

# **Tiger—Army's Armed Reconnaissance Helicopter**

Department of Defence

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Canberra ACT

1 September 2016

Dear President and Speaker

The Australian National Audit Office has undertaken an independent performance audit in the Department of Defence titled *Tiger—Army's Armed Reconnaissance Helicopter*. The audit was conducted in accordance with the authority contained in the *Auditor-General Act 1997*. I present the report of this audit to the Parliament.

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

Yours sincerely



Grant Hehir  
Auditor-General

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

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# Summary and recommendations

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## Background

1. The Armed Reconnaissance Helicopter is an important combat capability for the Australian Army (Army). Its intended functions include: undertaking airmobile escort missions; and providing support to covering force, helicopter attack, and recovery missions. After releasing a Request for Tender in December 2000, the Department of Defence (Defence) signed a contract with Eurocopter International Pacific (now Airbus Group Australia Pacific (Airbus)) in December 2001 for:

- the acquisition of 22 of its 'Tiger' variant helicopters at an acquisition cost of \$1.1 billion (2001 price); and
- a Through-Life Support contract at a cost of \$397 million (2001 price).

2. Government approval for the acquisition was on the basis that it was a low-risk off-the-shelf platform. The ANAO conducted a performance audit of the Tiger acquisition in 2005–06, and concluded that Tiger was more developmental than off-the-shelf and this heightened exposure to schedule, cost and capability risks, both for the acquisition of the aircraft and its sustainment.

3. Australia is one of four countries to operate the Tiger aircraft.<sup>1</sup> The small size of the international fleet, currently 119 aircraft, creates a niche capability with the associated challenges of sustaining the aircraft within a limited supply-chain.<sup>2</sup>

## Audit objective and criteria

4. The objective of the audit was to examine Defence's progress since 2007<sup>3</sup> in introducing into service a fully capable Tiger fleet and cost-effective sustainment arrangements.

5. To form a conclusion against the audit objective, the ANAO adopted the following high-level audit criteria:

- the acquisition met Government expectations relating to cost, schedule and capability;
- the acquisition is providing value-for-money to the Australian Government in respect to: cost of sustainment, rate of effort, and capability;
- Defence implemented appropriate contractual remedies, or alternate remediation, for any under-performance by the contractor(s); and
- Defence appropriately informed Government of the status of the Tiger fleet.

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1 Other countries operating the Tiger are France, Germany and Spain.

2 In contrast, the Army operates 35 Black Hawk helicopters from a total world fleet of some 2500 aircraft operated by 25 countries.

3 The ANAO reported on the Tiger program in May 2006, in ANAO Report No.36 2005–2006 *Management of the Tiger Armed Reconnaissance Helicopter Project—AIR 87*. This audit covers the period since 2007.

## Conclusion

6. The Tiger helicopter fleet has not yet delivered the original capability expected by the Australian Government, and continues to experience higher than expected sustainment costs and lower than expected aircraft availability.

- The Chief of Army declared Final Operational Capability for the Tiger on 14 April 2016, allowing the helicopter to be operationally employed. The declaration was seven years later than planned, and was accompanied by nine operational caveats.
- As at April 2016, the Tiger also had 76 capability deficiencies relating to Army's current and future operational requirements, 60 of which were deemed by Defence to be critical. Other key limitations relate to shipborne operations, pilot flying hours, interoperability and communications, airworthiness, and the roof-mounted sight.
- To date, sustainment costs have exceeded the original contract value. The 15 year (2004–2019) sustainment contract provided for expenditure of \$571 million.<sup>4</sup> That sum was expended by June 2014, and expenditure as at June 2016 was \$921 million.
- As at June 2016, the cost per flying hour for the Tiger fleet was \$30 335, compared to a target of \$20 000. The long-term average was \$39 472 per hour. Defence negotiated a cost cap to control sustainment cost growth in 2014.
- On average only 3.5 aircraft of the operational fleet (16 aircraft) were serviceable at 10am on any given day in 2015, against a target of 12 aircraft.

7. Defence's internal lessons learned review of the Tiger program concluded that the 'rushed' nature of the initial Through-Life Support contract negotiations resulted in a flawed outcome for the fleet's sustainment, and that Defence was ineffective in enforcing its contractual rights under the contract. These factors weakened Defence's position in managing the fleet's sustainment arrangements.

8. The 2016 Defence White Paper allocated \$500–\$750 million to address the current capability requirements of the Tiger platform with a view to replacing the platform mid next decade, at a cost of some \$5–\$6 billion. In effect, an upgrade is scheduled for consideration less than 12 months after the Tiger achieved Final Operational Capability. Defence should conduct a thorough analysis of the value-for-money of investing further in the Tiger, pending the introduction of a replacement capability.

## Supporting findings

### Status of the Tiger fleet

9. The Acquisition contract for the Tiger system was completed in 2013. The Tiger acquisition had a budget of \$2.03 billion. Defence spent \$1.86 billion on the acquisition (capital expenditure) and the remainder (\$170 million) was unspent contingency.

10. The acquisition missed all but one of its scheduled key milestones. In April 2016, the Chief of Army declared that the Tiger had achieved the Final Operational Capability milestone,

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<sup>4</sup> June 2016 out-turned price.



some seven years behind schedule. The developmental nature of the aircraft was a major factor in the Tiger's delayed introduction into service.

11. The declaration of Final Operational Capability allows the Tiger to be operationally employed in a land based 'non-permissive environment'. The relevant documentation and advice to the Defence Minister did not define the meaning of such an environment. The declaration was made with nine caveats, including for the Electronic Warfare Self-Protection System, Identification Friend or Foe System and Communication and Mission Planning System. There were also several shortfalls between the initial Government approvals given in 2001 and the capability realised when Final Operational Capability was declared in 2016. The shortfalls related to aircraft availability, rate of effort and the threat environment in which the Tiger can operate. Defence did not seek Government agreement to these shortfalls prior to declaring Final Operational Capability, as required by Defence Instructions. The relevant Defence Instruction provides that where a shortfall in capability occurs, Defence is to either:

- not accept the capability into operational service and determine a remediation plan; or
- accept the capability shortfall and, in cases where the shortfall 'places the capability outside the basis of the Government's project approval', notify and seek agreement by the Government before the shortfall can be accepted by the Capability Manager.

12. When declaring Final Operational Capability, Defence should comply with the requirements of the Defence Instructions.

13. As at April 2016, the Tiger fleet had 76 deficiencies relating to Army's current and future operational requirements, 60 of which were deemed by Defence to be critical and requiring resolution. Other key limitations relate to shipborne operations, pilot numbers and flying hours, interoperability and communications, airworthiness, rocket launchers and the roof-mounted sight.

14. The resolution of key deficiencies and lifting of operational caveats will require active management by Defence.

### **Sustaining the Tiger fleet**

15. The through-life support arrangements for the Tiger fleet were not well designed. The Through-Life Support contract signed in 2001 by Defence with Airbus—the single sustainment provider—provided limited recourse for Defence to address under-performance in Tiger's required availability and serviceability. In 2008 and 2014, Defence negotiated changes with Airbus to improve the Through-Life Support contract. The 2008 contract renegotiation introduced performance management arrangements, and nearly doubled the value of the sustainment contract. The 2014 renegotiation further amended the performance management arrangements, and changed the payment mechanism. Operating costs remain high, and aircraft availability continues to fall short of target.

16. The Tiger fleet has consistently underperformed against its sustainment metrics and targets for availability and rate of effort. On average, only 3.5 aircraft, from an operational fleet of 16 aircraft, were considered serviceable at 10am on any given day in 2015. Further, Defence considers that the Tiger fleet is unlikely to exceed 74 per cent of its original target for rate of effort. The revised mature target is 5300 flying hours per year as compared to the original target of 7147 flying hours.

17. Despite the Tiger fleet's low rate of effort, by June 2014 sustainment costs for the Tiger had exceeded the original contract value, with five years still remaining. On a year-to-year basis, sustainment costs have regularly exceeded Army's annual allocated budget, in some years by as much as 20 per cent. Between 2007 and 2016, sustainment costs exceeded Army's annual budget by some \$54 million. As of July 2016 the cost per flying hour for the Tiger fleet was \$30 335, against a target of \$20 000. The long-term average was \$39 472 per hour.

18. In December 2014, Defence and Airbus agreed to new Through-Life Support contract arrangements that introduced a cap on the growth in the cost of sustainment arrangements. The maximum total cost of the amended 15 year Through-Life Support contract is \$1.32 billion, more than double the initial contract amount of \$571 million (June 2016 out-turned).

19. Defence developed a Lessons Learned Report on the Tiger acquisition in April 2015. The Report highlighted the 'rushed' nature of the initial Through-Life Support contract negotiations, which resulted in a flawed outcome for the Tiger Fleet's sustainment. The Report also identified that Defence's ineffectiveness in enforcing its contractual rights under the Through-Life Support contract weakened its position in managing the Tiger fleet's sustainment arrangements.

20. The Lessons Learned Report made five recommendations. The findings of the report and its recommendations should be communicated to all current and future sustainment managers within Defence.

### **Future of the Armed Reconnaissance Helicopter capability**

21. The Tiger has a number of systems which are obsolete or are approaching obsolescence. Defence's main program for addressing the future of the Tiger is Project Land 9000 Armed Reconnaissance Helicopter Capability Assurance Program. This Project was initiated in 2014, and has not yet received Gate Zero approval. The final form of the Capability Assurance Program—whether to upgrade or replace the Tiger—has not been finalised. Given the current state of the aircraft, an upgrade of the Tiger would also have to remediate the aircraft's known deficiencies.

## **Recommendations**

### **Recommendation No.1**

#### **Paragraph 3.43**

That Defence implements arrangements to capture in its policies and procedures the lessons learned from project reviews of contract and sustainment arrangements. Key lessons learned should also be disseminated to relevant internal stakeholders.

**Defence's response:** *Agreed.*

### **Recommendation No.2**

#### **Paragraph 4.22**

That Defence assesses, and advises Government, on the value-for-money in investing further in the Tiger aircraft fleet for only a short period of improved performance, against other alternatives. This assessment should take into account the associated technical risks of upgrading an aircraft which has not fully delivered the level of capability originally expected by Government.

**Defence's response:** *Agreed.*

## Summary of Defence's response

Defence acknowledges the findings contained in the audit report on Tiger – Army's Armed Reconnaissance Helicopter and agrees with the two recommendations.

Army operates a sound capability. Whilst the capability continues to be expensive to operate, the cost control around the Australian Tiger sustainment system is highly regarded by other user nations (France, Germany and Spain). Further, it is improving along the road map that was set for it by CEO DMO, and committed to by CEO Airbus Helicopters, during 2014.

Defence has made significant progress on improving its current and future through-life-support costs and rate of effort. Furthermore, lessons learnt from the Tiger acquisition project and sustainment are continuously applied as Army and Capability Acquisition and Sustainment Group deliver the capability.

Defence acknowledges the deficiencies of the Tiger capability highlighted in the report as areas which will require upgrade or modification to remain relevant within the future battlespace. Defence will assess best value for money and the most effective capability for both the Tiger, and the Tiger Replacement, going forward.

## Summary of Airbus Group Australia Pacific's response to an extract of the proposed audit report

The Extract summarises the introduction into service of the Tiger ARH since 2007 and notes the considerable delays experienced in achieving the key Project milestones. Airbus Group Australia Pacific acknowledges these delays and generally agrees with the suggestion that this was largely caused by the maturity of the Tiger during the acquisition phase. Airbus Group Australia Pacific, its parent company Airbus Helicopters and all of the industry partners that support the Tiger have been strongly engaged over the past two years in a dedicated program to resolve all known issues with the support and operation of the aircraft. Under a dedicated Task Force the support arrangements have been extensively remediated with the result that support issues do not significantly contribute to lack of available aircraft.

The efforts to improve the levels of serviceable aircraft now focuses on the reliability of some systems, maintenance burden reduction and optimisation of support arrangements in the Operational Unit. Both CASG and Army have expressed their support for the initiatives and acknowledge the improvement plans which are in place. It is the view of Airbus Group Australia Pacific that the Extract does not provide a balanced view of the Tiger ARH as it does not appreciate the significant improvements which have been made in the past two years nor the positive trend of all support key performance indicators.<sup>5</sup>

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5 ANAO comment – a number of specific issues were raised in Airbus Group Australia Pacific's comments on an extract of this report. See Appendix 2 for ANAO commentary on key issues.



## **Audit Findings**



# 1. Background

## Introduction

1.1 The Armed Reconnaissance Helicopter is an important combat capability for the Australian Army (Army). Its intended functions include: undertaking airmobile escort missions; and providing support to covering force, helicopter attack, and recovery missions.<sup>6</sup> The acquisition process for the Armed Reconnaissance Helicopter was initiated in February 1994, to replace Army's then existing reconnaissance and fire support capability, the Bell 206B-1 and Iroquois UH1-H helicopters. After releasing a Request for Tender in December 2000, the Department of Defence (Defence) signed a contract with Eurocopter International Pacific (now Airbus Group Australia Pacific (Airbus)) in December 2001 for:

- the acquisition of 22 of its 'Tiger' variant helicopters (Figure 1.1) at an acquisition cost of \$1.1 billion (2001 price); and
- a Through-Life Support contract at a cost of \$397 million (2001 price).

**Figure 1.1: Tiger—Army's Armed Reconnaissance Helicopter**



Source: Department of Defence.

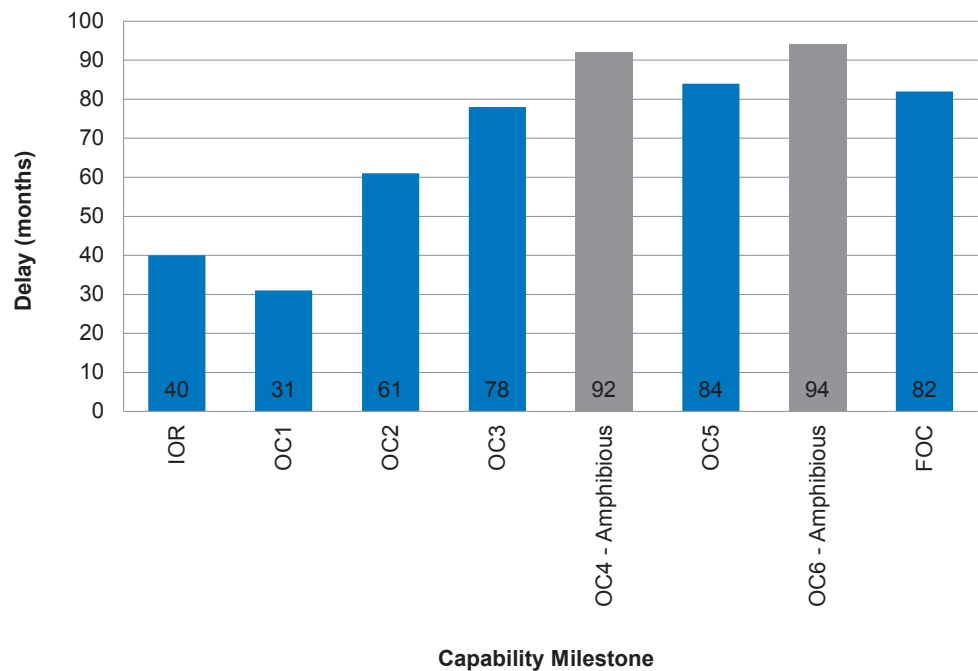
1.2 Australia is one of four countries to operate the Tiger aircraft.<sup>7</sup> The small size of the international fleet, currently 119 aircraft, creates a niche capability with the associated challenges of sustaining the aircraft within a limited supply-chain.<sup>8</sup> The acquisition strategy for the Tiger required the fleet to achieve Final Operational Capability during 2009. This milestone was not achieved until April 2016, some 7 years behind schedule. The slippage in achieving capability milestones is displayed in Figure 1.2.

<sup>6</sup> The Tiger is intended to be operable in a range of threat level environments.

<sup>7</sup> Other countries operating the Tiger are France, Germany and Spain.

<sup>8</sup> In contrast, the Army operates 35 Black Hawk helicopters from a total world fleet of some 2500 aircraft operated by 25 countries.

**Figure 1.2: Slippage to Tiger’s Acceptance into Operational Service capability milestones**



Note: Blue: Delay between original and achieved date.  
 Grey: Not yet achieved. Current delay between original and scheduled completion date.

Definition of Operational Milestones – IOR: Initial Operational Release, commencement of Test and Evaluation; OC1: Operational Capability 1 Deployable Troop – Land (permissive); OC2: Operational Capability 2 Deployable Squadron – Land (non-permissive); OC3: Operational Capability 3 Deployable Troop and Squadron – Land (non-permissive); OC4: Operational Capability 4 Deployable Troop – Amphibious; OC5: Operational Capability 5 Deployable Squadron – Land; OC6: Deployable Squadron – Amphibious; FOC: Final Operational Capability Deployable Regiment.<sup>9</sup>

Source: ANAO analysis of various Defence documents.

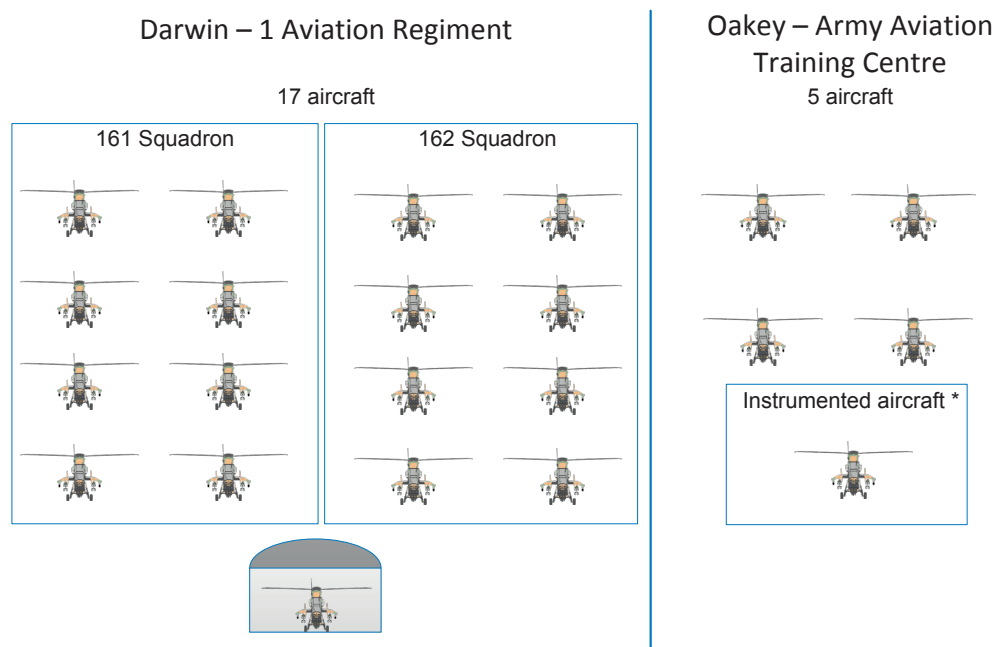
1.3 Australia’s Tiger fleet typically comprises:

- two operational squadrons of eight aircraft each, operated by Army’s 1 Aviation Regiment in Darwin;
- one aircraft being rotated through Deeper Maintenance in support of 1 Aviation Regiment; and
- five aircraft at the Army Aviation Training Centre in Oakey.

1.4 The typical distribution of Army’s Tiger fleet is displayed in Figure 1.3.

9 In 2013, the Army agreed to align the achievement of Tiger’s shipborne operations capability with the introduction into service of the Navy’s Landing Helicopter Dock ships. As a result, Defence considered that the achievement of shipborne operations capability would no longer be a prerequisite for the declaration of Tiger’s Final Operational Capability, which was restricted to land based operations only.



**Figure 1.3: Distribution of Army's Tiger fleet (22 aircraft)****Legend**

- \* Army has one instrumented aircraft which is permanently fitted with in-flight test instrumentation
- 1 Aviation Regiment typically has one aircraft being rotated through Deeper Maintenance

Source: ANAO analysis of Defence documents.

1.5 Army did not deploy the Tiger during its prolonged engagements in Afghanistan and Iraq. In the 2016 Defence White Paper, the Government indicated that it intends to commence a program of 'essential upgrades' of the aircraft to 'maintain the capability's effectiveness'<sup>10</sup>, and signalled that it plans to replace the current Tiger fleet in the middle of the next decade.

## Audits and external reviews of the Tiger

1.6 The ANAO conducted a performance audit of the Tiger acquisition in 2005–06, and concluded that the developmental nature of the Tiger had heightened exposure to schedule, cost and capability risks, both for the acquisition of the aircraft and its sustainment. The lack of operational experience in maintaining the Tiger in other defence forces meant that the original cost estimates for through-life support of the aircraft were immature, and exposed Defence to significant future budgetary risks.<sup>11</sup>

<sup>10</sup> Department of Defence, *Defence Integrated Investment Program*, 2016, p. 114.

<sup>11</sup> ANAO Report No.36 2005–2006 *Management of the Tiger Armed Reconnaissance Helicopter Project—AIR 87*, p. 16.

1.7 The Senate Foreign Affairs, Defence and Trade References Committee conducted an inquiry in 2012 into *Procurement procedures for Defence capital projects*. In its Final Report, the Committee reiterated the findings of the 2005–06 ANAO Report, and found that prior to contract, Defence was aware of the significant risk and developmental nature of the Tiger aircraft, and had made a ‘deliberate decision ... not to advise the capability manager (and by extension it is assumed government) of this information’.<sup>12</sup> The Committee also emphasised the importance of test and evaluation of platforms prior to acquisition and acceptance.<sup>13</sup>

1.8 The Tiger acquisition (Project AIR 87 Phase 2) has been included in all eight ANAO Major Projects Reports since the first Report was released in 2007–08. In the most recent Major Projects Report (2014–15), Defence identified three major project issues<sup>14</sup>:

- The Groundcrew Training Devices, delivered to the Acquisition contract specifications, no longer meet Army’s necessary training outcomes.
- The Electronic Warfare [Self-Protection] System fitted to the [Tiger] is not performing to specification during specific aircraft manoeuvres.<sup>15</sup>
- In Financial Year 2013–14 the estimated cost of sustaining the [Tiger] in exchange of flying hours represents very poor return on investment for Army. Army requires adjustment to the sustainment contract to ensure value for money.<sup>16</sup>

## Audit approach

1.9 The objective of the audit was to examine Defence’s progress since 2007 in introducing into service a fully capable Tiger fleet and cost-effective sustainment arrangements.

1.10 To form a conclusion against the audit objective, the ANAO adopted the following high-level audit criteria:

- the acquisition met Government expectations relating to cost, schedule and capability;
- the acquisition is providing value-for-money to the Australian Government in respect to: cost of sustainment, rate of effort, and capability;
- Defence implemented appropriate contractual remedies, or alternate remediation, for any under-performance by the contractor(s); and
- Defence appropriately informed Government of the status of the Tiger fleet.

1.11 The scope of the audit included: progress made by Defence in introducing the Tiger into service since a 2007 re-baselining of the acquisition and Through-Life Support contracts; the current capability status of the fleet; and the cost and performance of the Tiger sustainment arrangements.

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12 Senate Foreign Affairs, Defence and Trade References Committee, *Procurement procedures for Defence capital projects*, Final Report 2012, p. 20.

13 *ibid.*, pp. 20–21.

14 ANAO Report No.16 2015–16, *Major Projects Report 2014–15*, p. 278.

15 Issues with the Electronic Warfare Self-Protection System are discussed in Chapter 2 of this audit report.

16 The Through-Life Support contract was renegotiated in December 2014. This is discussed in Chapter 3 of this audit report.

1.12 The audit method involved review of:

- Defence records relating to the introduction into service of the Tiger fleet;
- Defence assessments of the Tiger's capability;
- data and documents relating to the sustainment of the Tiger fleet;
- contracts between Defence and Airbus; and
- Defence capability plans.

1.13 The ANAO also conducted site visits to the Army Aviation Training Centre at Oakey in Queensland; and 1 Aviation Regiment<sup>17</sup>, Darwin, which operate the aircraft.

1.14 The audit was conducted in accordance with the ANAO auditing standards at a cost to the ANAO of approximately \$567 800.

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17 Army arranges its operational units in a series of formations: a Regiment is one segment of a Brigade.

1 Aviation Regiment is the Armed Reconnaissance Helicopter segment of Army's 16<sup>th</sup> Aviation Brigade. The 16<sup>th</sup> Aviation Brigade also includes the 5<sup>th</sup> and 6<sup>th</sup> Regiments, which operate Army's Multi-Role, Chinook, Black Hawk and Kiowa helicopters.

## 2. Status of the Tiger Fleet

### Areas examined

This Chapter examines:

- if the acquisition progressed to expectations in terms of budget and scheduled key milestones; and
- the level of capability achieved by the Tiger.

### Conclusion

The Tiger achieved Final Operational Capability in April 2016, some seven years later than planned. The developmental nature of the Tiger was a major factor in the aircraft's delayed introduction into service, and was contrary to Defence's expectations in 2001 that Tiger would be an 'off-the-shelf' acquisition.

The Tiger acquisition had a budget of \$2.03 billion as at 2015. Defence spent \$1.86 billion on the acquisition (capital expenditure) and the remaining \$170 million was unspent contingency. Defence finalised the Acquisition contract in May 2013, but when Final Operational Capability was declared in April 2016, the Tiger had not delivered the original capability expected by Government. As at April 2016, the Tiger fleet had 76 capability deficiencies relating to Army's current and future operational requirements, 60 of which were deemed by Defence to be critical and requiring resolution.

Final Operational Capability was declared with nine caveats. Defence expects four of the caveats to be resolved between 2016 and 2019. There were also several shortfalls between the initial approvals in 2001 and the capability realised at Final Operational Capability in 2016. Defence did not seek Government agreement to these shortfalls prior to declaring Final Operational Capability, as required by Defence Instructions.

### Areas for improvement

The resolution of key deficiencies and lifting of operational caveats will require active management by Defence. When declaring Final Operational Capability, Defence should comply with the requirements of the Defence Instructions relating to seeking agreement from Government before accepting shortfalls in capability.

2.1 On 21 December 2001, the Commonwealth entered into two contracts with Airbus (formerly Eurocopter International Pacific) for:

- the acquisition of an Armed Reconnaissance Helicopter capability; and
- the provision of 15 years' through-life support for the capability.

2.2 The Acquisition contract included the delivery to Defence of: 22 Tiger Armed Reconnaissance Helicopters (Tiger)<sup>18</sup>; a full flight and mission simulator; two Cockpit Procedures Trainer(s); ground crew training devices; an Electronic Warfare Mission Support System; Ground Mission Equipment; and supporting stores, facilities and ammunition.

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18 The 22 helicopters were configured to meet the capability requirements for aerial reconnaissance and fire support at the agreed Baseline Configuration 4 which was achieved, after a retrofit program, in 2012. This included one instrumented aircraft which is permanently fitted with in-flight test instrumentation.

2.3 Prior to contract signature in December 2001, Defence had an Equipment Acquisition Strategy to acquire an off-the-shelf Armed Reconnaissance Helicopter system to lower the risk of schedule, cost and performance shortfalls. In October 2001, a team of Defence test pilots and flight test engineers conducted a series of ground and flight tests on the Tiger. The results of these tests were published in an Aircraft Research and Development Unit Preview Evaluation.<sup>19</sup> The Evaluation highlighted the developmental nature of the Tiger and the key schedule and technical risks associated with its acquisition. Government approved and Defence proceeded with the acquisition of the Tiger on the basis it was a low-risk off-the-shelf platform.

### Did the acquisition progress to expectations in terms of budget and scheduled key milestones?

The Acquisition contract for the Tiger system was completed in 2013. The Tiger acquisition had a budget of \$2.03 billion.<sup>a</sup> Defence spent \$1.86 billion on the acquisition (capital expenditure) and the remainder (\$170 million) was unspent contingency.

The acquisition missed all but one of its scheduled key milestones. In April 2016, the Chief of Army declared that the Tiger had achieved the Final Operational Capability milestone, some seven years behind schedule. The developmental nature of the aircraft was a major factor in the Tiger's delayed introduction into service.

Note a: 2015 price, adjusted for inflation.

### Acquisition budget

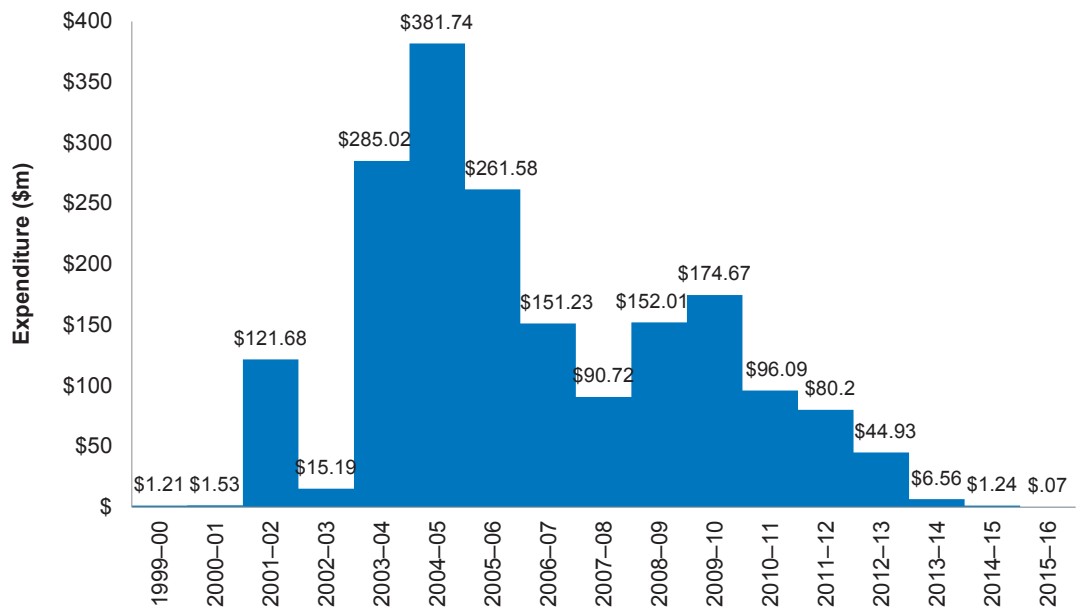
2.4 The Tiger acquisition had a budget of \$2.03 billion.<sup>20</sup> Defence spent \$1.86 billion on the acquisition (capital expenditure) and the remainder (\$170 million) was unspent contingency.<sup>21</sup> A breakdown of expenditure under the Acquisition contract is provided in Figure 2.1.

19 A Preview Evaluation involves a series of ground and flight assessments. In 2015, Defence instituted a policy for the completion of preview test and evaluation prior to entering First Pass, a process analogous to the use of Preview Evaluation.

20 2015 price, adjusted for inflation.

21 The project was approved in March 1999 with a budget of \$1.58 billion (December 1999 prices). Since 2001, the budget has increased by \$418.2 million as a result of price index variation, and \$121.5 million as a result of exchange rate variations. The 2014–15 project budget was \$2.03 billion.

**Figure 2.1: Acquisition expenditure, per financial year**



Source: Department of Defence.

**Delays to scheduled key milestones**

2.5 As at April 2016, Project AIR 87 Phase 2 has been in progress for 171 months (14 years) against an initial schedule of 78 months (6.5 years). The developmental nature of the aircraft affected the project in a number of ways, including: late delivery of the aircraft by Airbus; ongoing design issues; low aircraft reliability and sustainability; and reduced flying hours.

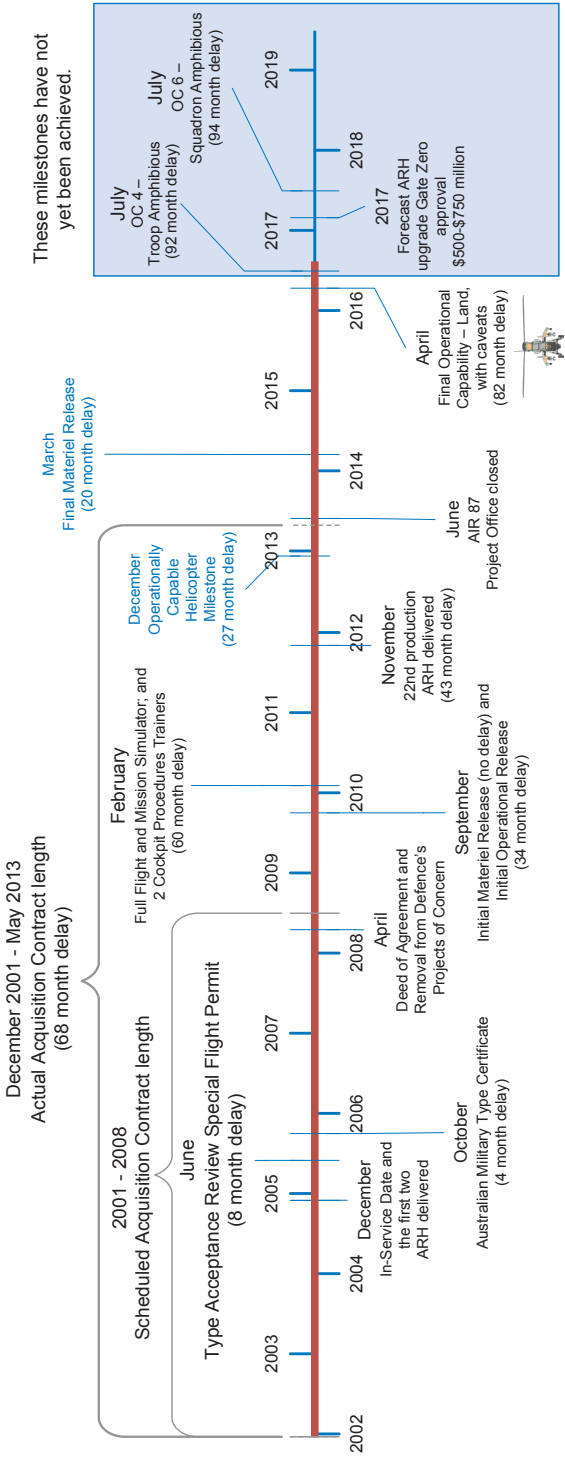
2.6 The Project appeared in Defence’s first Projects of Concern list<sup>22</sup> in January 2008, and was removed from the list in April 2008 after Defence classified the Project as ‘remediated’. A further eight years passed before the declaration of Final Operational Capability (April 2016). During this period Tiger was not put back onto the Projects of Concern list.<sup>23</sup>

2.7 A timeline of key project milestones and events is displayed in Figure 2.2.

22 The Projects of Concern list comprises projects experiencing significant commercial, technical, cost and/or schedule difficulties. Projects on the list receive targeted senior management attention and are required to report more regularly to the Government. Projects are removed from the list once the identified deficiencies have been remediated.

23 Final Operational Capability was originally planned for 2009.

Figure 2.2: Timeline of key project milestones and events



Notes: OC: Operational Capability.

Red line: time elapsed at the time of the audit.

Milestones in **blue** were not original milestones, they were introduced over the life of the project.

Source: ANAO analysis of Defence documents.

## *ANAO Major Projects Report—Tiger acquisition*

2.8 The Tiger acquisition project has been included in all eight ANAO Major Projects Reports since the first Report was released in November 2008. Since Defence declared Final Materiel Release in March 2014, the Capability Acquisition and Sustainment Group (formerly the Defence Materiel Organisation) has not reached agreement within Defence to pursue the removal of the project from the Major Projects Report. Removal would require consultation with the Parliament's Joint Committee of Public Accounts and Audit. In August 2014, Chief of Army wrote to the General Manager Joint, Systems and Air, relating to the low risk rating applied to Project AIR 87 Phase 2 by the then Defence Materiel Organisation, and its intention to seek to have the Project removed from the Major Projects Report:

In relation to AIR87 Ph2 I have some deep concerns. I do not agree with your overall risk rating of low. I assess that there is a high risk to achievement of [Final Operational Capability] by Jan 16, particularly in relation to poor Rate of Effort generation and deficiencies in the Electronic Warfare System. I note that these issues were also highlighted in Army's approval of [Final Materiel Release] at ref B. Although challenges remain in several [Fundamental Inputs to Capability] elements, [Defence Materiel Organisation] has a clear responsibility to resolve challenges in these two areas. I request you reconsider the overall risk rating, after which I would be happy to consider removal of this project from the Major Projects Report.

2.9 Project AIR 87 remained in the Major Projects Report, and in the most recent (2014–15) Report, the continuing risks associated with rate of effort, Ground Crew Training Devices, Electronic Warfare Self-Protection Systems, and cost of ownership are identified.<sup>24</sup> The schedule slippage experienced by the Tiger is also consistent with the Major Projects Report's findings<sup>25</sup> that Defence acquisition projects approved prior to 2005 present a greater risk to Defence in achieving Final Operational Capability within the scheduled timeframe.<sup>26</sup>

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24 ANAO Report No.16 2015–16, *Major Projects Report 2014–15*, pp. 277–8.

25 *ibid.*, pp. 51–2.

26 In 2005, Defence introduced a series of reforms based on the *Defence Procurement Review 2003* (the Kinnaird Review) which concluded that Defence needed to further reform its acquisition management, and become more business-like and outputs-focused. Key reforms adopted by Defence in response to the review included the strengthening of the capability and assessment process prior to acquisition. See ANAO Audit Report No.6 2013–14, *Capability Development Reform*, for further discussion of the Kinnaird reforms.



## What level of capability has the Tiger achieved?

The declaration of Final Operational Capability allows the Tiger to be operationally employed in a land based 'non-permissive environment'. The relevant documentation and advice to the Defence Minister did not define the meaning of such an environment. The declaration was made with nine caveats, including for the Electronic Warfare Self-Protection System, Identification Friend or Foe System and Communication and Mission Planning System. There were also several shortfalls between the initial Government approvals given in 2001 and the capability realised when Final Operational Capability was declared in 2016. The shortfalls related to aircraft availability, rate of effort and the threat environment in which the Tiger can operate. Defence did not seek Government agreement to these shortfalls prior to declaring Final Operational Capability, as required by Defence Instructions. The relevant Defence Instruction provides that where a shortfall in capability occurs, Defence is to either:

- not accept the capability into operational service and determine a remediation plan; or
- accept the capability shortfall and, in cases where the shortfall 'places the capability outside the basis of the Government's project approval', notify and seek agreement by the Government before the shortfall can be accepted by the Capability Manager.

When declaring Final Operational Capability, Defence should comply with the requirements of the Defence Instructions.

As at April 2016, the Tiger fleet had 76 deficiencies relating to Army's current and future operational requirements, 60 of which were deemed by Defence to be critical and requiring resolution. Other key limitations relate to shipborne operations, pilot numbers and flying hours, interoperability and communications, airworthiness, rocket launchers and the roof-mounted sight.

The resolution of key deficiencies and lifting of operational caveats will require active management by Defence.

2.10 Final Operational Capability is declared when the designated Defence Capability Manager considers that the capability to be delivered by a project is able to be operationally employed.<sup>27</sup> On 14 April 2016, the Chief of Army declared Final Operational Capability for the Tiger. On the recommendation of key advisors, the Chief of Army declared that:

Army can deploy an aviation battle group Headquarters based on Headquarters 1 Aviation Regiment, simultaneously with a Tiger squadron for a single sustainment period reducing to an on-going deployment of a troop in a land based non-permissive environment.

### Final Operational Capability—caveats

2.11 The declaration of Tiger's Final Operational Capability was accompanied by nine 'caveats'.<sup>28</sup> Table 2.1 summarises the caveats and their expected resolution.

<sup>27</sup> Department of Defence, DI(G) OPS 45–2, Capability Acceptance into Operational Service, November 2012.

<sup>28</sup> Defence has not formally defined the effect of caveats on the declaration of Final Operational Capability. In May 2016, Defence described caveats to the ANAO as 'alerts' to operational decision makers about risks to be taken into account when making decisions about the use of the Tiger in particular operational circumstances.

**Table 2.1: Caveats on Final Operational Capability**

Caveat	Description	Expected resolution (as at 14 April 2016)
Electronic Warfare Self-Protection System	The system currently exhibits deficiencies.	Airbus is currently developing an engineering solution, with an expected final delivery date of December 2016.
Availability and rate of effort	Tiger availability is likely to plateau at 50 per cent availability (four from eight aircraft per two squadrons). Tiger is currently expected to fly 4500 hours during 2015–16 and is unlikely to exceed 5400 hours in future years.	Defence's Final Operational Capability declaration stated that 'industry and Defence must continue to improve availability'.
Identification Friend or Foe System (Mode 4)	The system is experiencing technical and integration issues.	June 2016.
Communication and mission planning	Limitations exist with voice and data communication and the Ground Mission Equipment mission planning suite. <sup>a</sup>	Ground Mission Equipment will be replaced with a new Joint Mission Planning System commencing mid-2017. Radio obsolescence expected to be resolved by the end of 2019.
Missiles	AGM-114M Hellfire missile is no longer manufactured by the original Equipment Manufacturer.	The next generation Hellfire missile is not expected to be released into service until late 2017.
Ammunition	Availability issues.	Stocks procured.
Spare parts and consumables	Supply constraints on breakdown spares and consumables.	No resolution in the short to medium term identified.
Class IX Fly Away Kits	Each kit is designed to support a troop-level deployment in a field environment for 14 days. Defence currently has limited stocks.	No current resolution identified.
Support	Engineering capacity within Defence and industry is constrained with the potential to affect capability.	No current resolution identified.

Note a: See paragraphs 2.21–2.23.

Source: Department of Defence documentation.

## **Final Operational Capability—advising Government of shortfalls against initial project approval**

2.12 Typically, Final Operational Capability is declared when the equipment meets the capability initially approved by Government.<sup>29</sup> In the case of Tiger, there were several gaps between the initial approvals in 2001 and the capability realised at Final Operational Capability in 2016. Table 2.2 illustrates the key shortfalls in respect of availability, rate of effort and threat environment. With regard to availability for example, Defence now expects that eight aircraft will be available. The

29 Department of Defence, DI(G) OPS 45–2, Capability Acceptance into Operational Service, November 2012.

Government's original expectation, based on Defence's advice, was that 12 aircraft would be available.<sup>30</sup>

**Table 2.2: Shortfalls against initial project approval at Final Operational Capability**

Initial approval		Status at Final Operational Capability
Availability	A minimum of six aircraft available from the eight aircraft in each of Army's 161 and 162 squadrons (see Figure 2.3 below).	Defence expected Tiger availability to plateau at 50 per cent availability (four aircraft available from the eight aircraft in each of the two squadrons).
Rate of effort	A mature rate of effort of 7147 hours per year.	Defence considered that it was unlikely that Tiger would exceed 5400 hours in future years. <sup>a</sup>
Threat environment	Non-permissive, medium-high threat environment. <sup>b</sup>	Non-permissive, medium threat environment.

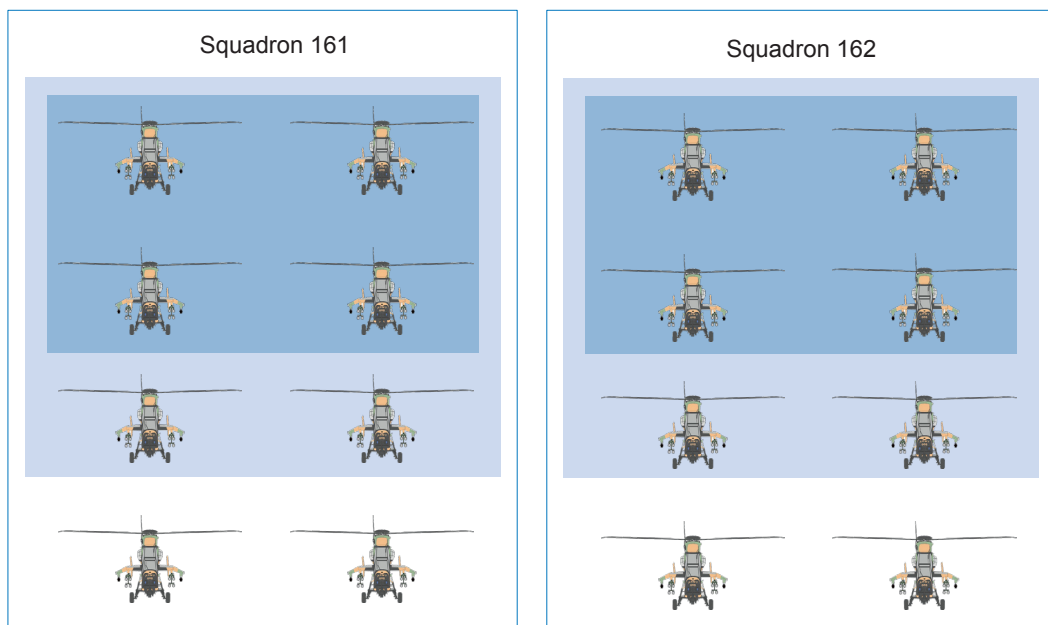
Note a: In its 2016–17 Portfolio Budget Statements, Defence forecasted a rate of effort of 6227 hours per year (2016–17 to 2019–20), but in May 2016, Defence advised the ANAO that it had further revised its future expectation for rate of effort to 5300 hours. Rate of effort is discussed further in Chapter 3.

Note b: Defence has not formally defined the threat levels applicable to the Tiger. In May 2016, Defence indicated that: Low threat would indicate a small arms threat only, while medium would indicate the presence of Man Portable Infra-Red missiles, and a high threat would indicate a coordinated air defence system with multiple Infra-Red and Radar guided missile systems.

Source: ANAO analysis.

30 The Acquisition Strategy for the Armed Reconnaissance Helicopter capability, provided to the Government in 1998, required two squadrons of Tigers—each squadron with a minimum of six available aircraft (12 aircraft available in total).

**Figure 2.3: Expected Tiger availability—1 Aviation Regiment (Darwin)**



Government's expected aircraft availability at contract signature (12)

Defence's expected aircraft availability post-Final Operational Capability (8)

Source: ANAO analysis of Defence documents.

2.13 In May 2016, Defence advised the ANAO that some of the initial capability descriptions were aspirational and its understanding of the requirements for a mature Armed Reconnaissance Helicopter capability had evolved over the years.

2.14 In situations where there are capability shortfalls, the Defence Instruction for accepting capability into operational service<sup>31</sup> requires Defence to either:

- not accept the capability into operational service and determine a remediation plan; or
- accept the capability shortfall and, in cases where the shortfall 'places the capability outside the basis of the Government's project approval' Defence must notify and seek agreement by the Government before the shortfall can be accepted by the Capability Manager.

2.15 Defence did not seek Government agreement to these shortfalls prior to declaring Final Operational Capability. On 14 April 2016, Defence asked the Minister to note the declaration of Final

31 Department of Defence, DI(G) OPS 45–2, Capability Acceptance into Operational Service, November 2012, paragraph 14.

Operational Capability, but did not make the shortfalls clear in that advice or provide an explanation of key concepts such as ‘caveats’, ‘non-permissive’<sup>32</sup> and ‘medium threat’ environments.

### **Key deficiencies and limitations—Tiger fleet**

2.16 In addition to the aircraft’s shortfalls against its initial requirements, Defence has identified 76 ‘capability deficiencies’ with the Tiger relating to Army’s current and future operational requirements. Of the 76 deficiencies, 60 (79 per cent) were deemed by Defence to be ‘critical’ and 16 (21 per cent) ‘non-critical’. Defence defines ‘critical’ as deficiencies that need to be resolved as they unacceptably degrade war fighting capability, limit operational effectiveness, freedom of navigation and/or aircraft safety. ‘Non-critical’ is defined by Defence as deficiencies that should be resolved as they inhibit full operational effectiveness and flexibility of the capability.

2.17 In addition to these deficiencies, there are other limitations affecting the Tiger fleet. Some significant limitations are outlined below.

#### ***Shipborne operations***

2.18 As at May 2016, Tiger was not cleared to operate from any ship. The ability to conduct shipborne operations was a requirement specified in the November 1999 Capability Summary<sup>33</sup>, and as part of Army’s future operational structure. In 2013, the Army agreed to align the achievement of Tiger’s shipborne operations capability with the introduction into service of the Navy’s Landing Helicopter Dock ships. As a result, Defence considered that the achievement of shipborne operations capability would no longer be a prerequisite for the declaration of Tiger’s Final Operational Capability, which was restricted to land based operations only. Defence advised the ANAO that Tiger is currently expected to undertake First of Class Flight Trials<sup>34</sup> for shipborne operations from the Navy’s two new Landing Helicopter Dock ships in mid-2017.

#### ***Pilot flying hours***

2.19 Defence has been unable to achieve sufficient flying hours for its Tiger pilots. Defence requires its Tiger pilots to fly a minimum of 150 hours per year in the Tiger. In addition, Tiger pilots should also complete a minimum of 30 flight simulated hours per year. Defence informed the ANAO that for the period July–December 2015, Tiger pilots averaged 59.2 flying hours.

2.20 Army has also experienced difficulty in maintaining a sufficient cohort of pilots in recent years. In June 2014, Defence reported that none of the 99 trained pilots (since 2006) had returned to 1 Aviation Regiment, Darwin after being rotated to other units. In December 2014, Defence identified trained pilots and qualified flying instructors as ‘key personnel deficiencies’ for the Tiger

32 Defence’s Land Warfare Doctrine 9-4 defines a permissive environment as ‘Local authorities, forces and the population are unlikely to oppose or are willing to support Australian Defence Force operations.’ Defence informed the ANAO that ‘a non-permissive environment [is] where either the local authorities are likely to oppose [Australian Defence Force] forces directly, or do not control the situation sufficiently to prevent other forces from acting against the [Australian Defence Force].’

33 The Capability Summary sets out Defence’s initial requirements for the Armed Reconnaissance Helicopter capability.

34 First of Class Flight Trials involve the development of Ship Helicopter Operating Limits, aircraft handling procedures and embarkation routines, which aim to determine the limitations and procedures for establishing a safe and operationally effective interface between the Tiger and Defence’s Landing Helicopter Dock ships. For a wider discussion of helicopter operations from the Landing Helicopter Docks, see ANAO Report No.9 2015–16, *Test and Evaluation of Major Defence Equipment Acquisitions*, pp. 59–63.

fleet. In July 2016, Defence advised the ANAO that since June 2014 at least two Commanding Officers and one Qualified Flight Instructor returned to the unit after posting to other units.

*Interoperability and communications: the tactical data link*

2.21 The acquisition strategy for the Armed Reconnaissance Helicopter was to purchase a platform with a communication system that could integrate and interoperate with other Defence platforms and systems. Defence advised that, at contract signature in 2001, Army's digital messaging requirements were not defined due to the infancy of Army's digital communication platform requirements. Tiger is equipped with the Eurogrid mapping and mission planning system and a proprietary data link that allows data communication directly between Tiger aircraft and Ground-Based Mission Equipment.

2.22 At present, the Eurogrid system cannot communicate with Army's Battle Management System or other Army Aviation platforms, due to architecture incompatibility. In addition, Army is unable to communicate key mission data to and from the Tiger platform in real time.<sup>35</sup> These communications issues reduce the effectiveness of the aircraft as a reconnaissance platform. In January 2014, Defence reported that the Tiger's satellite communication performance had failed to achieve desired expectations and was further limiting the operational capability of the platform.

2.23 In August 2014, the Minister for Defence approved a combined First and Second Pass acquisition of an 'interim' tactical data link solution at an estimated acquisition cost of \$11.6 million.<sup>36</sup> Defence decided to proceed with an interim solution rather than pursue a fully functional tactical data link due to: the complexity of the project; timing; and the availability of funding to implement and certify. The interim solution was intended to inform the requirements of the Land 9000 Armed Reconnaissance Helicopter Capability Assurance Program, with an upgraded tactical data link to be considered as an upgrade option within the Capability Assurance Program.<sup>37</sup>

*Tiger Airworthiness*

2.24 Airworthiness<sup>38</sup> Issues Papers are used by Defence to ensure visibility of all significant airworthiness issues in an aviation platform. In April 2016, the Tiger fleet had five open Defence Airworthiness Issues Papers, which the Airworthiness Board stated was a 'large number'. Plans were in place to remediate these issues within twelve months. Open Tiger Airworthiness Issues Papers are listed in Table 2.3.

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35 The Tiger's data communication with Ground-Based Mission Equipment can only occur prior to and after flying; it is not able to be conducted in real-time when in flight.

36 The proposal had an estimated Net Personnel and Operating Cost of \$2.1 million. The approval sought to modify 21 of the 22 Tiger Armed Reconnaissance Helicopters, with Defence deciding not to modify the instrumented helicopter.

37 As discussed in Chapter 4 of this audit report, the Defence Integrated Investment Plan released in February 2016 indicated that the Tiger fleet would be replaced from 2025.

38 Under the Through-Life Support contract (discussed further in Chapter 3), Airbus is required to comply with Defence's technical airworthiness and maintenance regulations.

**Table 2.3: Tiger Airworthiness Issues Papers**

Issues Paper	Status, April 2016
#18E – Tiger Instrument Flight Rules Certification	Airworthiness Issues Paper to remain open until solutions have been assessed for navigation database corruption and Global Positioning System in-flight failure.
#23D – Flight Over Water	There are no current technical solutions available to support First of Class Flight Trials. Airworthiness Issues Paper will remain open pending further investigation into Flight Over Water operational scenarios.
#31A – Tiger Cockpit Smoke and Fumes	This Issues Paper is with Army's Operational Airworthiness Authority for review. It was noted as a significant airworthiness issue at the last Airworthiness Board which is being addressed but requires further attention. Airworthiness Issues Paper remains open.
#32A – Upper Mode Automatic Flight Control System Disengagement	Airworthiness Issues Paper remains open pending further investigation into treatments for 'Upper Mode Automatic Flight Control System' (auto-pilot) disengagement.
#34 V1.1 – Aircraft Structural Integrity Remediation	The Technical Airworthiness Authority <sup>a</sup> endorsed the remediation actions to address this Issues Paper in September 2015. It was noted as a significant airworthiness issue at the last Airworthiness Board which is being addressed but requires further attention. Airworthiness Issues Paper remains open.

Note a: The Director General Technical Airworthiness within the Air Force is the Technical Airworthiness Authority for all of Defence's aviation systems.

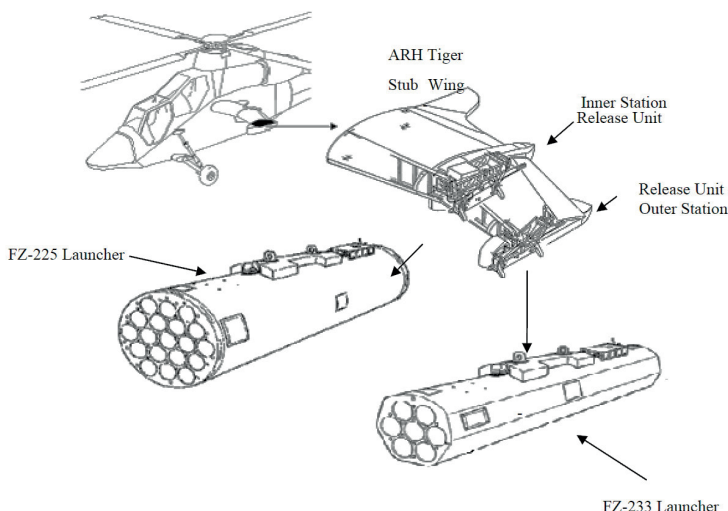
Source: Department of Defence.

2.25 At the October 2015 Airworthiness Board, Defence highlighted that the two major Airworthiness concerns are the absence of a Crash Rescue Helicopter in Darwin and staffing shortfalls. The lack of a suitable crash rescue helicopter or search and rescue capability in Darwin means that tactical low-flying gunnery activities are restricted except during periods where an Army Medical Evacuation aircraft is available or during major exercises.

### *Rocket launchers*

2.26 One of the weapons available to the Tiger, depending on its configuration, are 70mm rocket launchers (either with 19 or seven rockets) that can be mounted on the Tiger's multipurpose stub wings. By mounting two of each launcher type, the Tiger can carry up to 52 rockets (see Figure 2.4).

**Figure 2.4: Tiger rocket sub-system**



Source: Department of Defence.

2.27 Since June 2014, there have been two separate incidents across the world fleet of Tigers that have involved the rocket launcher detaching, uncommanded, in mid-flight. One incident involved a German variant UH Tiger, the other involved an Australian Tiger at Oakey in June 2014. Defence advised the ANAO that it recovered the rocket launcher from the Oakey incident however the launcher was damaged beyond repair.

2.28 Following the second incident, in September 2014 an Incident Review Meeting considered the loss of a rocket launcher pod as a 'fleet wide risk'. The issue is listed by Defence as a Noteworthy Hazard. The root cause remains 'undetermined'. The current mitigation measure, provided by industry, is to conduct an Intermediate Maintenance on the Tiger Release Unit (which was not conducted previously). Post-mitigation the risk remains 'reasonably probable'. Defence informed the ANAO that 'the rate of occurrence for this particular incident is very low' and it has restricted the Tiger's operations to 'not over populated areas' to reduce risk.

### *Roof-mounted sight*

2.29 As discussed, Final Operational Capability for the Tiger fleet was declared for environments up to 'medium threat'. While Defence has not formally defined this term, the Department advised that 'medium [threat] would indicate the presence of Man Portable Infra-Red missiles.' The original requirement for Tiger's air-to-ground missile was to provide a guided weapon accurate out to eight kilometres and outside the range of most Man-Portable Air Defence Systems.<sup>39</sup> While the Tiger's air-to-ground missile is accurate to these distances, the Tiger's roof-mounted sight has an effective range of only around four kilometres. The Tiger may be within the effective range of enemy fire before the Tiger crew can positively identify and respond to the threat. In 2015, Defence commented that:

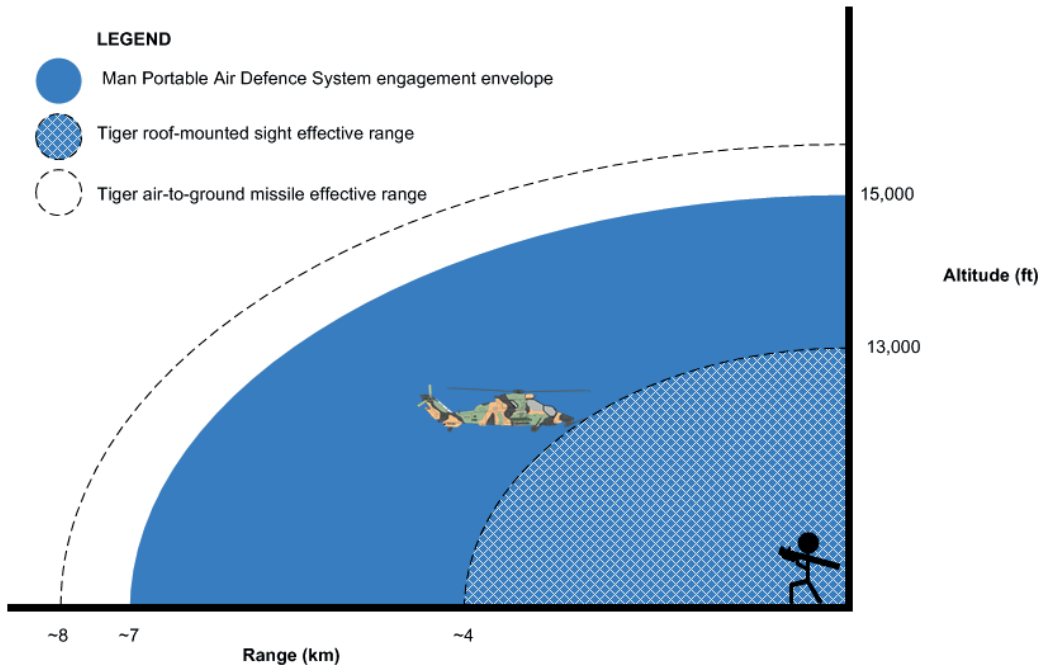
39 Man-Portable Air Defence Systems are lightweight anti-aircraft weapons that are low cost, compact and mobile.



Tiger Roof Mounted Sight (RMS) does not enable the weapon system to achieve range overmatch in most Australian climatic conditions. [Electronic Warfare Self-Protection] systems are very good, and will enable operations above terrain flight altitudes in most situations, but the requirement for positive [identification] of targets will usually mean Tiger weapons release is within the effective range of [Man-Portable Air Defence Systems].

2.30 The approximate range of the roof-mounted sight is illustrated in Figure 2.5 and is overlaid with the engagement envelope of a typical Man-Portable Air Defence System and the effective range of the Tiger's air-to-ground missile.

**Figure 2.5: Roof-mounted sight effective range**



Note: Figure not to scale.

Source: ANAO analysis of Defence documents and Department of Foreign Affairs and Trade, *Man-Portable Air Defence Systems (MANPADS)*, June 2008, p. 5.

2.31 Defence advised that this limitation 'can be overcome by having a ground element lase the target, thereby maintaining aircraft stand-off distance.' Further, Defence informed the ANAO that 'Tiger has an Electronic Warfare Self Protection System (despite some ongoing issues) that permits flight inside a [Man-Portable Air Defence System] engagement zone. Standoff range provided by the Sight and Hellfire are designed to protect against other direct fire weapon systems for which Tiger has no other defence.'

### 3. Sustaining the Tiger Fleet

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#### Areas examined

This Chapter examines Tiger's through-life support arrangements; sustainment performance and costs; and Defence's review of lessons learned from the Tiger sustainment experience.

#### Conclusion

Shortcomings in the Through-Life Support contract with Airbus limited Defence's ability to address sustainment under-performance and the contract was renegotiated twice. Key drivers of Tiger's sustainment under-performance include Airbus's supply-chain constraints, the poor reliability of Tiger components, and cost. The Tiger has exceeded the operating cost originally agreed to by Government, and continues to operate at a cost well above Defence's expectations. As at June 2016, the cost per flying hour for the Tiger fleet was \$30 335, compared to a target of \$20 000. The long-term average was \$39 472 per hour.

In 2008 and 2014, Defence sought to address the Tiger's poor sustainment performance through renegotiating Deeds to the contract. The 2008 Deed renegotiation did not produce a satisfactory improvement in sustainment performance—performance since the 2014 contract amendment has shown signs of improvement with a 29 per cent reduction in operating costs per flight-hour achieved in the period June 2014–June 2016. Defence's data shows that, on average, only 3.5 aircraft—from an operational regiment of 16 aircraft—were considered serviceable at 10am on any given day in 2015.

Defence's internal lessons learned review concluded that the 'rushed' nature of the initial Through-Life Support contract negotiations resulted in a flawed outcome for the Tiger Fleet's sustainment, and that Defence was ineffective in enforcing its contractual rights under the Through-Life Support contract. These factors weakened Defence's position in managing the Tiger fleet's sustainment arrangements.

#### Areas for improvement

The ANAO has recommended that Defence implements arrangements to capture in its policies and procedures the lessons learned from project reviews of contract and sustainment arrangements. Key lessons learned should also be disseminated to relevant internal stakeholders.

3.1 Defence's key arrangement underpinning the sustainment of the Tiger fleet is a Through-Life Support contract.

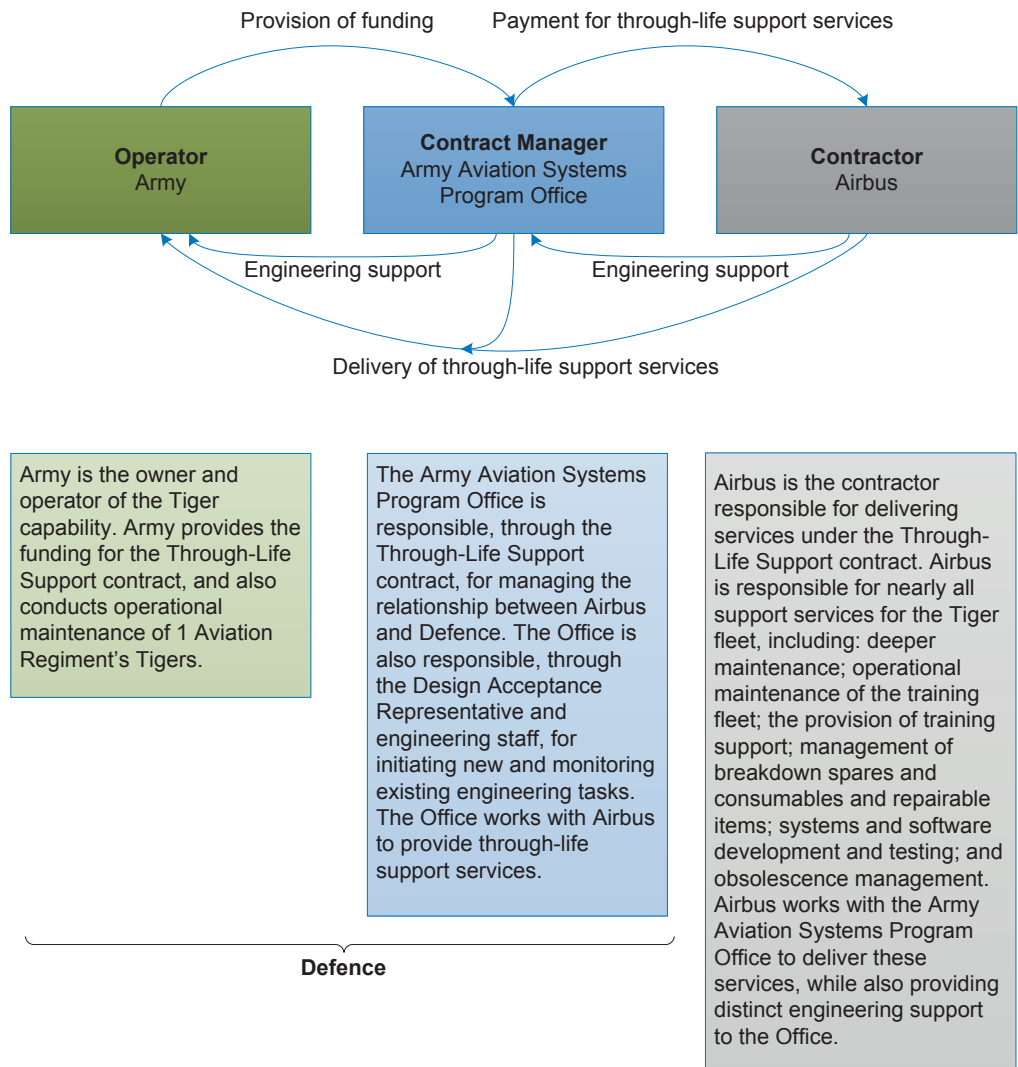
3.2 Defence's System Program Offices (which fall within the Capability Acquisition and Sustainment Group) are responsible for the administration and oversight of sustainment activities for specialist military equipment. In the case of the Tiger, Defence has outsourced the majority of the functions of its System Program Office to Airbus Group Australia Pacific (Airbus). In completing the roles assigned to it under the Through-Life Support contract, Airbus is supported and overseen by a small number of Defence uniformed and civilian personnel in the Army Aviation Systems Program Office of Defence's Capability Acquisition and Sustainment Group.<sup>40</sup>

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40 The Army Aviation Systems Program Office is responsible for supporting all Army aviation platforms.

3.3 Figure 3.1 illustrates the sustainment arrangements for the Tiger fleet and summarises each party’s responsibilities at the time of the audit.

**Figure 3.1: Tiger fleet sustainment arrangements and responsibilities**



Source: ANAO analysis based on information provided by Defence.

## Were the through-life support arrangements for the Tiger fleet well designed to support the achievement of Defence's sustainment requirements?

The through-life support arrangements for the Tiger fleet were not well designed. The Through-Life Support contract signed in 2001 by Defence with Airbus—the single sustainment provider—provided limited recourse for Defence to address under-performance in Tiger's required availability and serviceability. In 2008 and 2014, Defence negotiated changes with Airbus to improve the Through-Life Support contract. The 2008 contract renegotiation introduced performance management arrangements, and nearly doubled the value of the sustainment contract. The 2014 renegotiation further amended the performance management arrangements, and changed the payment mechanism. Operating costs remain high, and aircraft availability continues to fall short of target.

### The Through-Life Support contract

3.4 The Tiger Through-Life Support contract was signed in conjunction with the Acquisition contract in 2001, and requires Airbus to sustain the Tiger fleet for a set, in-service period of 15 years, from 1 December 2004 to 30 June 2019<sup>41</sup>, with an option to extend for five years. The full value of the contract for 15 years of through-life support was \$396 million (some \$571 million in inflation adjusted dollars as at June 2016).

3.5 The contract established Airbus as a single-source provider for all services required to support sustainment of the Tiger, including management and administration, integrated logistics management services, fleet deeper maintenance services, and training operations and support. Under the initial contract provisions, Airbus was paid for the value of work done, including the cost of repairing or replacing parts as required, with the value of these services to be established annually by Defence and Airbus.<sup>42</sup>

3.6 Defence records indicate that as the Tiger was progressively introduced into service, the Australian variant exhibited poor reliability and problems were encountered in manufacturing and repairing parts as required. In November 2015, a Tiger Airworthiness Board Report observed that:

Ten years of operation has proven that the reliability projections for components under estimated failure rates, resulting in unscheduled maintenance rates being higher than expected.

3.7 The small size of the international fleet<sup>43</sup>, and Airbus's reliance on numerous subcontractors in Europe<sup>44</sup>, have also affected Airbus's ability to sustain the Australian aircraft in an efficient and timely manner. In response to ongoing under-performance in the sustainment arrangements (discussed below), Defence has on several occasions written to Airbus's parent company, Airbus Helicopters.

41 There was a three-year pre-implementation stage from 2001–02, before the 15 year contract took effect.

42 Under the contract, Airbus was able to claim a 'Performance Award Fee' for achieving a result 'that [was] better than the contracted performance standard', and for 'mak[ing] a material contribution towards the working relationship between [Airbus] and the Commonwealth'. In March 2016, Defence advised the ANAO that no Performance Award Fee had been paid.

43 See paragraph 1.2 of this audit report.

44 In 2012, a Defence stocktake identified 28 European subcontractors.

3.8 In 2011, for example, Defence wrote to the Chief Executive Officer of Airbus Helicopters expressing concern regarding the cost and sustainment arrangements of the Tiger and Defence's other Airbus Helicopters helicopter platform—the MRH90.<sup>45</sup> In relation to sustainment arrangements, Defence highlighted that Airbus Helicopters' tight control over its sub-contractors impacted their ability 'to work directly with the Commonwealth and hence preventing Australian Defence from achieving value for money by competing work in the market' and that:

the pace of resolving the technical, reliability and support arrangements has been far too slow. Australia has attempted to be a pragmatic and positive customer, but we continue to find our pragmatism brings few favours or positive responses from European industry.

3.9 Defence has, on several occasions, raised concerns with and subsequently renegotiated the terms of the 2001 Through-Life Support contract with Airbus. Renegotiations occurred in 2007–08 and 2014, focusing, among other things, on aircraft availability.

*2007 contract dispute negotiations and the 2008 Deed of Agreement*

3.10 On 1 June 2007, Defence activated a Stop-Payment provision of its Acquisition contract with Airbus, in response to Airbus failing to achieve the Tiger's contracted Initial Operating Capability milestone. Defence used this opportunity to address Airbus's failure to achieve Initial Operating Capability, and a number of sustainment issues. These included: the pricing of spare parts; off-aircraft Deeper Maintenance and Repairable Items; payments made to Airbus for maintenance work that had been undertaken; the price of through-life support for the Ground Mission Equipment and Electronic Warfare Mission Support System Equipment; transparency of information provided by Airbus; and the terms of the contract.

3.11 On 16 April 2008, Defence and Airbus signed a Deed of Agreement to address the disputed issues and improve the performance of the Through-Life Support contract. The Deed introduced a 'pay for performance' management arrangement, Key Performance Indicators (including for availability), and financial penalty provisions for under-performance. In return, Defence agreed to a revised contract cost of \$1054 million<sup>46,47</sup> for the provision of eleven years of through-life support services from 1 July 2008 to 30 June 2019. The Parliamentary Secretary for Defence Procurement stated:

The Deed of Agreement contains the basis for a Contract Change Proposal that transitions the current support contract to a performance based structure, to reduce cost of ownership to the Commonwealth over time. This will help achieve the government's aim for greater efficiencies in the sustainment of our major capital equipment.

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<sup>45</sup> The ANAO reported on the MRH90 in ANAO Report No.52 2013–14, *Multi-Role Helicopter Program*, June 2014.

<sup>46</sup> June 2016 prices.

<sup>47</sup> Against an original contract value of \$569 million (June 2016 prices) for 15 years of support. At the time the Deed of Agreement was signed, Defence had paid Airbus \$42 million (June 2016 prices) under the Through-Life Support contract.

3.12 The 2008 Deed also amended the liquidated damages clause of the Through-Life Support contract. Airbus was required to provide 14 Fully Mission Capable Aircraft daily to 1 Aviation Regiment, in addition to meeting certain training requirements.<sup>48</sup>

### *2011 contract dispute*

3.13 In June 2011, Airbus entered into a dispute with Defence on the basis that Defence had incorrectly calculated Airbus's performance against the Key Performance Indicator for 'availability' introduced as part of the 2008 Deed of Agreement. Airbus claimed that Defence had incorrectly penalised Airbus for underperformance against the availability indicator. The dispute was over conflicting interpretations over what constituted an aircraft being classified as 'available'. The dispute went to arbitration, and the Arbitrator found in Airbus's favour. The Arbitrator found that Defence had applied an incorrect method when calculating Airbus's performance, stating that:

It may be convenient for those at Darwin to use [the method used by Defence] to determine Contractor performance but it can only be done by ignoring the plain words of the Contract.

### *2014 Viability Review Deed*

3.14 In May 2014, Defence wrote to the President of Airbus Helicopters highlighting that 'Australia continues to be dissatisfied with the Tiger in terms of the support arrangements and the cost of ownership.' Defence also observed that:

In the not too distant future, Australia will be making a decision as to whether we will upgrade the Tiger or replace it with [an] alternative platform and your ability to address our concerns quickly and effectively will be key to the future of the Tiger capability.

3.15 Subsequent to this letter, Defence undertook a 'Strategic Review' of the Tiger fleet. The outcome was to again renegotiate the terms of the Through-Life Support contract. The negotiation led to a Viability Review Deed, which was implemented in December 2014 and introduced a number of changes to the Through-Life Support contract, including to the contract's payment mechanism and performance management arrangements. The Viability Review Deed also amended the liquidated damages provision, requiring Airbus, in addition to its training requirements, to provide an average of 5.25 'serviceable' Tigers per month to 1 Aviation Regiment, or liquidated damages could be applied. Key Defence engineering staff informed the ANAO that there was frequent disagreement between Defence and Airbus on the definition of 'serviceable', citing differences between French and Australian airworthiness standards.

3.16 During the 15 years the Through-Life Support contract has operated, Defence has not sought liquidated damages from Airbus. Instead, Defence sought alternate compensation for under-performance against the Through-Life Support contract, including the provision of additional supplies and services. Defence advised the ANAO that the additional supplies and services included an exchange of parts requiring repair for new parts, and additional support, maintenance and engineering personnel, worth some \$4.5 million, at no cost to Defence.

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48 The structure of the 2001 Through-Life Support contract provided Defence with limited recourse to seek compensation or remediation from Airbus for under-performance. Its main accountability mechanism was the liquidated damages clause, with very limited scope. The clause could be activated if fewer than 16 of 22 Tigers were 'allotted' to 1 Aviation Regiment. The term 'allotted' was not defined, and therefore the allotted aircraft could be in any condition. There were no other penalties incorporated into the contract for under-performance.

## Has Tiger's sustainment performance met Defence's requirements?

The Tiger fleet has consistently underperformed against its sustainment metrics and targets for availability and rate of effort. On average, only 3.5 aircraft, from an operational fleet of 16 aircraft, were considered serviceable at 10am on any given day in 2015.<sup>a</sup> Further, Defence considers that the Tiger fleet is unlikely to exceed 74 per cent of its original target for rate of effort. The revised mature target is 5300 flying hours per year as compared to the original target of 7147 flying hours.<sup>b</sup>

Note a: The serviceability performance of the training fleet, based at Army's Aviation Training Centre in Oakey, is not considered in this section due to the different requirements applied to the training fleet.

Note b: In its 2016–17 Portfolio Budget Statements, Defence forecasted an estimated rate of effort of 6227 hours per year (2016–17 to 2019–20).

### Performance against the Through-Life Support contract

3.17 As discussed, Defence and Airbus agreed in 2008 that the Through-Life Support contract would be amended to introduce a number of Key Performance Indicators. The 2014 Viability Review Deed updated these Indicators. Airbus is required to produce a quarterly performance report which summarises its performance against five Indicators. Four Indicators<sup>49</sup> relate to the availability of the helicopter fleet and the repair or replacement of parts<sup>50</sup>:

- Availability:
  - Aircraft availability at the operational squadron; and
- Repair and replacement of parts:
  - Demand Satisfaction Rate<sup>51</sup> – Repairable Items<sup>52</sup>;
  - Demand Satisfaction Rate – Break Down Spares and Consumables<sup>53</sup>; and
  - Timeliness and Quality of Deliverables.<sup>54</sup>

3.18 The contract also sets a 'Rate of Effort' target for the Tiger fleet. The rate of effort is the total number of hours flown by the Tiger fleet annually.

3.19 The following sections report on the available data on the Tiger fleet's performance against the sustainment metrics included in the Through-Life Support contract.

49 The fifth Key Performance Indicator is for Annual Training Program Delivery, and is not considered further in this audit.

50 These Key Performance Indicators are used to calculate Airbus's Weighted Performance Score, which in turn is used to inform the payment of a Quarterly Adjustment Amount.

51 Demand Satisfaction Rate is the number of successfully completed demands (that is, requests) for the supply or repair of parts compared to the total number of demands.

52 Repairable Items are those items that must be returned to Airbus, and often to the Original Equipment Manufacturer in Europe, for repair before being returned to the Regiment.

53 Break Down Spares and Consumables are those items that must be replaced once they have reached the end of their use.

54 This measure was introduced with the signing of the Viability Review Deed, and has been reported since January 2015.

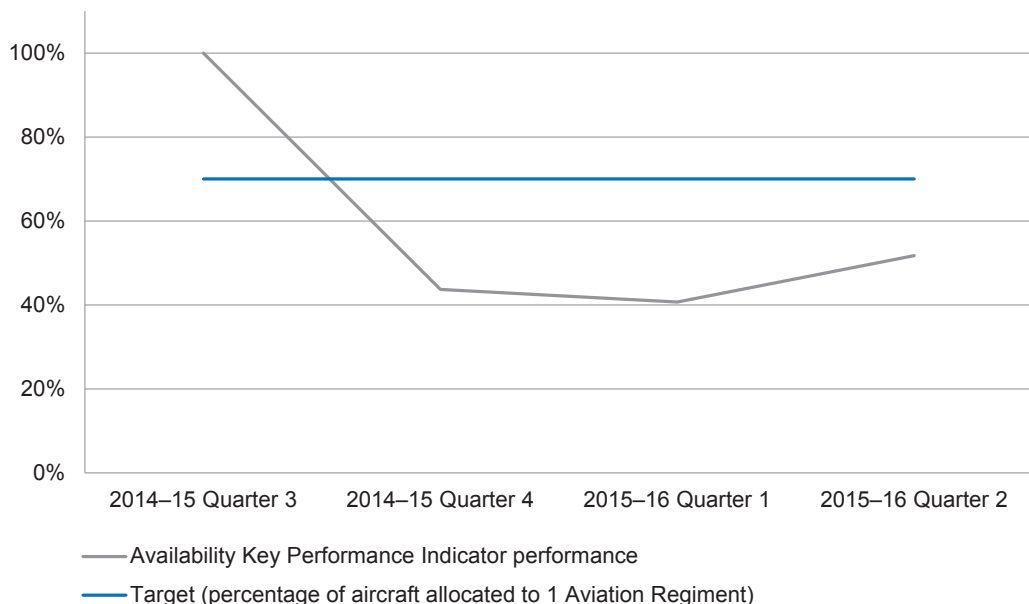
## Availability

3.20 Three different metrics have been used over the life of the Through-Life Support contract to measure aircraft availability. As a consequence, Defence does not have reliable longitudinal data covering the full term of the contract. Since January 2015, the Availability Indicator has measured the percentage of the aircraft<sup>55</sup> allocated to Army's 1 Aviation Regiment that are determined to be 'serviceable' by the Army Aviation Systems Program Office. Under the contract, an aircraft is serviceable:

- if, at 10am, it is able to be flown on the day of measurement with all such systems (including applicable Role Equipment) as are necessary to enable the planned mission to be accomplished being serviceable; or
- if no missions are planned for that aircraft on that day, it is able to be made serviceable within four hours of 10am (including flight servicing and minor rectification) as determined by the Commonwealth in its discretion.

3.21 Figure 3.2 below shows Airbus' reported performance against the Availability Key Performance Indicator for 2015. The target of 70 per cent was achieved during the first reporting period, and resulted from an agreement between Airbus and Defence that Airbus be granted a baseline 100 per cent rating for that quarter. In subsequent reporting periods, performance was consistently below the target, in a range of 40–55 per cent.

**Figure 3.2: Contracted availability performance—January 2015 to December 2015**



Source: ANAO analysis of Airbus documents.

<sup>55</sup> Two operational squadrons of eight aircraft and an additional aircraft rotated through Deeper Maintenance.



3.22 As discussed, a component of the availability metric is Defence's determination of the number of aircraft classified as unserviceable that are able to be made serviceable within four hours of 10am. While some aircraft may be made serviceable during the day, there is no contractual requirement for this to be achieved, and the metric does not capture performance in this regard.

#### Achieved serviceability

3.23 To establish the rate of achieved aircraft availability—that is the number of aircraft determined by Army's operational regiment's engineers as able to be flown, with all necessary systems available, at 10am—the ANAO examined engineering data from Army's 1 Aviation Regiment for the calendar year 2015. The ANAO's analysis shows that 1 Aviation Regiment engineers have recorded that, on average, only 3.5 of its aircraft were considered to be serviceable at 10am on any given day.<sup>56</sup> On only three occasions were 10 or more serviceable Tigers available for use by the Regiment.<sup>57</sup> The only instance where the fleet met the target of 12<sup>58</sup> Tigers classified as serviceable on a single day was on 26 October 2015.

3.24 A significant cause of aircraft unavailability was unscheduled maintenance. In June 2015, Army reported that 'unscheduled maintenance was the largest contributor' to the Tiger's under-performance in terms of availability. On average, 4.2 of 1 Aviation Regiment's aircraft were considered to be unserviceable due to unscheduled maintenance at 10am on any given day. On 3 November 2015, 11 of the Tigers were recorded as unserviceable due to unscheduled maintenance.

3.25 Figure 3.3 below indicates the average number of aircraft recorded as serviceable, per month, at 1 Aviation Regiment during 2015.

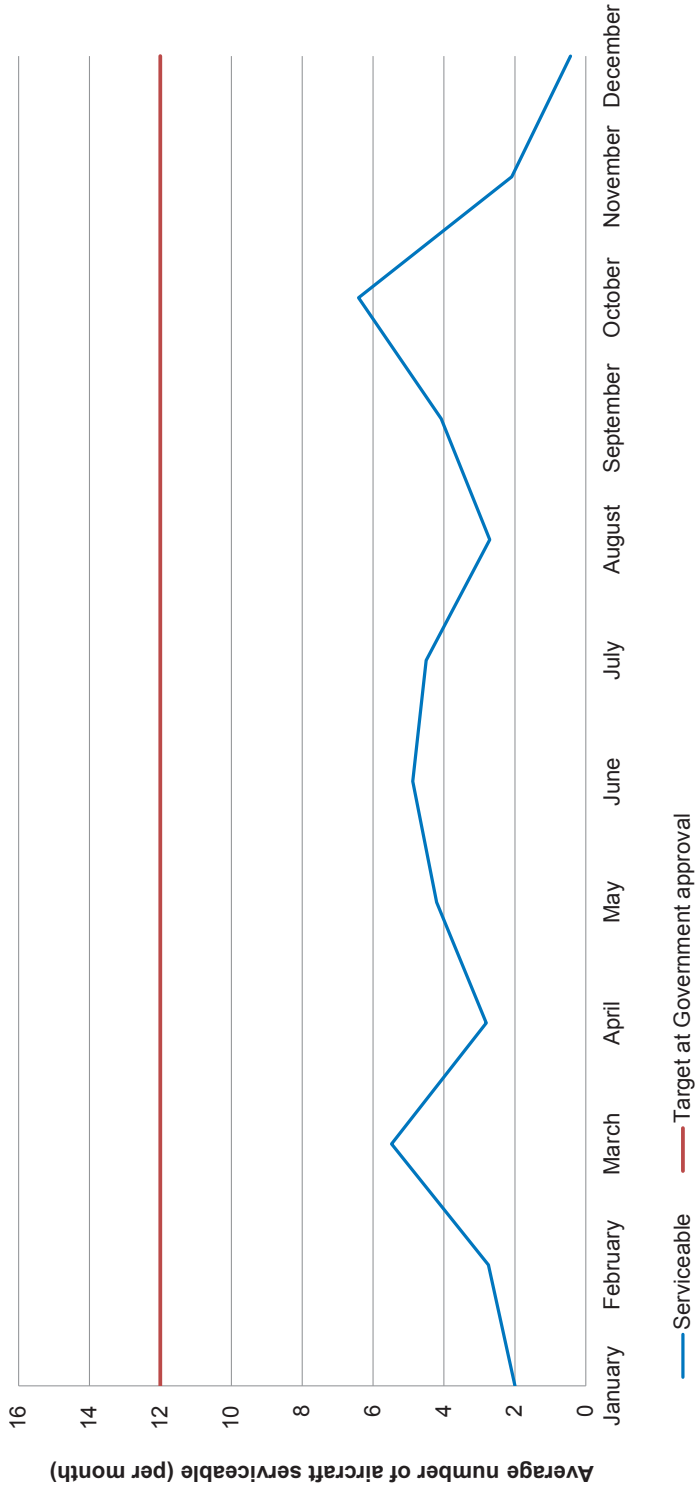
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56 Data used for contractual reporting indicates that, during 2015, Defence determined that an average of 1.9 unserviceable aircraft per day were able to be made serviceable within four hours of 10am. Defence does not measure the number of aircraft that were made serviceable in this timeframe.

57 The Regiment flew Tigers on 269 days over this period.

58 See paragraph 2.12.

Figure 3.3: Average aircraft serviceability at 10am, by month—1 Aviation Regiment, 2015<sup>a</sup>



Note a: The Regiment reports daily at 10am on the status of each aircraft. Those aircraft that are able to be used are classified as Serviceable. The figure shows the average number of aircraft classified as Serviceable—that is, available and able to fly the specified mission—at 10am on each day that a measurement was recorded, by month. On some occasions an aircraft classified as unserviceable at 10am may be made serviceable during the day. See paragraphs 3.20 to 3.23.

Note b: The Government approved target for availability is 12 aircraft (see paragraph 2.12).

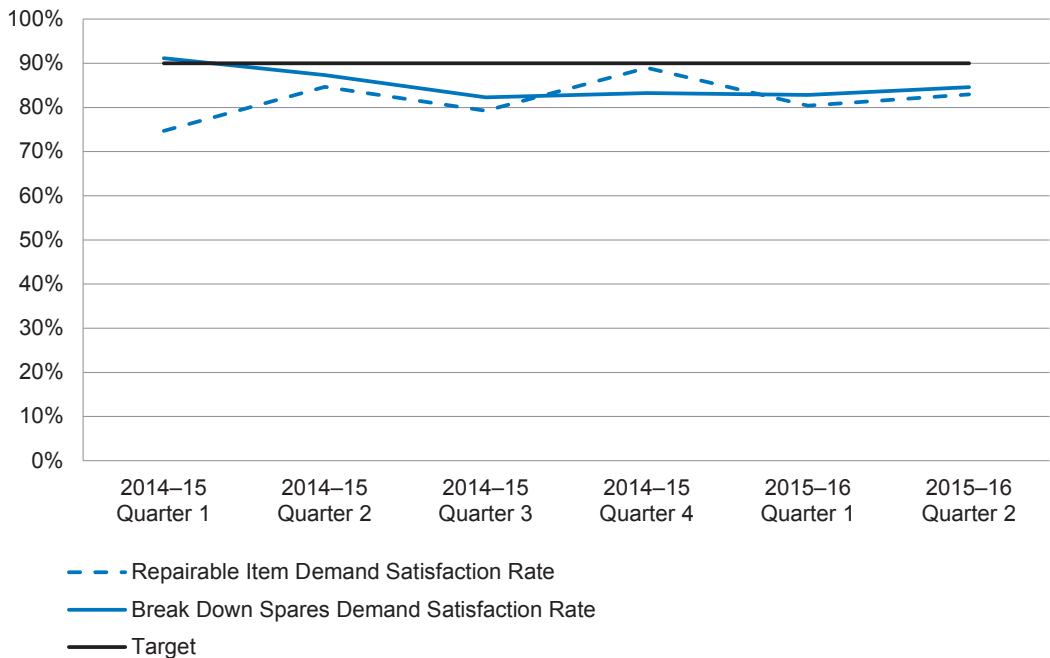
Source: ANAO analysis of Department of Defence data.

*Supply-chain and turn-around of repairable parts*

3.26 Defence relies on Airbus’s supply-chain to replace or repair parts. Since the arrival of the first Tiger in 2004, Defence has experienced delays in accessing parts through the Airbus supply-chain, and this was a contributing factor to the two Deed negotiations in 2008 and 2014.

3.27 The Through-Life Support contract includes Key Performance Indicators and targets for the Tiger fleet’s access to replacement and repaired parts. The ANAO’s review of available data indicates that between July 2014 and December 2015, Airbus has not always achieved these targets. For example, Figure 3.4 shows that the Break Down Spare Demand Satisfaction Rate met the targeted 90 per cent in the first quarter of 2014–15, but did not achieve the target in subsequent months. The Repairable Item Demand Satisfaction Rate did not achieve the targeted 90 per cent, but came close in the fourth quarter of 2014–15.

**Figure 3.4: Demand Satisfaction Rate performance, July 2014–December 2015**

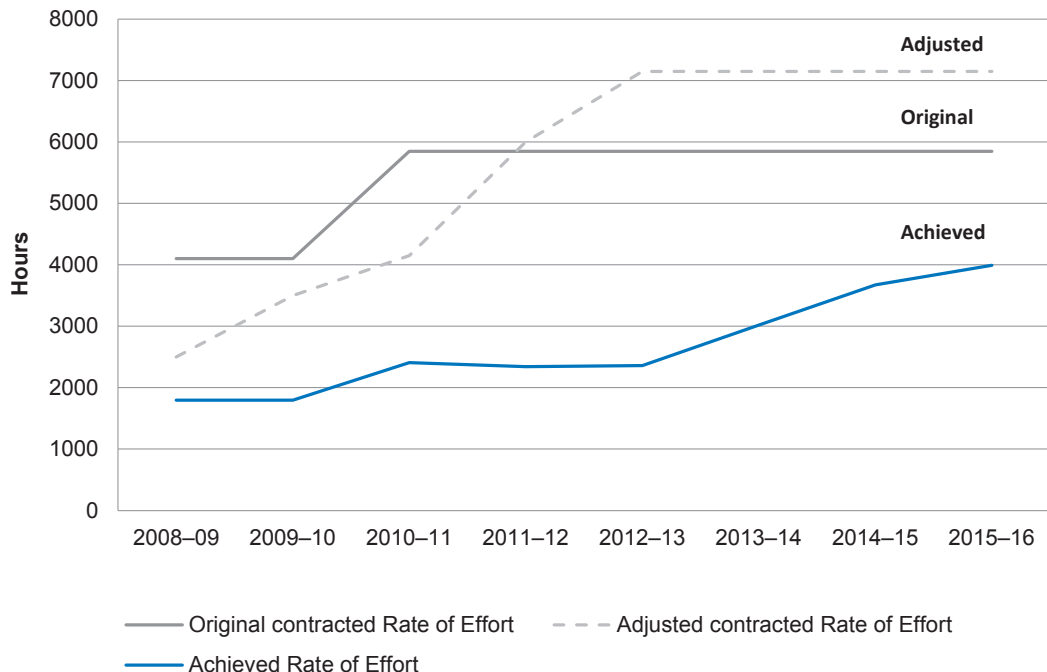


Source: ANAO analysis of Airbus documents.

## Rate of effort

3.28 Figure 3.5 shows that the Tiger has never achieved the rate of effort targeted under the Through-Life Support contract, including an adjusted target rate of effort introduced as part of the 2008 Deed of Agreement.<sup>59</sup> In 2015–16, Tiger achieved just over half its rate of effort target. In Defence’s 2014–15 Financial Statements, the value of the Tiger fleet was impaired by \$101 million—from \$705 million to \$604 million—due to the unreliability of the Tiger Fleet and its reduced rate of effort.

**Figure 3.5: Tiger rate of effort, 2008–09 to 2015–16**



Notes: The contracted rate of effort was adjusted in 2008. Under the original Through-Life Support contract, from 2008–09 onwards the expected rate of effort was presented as a range. The numbers used for this figure are the lowest of that range for each year.

Source: ANAO analysis of Defence documents.

3.29 Defence considers that the Tiger’s rate of effort is likely to improve, but will never reach its target. In July 2016, Defence reported internally that:

Tiger will not achieve a mature [rate of effort] of 6227 hours in FY15-16. The actual [rate of effort] in FY15-16 is forecast to be 4200 hours and the mature [rate of effort] is trending towards 5300 hours.

<sup>59</sup> Rate of effort measures total aircraft flying hours, rather than the effectiveness of the Tiger during its flight. For example, although the Tiger was able to fly, it may not have had any of its mission systems operational, or may have been restricted in its operation. Defence documents indicate that the Australian Tiger rate of effort per aircraft (182 hours per aircraft per year in 2015–16) is higher than other international users. Spain achieves some 122 hours per aircraft per year and Germany achieves some 82 hours per aircraft per year.

3.30 The revised target represents some 74 per cent of the original target rate of effort.<sup>60</sup>

### Are sustainment costs within budget?

Despite the Tiger fleet's low rate of effort, by June 2014 sustainment costs for the Tiger had exceeded the original contract value, with five years still remaining. On a year-to-year basis, sustainment costs have regularly exceeded Army's annual allocated budget, in some years by as much as 20 per cent. Between 2007 and 2016, sustainment costs exceeded Army's annual budget by some \$54 million. As of July 2016 the cost per flying hour for the Tiger fleet was \$30 335, against a target of \$20 000. The long-term average was \$39 472 per hour.

In December 2014, Defence and Airbus agreed to new Through-Life Support contract arrangements that introduced a cap on the growth in the cost of sustainment arrangements. The maximum total cost of the amended 15 year Through-Life Support contract is \$1.32 billion, more than double the initial contract amount of \$571 million (June 2016 out-turned).

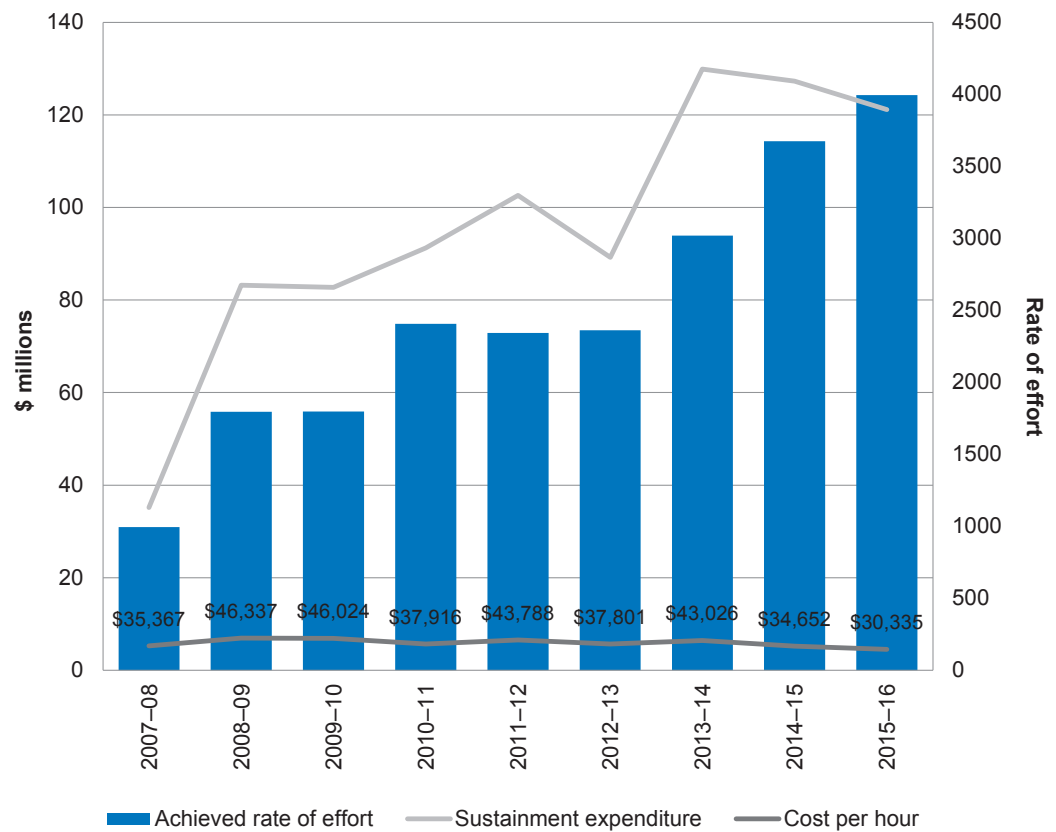
3.31 The original Through-Life Support contract was valued at \$396 million (December 2001 prices, or \$571 million in June 2016 prices). As at June 2016 (12 years into the 15 year contract), Defence had paid Airbus \$921 million for services under the Tiger Through-Life Support contract.<sup>61</sup> This was \$350 million more than the original contract budget and represented an average cost of \$77 million per year.

3.32 Figure 3.6 shows that as the Tiger fleet's rate of effort increased, the cost to operate the fleet increased, peaking at some \$130 million in 2013–14, with an average operating cost of some \$39 472 per hour between 2007 and 2016. In 2014, Defence renegotiated the Through-Life Support contract with Airbus, in part to control escalating sustainment costs (see paragraphs 3.35–3.36). The amended contract capped Tiger's sustainment costs, and in the period July 2014–July 2016, the Tiger's operating costs per flight-hour had reduced by 29 per cent.

60 In its 2016–17 Portfolio Budget Statements, Defence forecasted an estimated rate of effort of 6227 hours per year (2016–17 to 2019–20).

61 Of this amount, payments totalling \$62 million were made to Airbus for services that were not included in the budgeted cost of the original Tiger Through-Life Sustainment contract. These payments were primarily for work falling under the 'Indefinite Quantities' clause of the Through-Life Sustainment contract, which is work 'for which no accurate estimates are available and the Commonwealth guarantees no minimum volume of work.' All tasks and costs above the contract cost are funded through Army sustainment funds.

**Figure 3.6: Rate of effort, sustainment cost and cost per hour of the Tiger fleet, 2007–08 to 2015–16**



Source: ANAO analysis of Defence data.

3.33 Defence records indicate that ongoing reliability problems are amongst the key issues for the Tiger fleet.<sup>62</sup> These problems have been a key driver in the continued high cost of operating the Tiger and lower than expected rates of serviceability. In May 2014, the Chief Executive Officer of the Defence Materiel Organisation wrote to the President and Chief Executive Officer of Airbus Helicopters raising concerns over the high per hour cost of the Tiger aircraft:

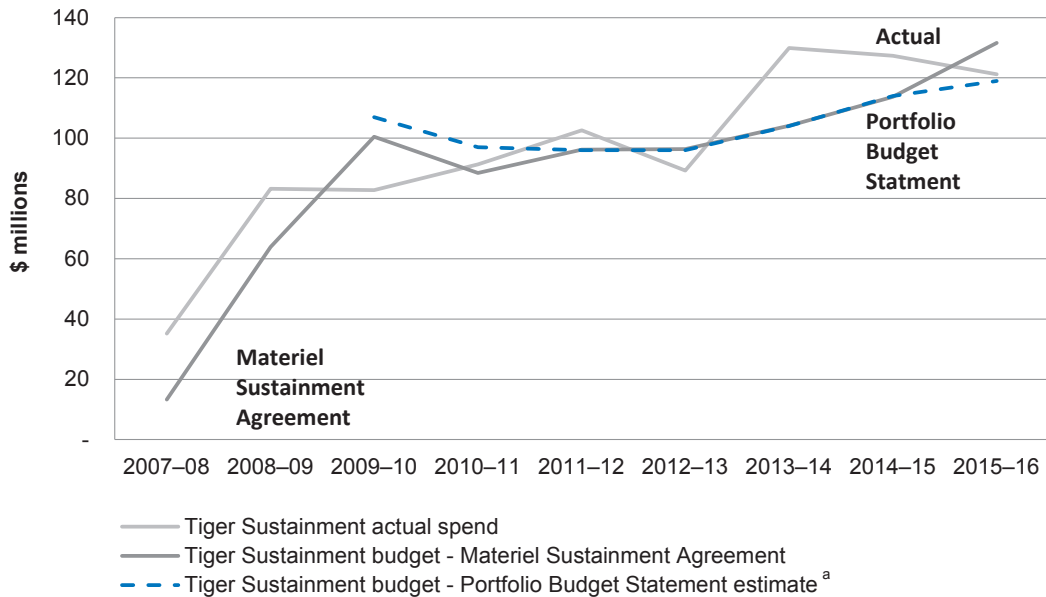
This Australian financial year, support to Tiger will cost the Australian tax payer \$124 million (not including operational costs such as fuel and personnel). For this very considerable sum, Tiger will fly less than 3000 hours. Broadly, this equates to \$41,000 per Tiger flying hour. A similar calculation for our Black Hawk fleet derives a figure of just over \$10,000 per hour.

3.34 The high cost of operating the Tiger has contributed to Defence regularly exceeding its annual internal budget for the fleet, on some occasions by as much as 20 per cent. Figure 3.7 shows

62 In a September 2011 letter to the Minister for Defence, the Chief Executive Officer of the Defence Materiel Organisation commented that ‘[t]he late realisation of the Tiger capability, largely caused by poor contractor performance in resolving the many technical, reliability and supportability issues encountered in this program, is directly limiting military response options available to Government.’

that between 2007 and 2016, then year sustainment expenses (\$862 million) have exceeded the budget (\$808 million) by some \$54 million, an average overspend of some \$6 million per annum.

**Figure 3.7: Sustainment cost of the Tiger fleet—annual budget versus actual**



Note a: An estimate for the cost of sustaining the Tiger was not provided in Defence's Portfolio Budget Statement prior to 2009-10. From 2011-12 to 2014-15, the budget provided in the Materiel Sustainment Agreement and the estimate provided in the Portfolio Budget Statement were aligned. The budget and estimate differed in the 2015-16 Portfolio Budget Statement.

Source: ANAO analysis of Defence documents.

3.35 By 2013-14, the annual sustainment cost for the Tiger fleet was over \$120 million per year, and Defence recognised that the cost was likely to continue to increase as rate of effort increased. In light of this risk, Defence and Airbus agreed in 2014 that the annual cost to the Commonwealth to support the Tiger fleet was 'not affordable for the Commonwealth, and, as a consequence, must be reduced if the [Tiger] Fleet is to be retained in service beyond 30 June 2019'.

3.36 In May 2014, the Chief Executive Officer of the Defence Materiel Organisation wrote to Airbus setting out an objective of reducing the cost of per aircraft flying hour to \$20 000 by 2017-18. In March 2015, Defence's Head Helicopters, Tactical Unmanned Aerial Systems and Guided Weapons Division advised the Minister for Defence that achievement of this cost target had been brought forward to 2015-16. As at June 2016, Tiger's cost per flying hour was \$30 335.

### *Cost-cap and future sustainment costs*

3.37 The 2014 Viability Review Deed amended the 15 year Through-Life Support contract. The maximum total cost of the contract is now \$1.32 billion<sup>63</sup>, more than double the initial contract amount of \$571 million (out-turned June 2016 price). The contract ends on 30 June 2019. The revised contract introduced a cost-cap comprising fixed and variable payments. For the remaining contract period (2016–17 to 2018–19), a maximum of \$402 million (GST exclusive) is available for sustainment, and payments are linked to the achievement of annual rate of effort targets.

3.38 Under the amended contract, Commonwealth payments for the first 84 per cent of the Tiger's rate of effort (5231 hours)<sup>64</sup> are higher than payments for the remaining 16 per cent (996 hours). Payments for this remaining 16 percent are approximately 50 per cent lower per hour. Defence informed the ANAO that this split is due to the relative risk in achieving the first 80 per cent of the annual rate of effort target, and that the payment model was 'an effective means of apportioning risk for both parties in the generation of flying rate of effort.'

### **Has Defence identified key lessons from the Tiger through-life support arrangements?**

Defence developed a Lessons Learned Report on the Tiger acquisition in April 2015. The Report highlighted the 'rushed' nature of the initial Through-Life Support contract negotiations, which resulted in a flawed outcome for the Tiger Fleet's sustainment. The Report also identified that Defence's ineffectiveness in enforcing its contractual rights under the Through-Life Support contract weakened its position in managing the Tiger fleet's sustainment arrangements.

The Lessons Learned Report made five recommendations. The findings of the report and its recommendations should be communicated to all current and future sustainment managers within Defence.

3.39 In April 2015, Defence prepared a Lessons Learned Report on the Tiger acquisition which was endorsed by the Director General Army Aviation Systems and the Commander of the Reconnaissance and Air Mobility System Program Office.<sup>65</sup> The Report highlighted the consequences of a 'rushed' negotiation on the Through-Life Support contract in order to sign the contract in conjunction with the Acquisition contract:

If the Through-Life Support contract signature had been delayed the [Tiger] Through-Life Support contract could have been better scoped and understood by both parties. Problems which may have been resolved include: Intellectual Property (Commonwealth does not have sufficient Intellectual Property Rights to compete [Tiger] work to other companies), spares availability and assessment, subcontractor arrangements, repairable items pipeline performance, [Airbus's] ability to undertake work, implementation timeframe etc.

63 Plus an additional, unknown amount, for work falling under the 'Indefinite Quantities' clause of the Through-Life Sustainment contract—see footnote 61.

64 As discussed in paragraph 3.29, Defence has acknowledged that the Tiger's mature rate of effort is unlikely to exceed 5300 hours per year. On that basis, most payments will be at the higher rate.

65 In May 2016, Defence advised that the Report was prepared as an annex to the Armed Reconnaissance Helicopter 'Project Closure Report', which is yet to be finalised.



3.40 The report also reflected on Defence's management of the through-life support arrangements with Airbus:

The Commonwealth did not adequately enforce the provisions of the Through-Life Support contract and if it had, then some of the dispute around sustainment performance may have been avoided. Inadequate contract management staffing levels, a lack of Commonwealth commercial acumen and poor leadership all contributed to a weakening of the Commonwealth's position.

... The Commonwealth needs to rigorously enforce the provisions of its contracts and not give in to contractor expectations. The Commonwealth needs to hold a hard line in order to shape contractor behaviour. Continued concession making on the behalf of the Commonwealth will ultimately lead to contract failure and stakeholder discontent.

3.41 The Lessons Learned Report made five recommendations, all focussed on sustainment.<sup>66</sup> Of note, the Report identified that there had been a lack of communication within Defence about the Tiger fleet's sustainment issues at the time that the Department was negotiating the Through-Life Support contract for the MRH90 helicopter fleet, also an Airbus Helicopters product. Defence identified that this contributed to 'flawed' sustainment arrangements for the MRH90 fleet.<sup>67</sup>

3.42 The findings and recommendations of the Lessons Learned Report contain valuable insights for Defence on the design and management of its contracting and sustainment arrangements. There was no evidence that these lessons were communicated outside of the Army Aviation Systems Program Office to current sustainment managers of other Defence platforms, or were available to future sustainment managers within Defence. There remains scope for Defence to communicate lessons learned—often painfully—to relevant internal stakeholders.

### Recommendation No.1

3.43 That Defence implements arrangements to capture in its policies and procedures the lessons learned from project reviews of contract and sustainment arrangements. Key lessons learned should also be disseminated to relevant internal stakeholders.

**Defence's response:** *Agreed.*

3.44 *Lessons from the Tiger acquisition project and sustainment are continuously applied to deliver capability.*

3.45 The ANAO's future Audit Work Program will include an ongoing focus on Defence's sustainment arrangements.

<sup>66</sup> The recommendations are listed in Appendix 3 of this audit report.

<sup>67</sup> The ANAO examined the MRH90 acquisition in ANAO Report No.52 2013–14, *Multi-Role Helicopter Program*.

## 4. Future of the Armed Reconnaissance Helicopter capability

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### Areas examined

This Chapter examines Defence's plans to achieve and maintain the Armed Reconnaissance Helicopter's defined capability.

### Conclusion

The Tiger platform is based on 1980s–1990s technology and is experiencing an increased level of obsolescence in its major systems. A number of known obsolescence issues do not have identified solutions.

Defence has commenced planning for the potential upgrade or replacement of the Tiger fleet through Project Land 9000 Armed Reconnaissance Helicopter Capability Assurance Program, which will be considered for Gate Zero<sup>a</sup> approval in 2017. The Government has recently indicated that the Tiger will receive an upgrade at a cost of \$500–\$750 million, with a replacement platform to be introduced mid next decade at a cost of \$5–\$6 billion. In effect, an upgrade is scheduled for consideration less than 12 months after the Tiger achieved Final Operational Capability.

### Areas for improvement

In considering the future of the Armed Reconnaissance Helicopter capability, the ANAO has recommended that Defence assesses, and advises Government, on the value-for-money in investing further in the Tiger aircraft fleet for only a short period of improved performance, against other alternatives. This assessment should take into account the associated technical risks of upgrading an aircraft which has not fully delivered Defence's expected level of capability.

Note a: Gate Zero is the first major approval point for a Defence project, and involves endorsement to establish an Integrated Project Team and proceed to the next Gate. Key outputs from Gate Zero are the Business Case, which is an agreed statement of what Defence assesses it needs to acquire; and the Project Directive which sets expectations around the resources, timeframes, key issues and risks to be addressed in order to reach the next Gate.

4.1 This Chapter reviews Defence's planning to date for the future of the Tiger and the Armed Reconnaissance Helicopter capability.

### Are plans in place to achieve and maintain the defined capability?

The Tiger has a number of systems which are obsolete or are approaching obsolescence. Defence's main program for addressing the future of the Tiger is Project Land 9000 Armed Reconnaissance Helicopter Capability Assurance Program. This Project was initiated in 2014, and has not yet received Gate Zero approval. The final form of the Capability Assurance Program—whether to upgrade or replace the Tiger—has not been finalised. Given the current state of the aircraft, an upgrade of the Tiger would also have to remediate the aircraft's known deficiencies.

## Obsolescence

4.2 Defence views obsolescence as ‘the process of becoming out-of-date, superseded or unsupportable’. Obsolescence affects ‘all equipment, software, tools, processes, technical data and other support elements.’ The impact of obsolescence ‘can be costly, both in monetary terms to rectify the obsolescence problems and in capability terms due to the reduction in required performance or availability.’ Defence therefore requires that appropriate ‘obsolescence management activities must be undertaken.’

4.3 In 2012, Defence reported internally that:

AusAero [Australian Aerospace - now Airbus] has not been effectively managing obsolescence for the [Tiger] program. A number of obsolescence cases have been presented to European customers years before the [Commonwealth] has been notified by [Airbus]. Current obsolescence cases which the [Commonwealth] believes are applicable to the [Tiger] are likely to be expensive to address as there are no longer a range of options available to treat each case. This is a direct result of time elapsed between announcement of the obsolescence by the [Original Equipment Manufacturer] to formal [Commonwealth] notification.

4.4 The significant scope of obsolescence treatment required for the Tiger is well known to Defence, with a 2013 report on a future Tiger capability upgrade program documenting that:

[Tiger] has 148 instances of obsolescence: many substantial ... Some items are sustainable in the short term ... [however] there are many instances where the development timeframe for replacement is unknown, raising the potential for capability gaps if replacements are not available when spares are exhausted.

4.5 In 2014, the number of instances of obsolescence identified by Airbus Helicopters had increased to 217, though only 124 were open. At the time of this audit, Airbus Helicopters reported to Defence that there were some 282 instances of obsolescence, with 149 still open, 12 of which were considered major. In October 2013, Airbus Helicopters wrote to all four Tiger user nations, noting that the number of obsolescence issues was likely to continue to grow:

[there was] a low rate of increase in the number of obsolescence cases between 2001 and 2005, however there has been a doubling over the subsequent 4 years (2006 to 2009) and again a further doubling over the following 3 years (2010 to 2012), with a new peak in 2013 showing a further doubling of obsolescence cases. This trend is expected to be reinforced beyond 2013 and the following years, as could be expected with equipment that [has] been developed in the [19]90’s.

4.6 A number of the known obsolescence issues do not have identified solutions. In February 2015, Defence identified that obsolescence is affecting a number of key systems:

Since acquisition of [Tiger], the [Australian Defence Force] has implemented major command and control, network and information transfer technologies that are not available to Tiger in its current configuration and are restricting its full employment. Threat weapons system lethality and proliferation has increased, and tightening of own force rules of engagement requires increased capacity to achieve Positive Identification of targets from extended range ...

4.7 In 2014, Airbus provided a financial forecast of known and likely obsolescence issues that would require remediation out to June 2023. This forecast estimated that treatment of obsolescence would cost some \$140 million. Airbus is responsible for the cost of treating obsolescence for the life of the Through-Life Support contract (June 2019). Should Defence elect to replace an obsolete item with an improved capability—for example, treating the obsolescence

of the roof-mounted sight by replacing it with a new and improved one—Defence would be responsible for that cost. In 2013, while evaluating options for a future capability upgrade program, Defence identified a requirement for significant obsolescence treatment to be undertaken as part of any upgrade:

Treating obsolescence is an expected component of any mid-life upgrade. For [Tiger], however, the levels identified to date suggests a more than palatable portion of the allocated budget may be diverted to address this issue.

## **Land 9000 Armed Reconnaissance Helicopter Capability Assurance Program**

4.8 In January 2014, Defence established Project Land 9000 Armed Reconnaissance Helicopter Capability Assurance Program. This Capability Assurance Program aims to address technology obsolescence, and improve the capability and availability of the Armed Reconnaissance Helicopter through two possible options:

- upgrading the existing Tiger fleet; or
- acquiring a new Armed Reconnaissance Helicopter platform.

4.9 As discussed in Chapter 2, the February 2015 Capability Needs Statement for Land 9000 identified 76 capability deficiencies with the Tiger relating to Army's current and future operational requirements that needed to be addressed as part of the Capability Assurance Program. The Statement observed that 'elements of [Tiger] obsolescence are already too significant for treatment through sustainment', and would need to be addressed by any upgrade program.

4.10 Defence informed the ANAO that Gate Zero approval for the Capability Assurance Program is scheduled for early 2017. This will closely follow the declaration of Final Operational Capability in April 2016, placing the Tiger in the position of requiring an upgrade less than 12 months after its introduction into service.

## **Tiger System Growth Plan**

4.11 As part of the Through-Life Support contract, Airbus is required to develop and maintain a 'Growth Plan' for the Tiger fleet. The purpose of the Growth Plan is to:

inform the Commonwealth about candidate technologies for upgrading the [Tiger] ... The expectation is that the Commonwealth will advise industry of its preferred enhancements to allow investigation that is more detailed and potential grouping of upgrades into modification packages.

4.12 The current Growth Plan was released in October 2015, and encompasses the obsolescence issues identified earlier in this Chapter, and the upgrade options available to Defence. Significantly, the Growth Plan highlights the interdependencies of the Tiger upgrade options—as Defence upgrades one system, dependent or related systems will also need to be upgraded.

## Other options

4.13 In January 2013, Defence's Rapid Prototyping, Development and Evaluation unit released a report identifying and examining available options for the Tiger's mid-life upgrade. This report observed that upgrading the Tiger was a 'high risk activity', and noted that consideration should be given to alternate platform options for delivering the capability for which the Tiger was originally acquired. In a section titled 'The Unspoken Option: Replacing the ARH', the report suggested that Boeing's Apache platform was one option:

The pricing for [the Apache] (upfront and in sustainment), alongside the capability difference and greater certainty about delivery is attractive and warrants strong consideration as an alternate to upgrading [Tiger]. In fact, a suitably directed business case may establish it is more cost effective to replace [Tiger] earlier than the planned date.

4.14 The report went on to recommend that:

Alternate platform options should be considered. One option is the [Apache], although it is acknowledged that there may be other cost competitive platforms. If the accuracy of preliminary cost estimates for the [Apache] is an impediment to its viability as an alternate, Defence could pursue Government to Government enquiry to establish the integrity of the figures.

4.15 In October 2013, the Defence Materiel Organisation responded to a request from the Minister for Defence for an assessment of costs between the Tiger and Apache helicopters. The report noted that: no in-depth analysis of the costs of acquiring the Apache had been undertaken since the initial tender process for AIR 87 Phase 2 in 2001; the figures identified in the 2013 report were 'not considered reliable'; and that further analysis would be undertaken to develop options in the lead up to Gate Zero for the Tiger mid-life upgrade.

## Defence's current plans for Tiger

4.16 The Government's Defence Integrated Investment Plan, which was released on 25 February 2016 alongside the Defence White Paper, acknowledges that:

The Tiger has had a troubled history – essential upgrades are programmed to maintain the capability's effectiveness.

4.17 Starting in 2017, Defence plans to spend some \$500–\$750 million remediating and upgrading the Tiger, at this stage through Project Land 9000 Armed Reconnaissance Helicopter Capability Assurance Program. The Investment Plan also commits some \$5–\$6 billion to replacing the Tiger:

Defence will invest in a future armed reconnaissance capability to replace Tiger, which could include manned or unmanned systems or a combination of both, to be introduced from the mid-2020s.

### *Tiger Mark 3 Architecture Study*

4.18 Prior to the release of the Defence Integrated Investment Plan, Defence had committed to an Architecture Study for the development of the Tiger Mark 3 variant to potentially replace the current Tiger fleet. With the release of the Integrated Investment Plan, which identified options other than Tiger to address Defence's future capability requirements, Defence paused its involvement in the Architecture Study.

## Australia's financial contribution to the Tiger Mark 3 Architecture Study

In support of a potential upgrade of part or all of their Tiger fleets to meet operational requirements beyond 2020, France, Germany and Australia agreed in 2012 to undertake an 'Architecture Study' for a future Tiger Mark 3.<sup>a</sup> Australia withdrew from the Study in February 2014 and reapplied to participate in November 2014. An internal Defence brief explained Defence's involvement in the Study as ensuring that the Commonwealth is operating as a 'smart buyer' that achieves value for money.

Following consultation with Airbus Group Australia Pacific (Airbus), in June 2015 Defence paid Airbus €1 500 000 for Australia's participation in the Study. In its correspondence, Defence documented that Airbus's role in the transaction was to facilitate the movement of these funds from Defence to Airbus's European parent company, Airbus Helicopters. These funds were drawn from the sustainment budget for the Tiger helicopter, although the payment was not made under the Through-Life Support contract and the Study relates to a future capability.

On 29 February 2016, following the release of the 2016 Defence White Paper<sup>b</sup>—which indicated that Australia would look to replace the Tiger helicopter in the mid-2020's—Defence advised France, Germany and Spain that:

the immediate impact of this announcement is that [Australia] must pause our involvement in the Tiger Architecture Study

The commitment of €1 500 000 was approved specifically for Australia's participation in the Study, rather than sustainment.<sup>c</sup> In early July 2016, Defence advised the ANAO that it had agreed to put the money towards the future sustainment cost of the Tiger.<sup>d</sup> However, Defence provided no evidence of a further financial approval for the payment subsequent to the change in intended purpose for the funds, and could not demonstrate a written contractual basis for the provision of these monies to Airbus for use against the Through-Life Support contract. Subsequently (late July 2016), Defence advised the ANAO that:

No financial arrangement nor funds have been transferred to the Architecture Study being undertaken in Europe as the international legal construct has not been agreed to facilitate this outcome. Funds have been transferred to Airbus to demonstrate to the other nations that Australia had a genuine intent to support the Architecture Study when the legal negotiations conclude. Given the passage of time and lack of progress on agreeing the international construct for the Architecture Study, arrangements have been made for the funds to be returned from Airbus to the Commonwealth.

Note a: Spain, which is also an operator of the Tiger helicopter, joined the Architecture Study at a later date.

Note b: See paragraphs 4.16 to 4.17.

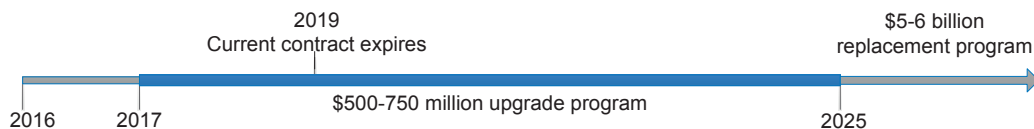
Note c: The relevant Defence Purchase Order documented that the payment was for 'Architectural Study – Tiger MkIII'. This was consistent with the delegate's financial approval that the payment was for 'participation in the Architecture Study'.

Note d: On 27 June 2016, Defence advised the ANAO that 'no contract was entered into and funds were not transferred' for the purpose of the Study. On 5 July 2016, in response to an ANAO request for clarification of this advice, Defence acknowledged that a payment had been made to Airbus for the study. Defence further advised that 'the funding remains held in credit with Airbus Group Australia Pacific for use as Army may require under the sustainment contract. This funding was not expended on the Architecture Study'.

## Future Milestones

4.19 Figure 4.1 below shows Defence's proposed future Armed Reconnaissance Helicopter capability upgrade and replacement program milestones.

**Figure 4.1: Defence's proposed future Armed Reconnaissance Helicopter capability upgrade and replacement program—key milestones**



Source: ANAO analysis of Defence data.

4.20 In considering the immediate future of the Armed Reconnaissance Helicopter capability, Defence will need to weigh two options:

- invest a further \$500–\$700 million in the Tiger fleet—which has delivered less than Defence's expected capability, and has proven an expensive and unreliable aircraft to operate—for a short period of improved performance; or
- bring forward an alternative acquisition to address Defence's Armed Reconnaissance Helicopter requirements.

4.21 The path taken by Defence in addressing the future of the Armed Reconnaissance Helicopter capability should be based on the assessed future value-for-money provided to the Commonwealth, setting aside the sunk cost of previous investments in the Tiger.

### Recommendation No.2

4.22 That Defence assesses, and advises Government, on the value-for-money in investing further in the Tiger aircraft fleet for only a short period of improved performance, against other alternatives. This assessment should take into account the associated technical risks of upgrading an aircraft which has not fully delivered the level of capability originally expected by Government.

**Defence's response:** *Agreed.*

4.23 *Defence will assess the best value for money and most effective capability for both the Tiger Capability Assurance Program and Tiger Replacement. Recommendations on the timings for both programs will be considered at Gate Zero.*

Grant Hehir  
Auditor-General

Canberra ACT  
1 September 2016





## **Appendices**



## Appendix 1 Defence's response to the proposed audit report



Australian Government  
Department of Defence

SEC/OUT/2016/158  
CDF/OUT/2016/661

Dr Thomas Clarke  
Executive Director  
Australian National Audit Office  
PO Box 707  
Canberra ACT 2601

### AUSTRALIAN NATIONAL AUDIT OFFICE PERFORMANCE AUDIT ON TIGER - ARMY'S ARMED RECONNAISSANCE HELICOPTER

1. Thank you for your correspondence which contained the Section 19 Proposed Report for the subject audit. Defence accepts both recommendations and is actively working to implement them. The Tiger has displayed significant improvements in performance and this is expected to continue in the future.
2. Attached to this letter are Defence's Proposed Amendments, Editorials and Comments (Attachment A), Responses to Requests for Information (Attachment B), Responses to Recommendations (Attachment C) and the Agency Response (Attachment D). These enclosures represent Defence's formal response to the Proposed Report.
3. We would like to take this opportunity to formally thank the ANAO for the time and resources they have allocated to the audit. The report's recommendations will benefit Defence's current and future management of the Tiger – Army's Armed Reconnaissance Helicopter capability.

**Brendan Sargeant**  
Acting Secretary

21 July 2016

**MD Binskin, AC**  
Air Chief Marshal  
Chief of the Defence Force

22 July 2016

#### Attachments:

- A. Proposed Amendments, Editorials and Comments
- B. Responses to Requests for Information
- C. Responses to Recommendations
- D. Agency Response

## Appendix 2 Airbus Group Australia Pacific's response to the proposed report



Dr Tom Ioannou  
Australian National Audit Office  
GPO Box 707  
Canberra ACT 2601

4 July 2016

Ref: ARHTLS-OUT-00045641-16CC

Dear Dr Ioannou,

**AIRBUS GROUP AUSTRALIA PACIFIC COMMENTS ON EXTRACT OF ANAO AUDIT  
REPORT  
TIGER – ARMY'S ARMED RECONNAISSANCE HELICOPTER**

References:

A. Your email dated 8 June 2016

1. Thank you for the opportunity provided at reference A to make formal comment on the Extract of your report on the Department of Defence's progress since 2007 in introducing into service the Tiger Armed Reconnaissance (ARH) Helicopter. This letter is the formal response by Airbus Group Australia Pacific to the content of the Extract of the Report. In our review of the Extract we have concluded that a significant amount of the full audit findings have not been made available to us and therefore our comments may not appear comprehensive or complete when viewed in relation to the final published Audit Report.
2. The Extract summarises the introduction into service of the Tiger ARH since 2007 and notes the considerable delays experienced in achieving the key Project milestones. Airbus Group Australia Pacific acknowledges these delays and generally agrees with the suggestion that this was largely caused by the maturity of the Tiger during the acquisition phase. Airbus Group Australia Pacific, its parent company Airbus Helicopters and all of the industry partners that support the Tiger have been strongly engaged over the past two years in a dedicated program to resolve all known issues with the support and operation of the aircraft. Under a dedicated Task Force the support arrangements have been extensively remediated with the result that support issues do not significantly contribute to lack of available aircraft.
3. The continued improvement to the levels of serviceable aircraft now focuses on the reliability of some systems, maintenance burden reduction, maintenance workforce capacity and efficiency. Both CASG and Army have expressed their support for the initiatives and acknowledge the improvement plans which are in place.
4. The general conclusion for Section 3 - Sustaining the Tiger Fleet, is based on some key data related to cost of ownership and aircraft serviceability presented in the Extract, which Airbus Group Australia Pacific considers is neither accurate nor objective.<sup>[1]</sup>

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<sup>1</sup> ANAO comment – Cost of ownership and aircraft serviceability data was provided by Defence. See Chapter 3 of this audit report, and in particular paragraph 3.23 and paragraphs 3.31-3.32.



### Cost of Ownership

5. Following the 2014 renegotiation of the Through Life Support Contract, all Commonwealth cost of ownership expectations have been met in accordance with the CEO DMO letter of May 2014. The ARH Tiger is now more cost effective and provides high capability to the Australian Army. The cost of ownership for FY14/15 was \$28,689 and for FY15/16 is \$28,674 as at Feb 2016. ARH Tiger is well on the way to achieving the \$20k per flight hour target in FY17/18 in accordance with the CEO DMO requirement. Please see at Annex A the Airbus Group Australia Pacific summary of ARH Tiger cost of ownership since the Viability Review Deed was executed at the start of 2015 and an explanation of the cost savings introduced.
6. There are many figures quoted throughout the Extract (eg Figure 3.6, paragraph 17, paragraph 3.34) that are not consistent with records known to and shared with Airbus. For example, in FY14/15 the total contract was capped at \$110MAUD, so to Airbus Group Australia Pacific the figure in excess of \$125MAUD appears incorrect.<sup>[2]</sup>
7. There are inferences in the Extract in relation to ARH Through Life Support Contract cost that Airbus Group Australia Pacific considers are not consistent, as follows:
  - Paragraph 3.11 infers that the introduction of performance management arrangements was the reason for the increase in contract value in 2008. In fact there were extensive changes to both the Through Life Support and Acquisition Contracts agreed in 2008 and the introduction of the Key Performance Indicators and the penalty regime did not significant contribute to the revised cost of the contracts.
  - Paragraph 3.38 infers the increase in total cost to the 15 year Through Life Support Contract was a result of the Dec 2014 contract change. The Dec 2014 change actually reduced the cost as can be evidenced by a review of the Fixed and Variable payments made under the contract since Jan 2015 compared to the Standing and Task Priced Estimate payments made prior. The Dec 2014 contract change to price is summarised at Annex A.
8. Airbus Group Australia Pacific is of the view that cost per flight hour for ARH Tiger should be measured on a like for like basis when compared to other platforms. Unlike most other platforms, ARH contracted support includes the cost of aircrew and technician training, staff performing the engineering, technical services and supply chain activities, and some facilities costs, in addition to the conventional support, software development and simulation.<sup>[3]</sup>

### Availability

9. Following the 2014 renegotiation of the Through Life Support Contract, the aircraft serviceability performance measure was introduced. The determination of serviceability where a measure is taken at 10am on any given day is not a good metric as it is not adjusted if no aircraft were required on the day, or if the aircraft became serviceable and flew later in the day. However, for the purpose of jointly focussing on an improved serviceability, the Army and Airbus have contractually agreed that 1 Avn Regt serviceability between 45 – 70% is a satisfactory performance target level. In 2015 achievement was 41.6% and so far in 2016 it

<sup>2</sup> ANAO comment – contract costs are discussed at paragraphs 3.31-3.32 of this audit report. The report refers to all payments made to Airbus for supporting the Tiger fleet.

<sup>3</sup> ANAO comment – the audit report does not include benchmarking data, but does refer at paragraph 3.33 to Defence comparisons between the Tiger and Black Hawk fleets.



is 49.3%.<sup>[4]</sup>

10. Multiple statements throughout the Extract state that on average during 2015 only 3.5 aircraft were considered serviceable. The recorded data on the Defence Restricted Network states 5.4 aircraft for 2015 and 6.8 aircraft so far in 2016. Airbus Group Australia Pacific does not understand the basis for the 3.5 figure or the accuracy of the information presented in Figure 3.3. The daily serviceability as understood by Airbus Group Australia Pacific is:

**Average Serviceable Tiger per Day**

Jan-Mar 2015	Apr-Jun 2015	Jul-Sep 2015	Oct-Dec 2015	Jan-Mar 2016	Apr-Jun 2016
3.2	6.1	6.0	6.3	6.3	7.2

11. The improvement in 1 Avn Regt aircraft serviceability since Jan 2015 demonstrates the effectiveness of Army and Airbus collectively working on this target.
12. The Extract also makes no mention of the aircraft serviceability achieved at the Army Aviation Training Centre. The average aircraft serviceability for the training fleet was 72.92% in 2015 and so far in 2016 it is 73.87%. The requirements are different between the operational unit (1 Avn Regt) and the Training Centre, but Airbus Group Australia Pacific considers it important to provide the full picture of serviceability.<sup>[5]</sup>
13. With specific reference to paragraph 3.15, Airbus Helicopters willingly participated in the Viability Review Deed and made sure that the outcome was satisfactory to Defence. Since the Deed, Airbus is not aware of any disagreement on the definition of serviceability. It should also be recognised that serviceability and airworthiness are not the same concepts and the views of the "Key Defence Engineers" are not supported by data available to Defence and Airbus Group Australia Pacific.

#### **Imbalance**

14. There are multiple places in the Extract which appear to focus on a negative aspect without any explanation or omitting any related positive aspect. In Airbus' opinion this is not representing a balanced view of the overall situation. The following are specific examples.
15. **CEO DMO Letter.** The CEO DMO Letter from May 2014 is quoted and referred to in many places throughout the Extract. Airbus Helicopters has responded fully to the concerns raised by Defence in their May 2014 letter. The CEO of Airbus Helicopters visited Australia in August 2014 to review the situation. He immediately formed a Company Task Force to deal with all the issues facing the ARH Tiger. This Task Force exists today and has made significant progress to redress Defence concerns. The letter set Industry four targets for FY 14/15: Cost \$35,000 per flight hour, Repairable Item Demand Satisfaction Rate 80%, Breakdown Spares Demand Satisfaction Rate 87%, Rate of Effort 4726. All these targets were met with the exception of Rate of Effort at 3678.
16. **Performance Against the Contract.** (Paragraph 3.17 - 3.25). There are five contract performance measures and only three are included in the Extract. The other two performance measures which are not mentioned have historically been and continue to be at or above targets. The Repairable Item and Breakdown Spares Demand Satisfaction Rate performance has been a major focus for Airbus and its industry partners and has steadily improved over the years. In May 2016 Demand Satisfaction Rates were over 90% for both Repairable Items and Breakdown Spares. Parts are now rarely a contributor to aircraft unserviceability.
17. **Obsolescence.** The Extract in paragraph 4.6 states that a number of known

<sup>4</sup> ANAO comment – see footnote 1 above.

<sup>5</sup> ANAO comment – see note a on page 39 of the audit report.  
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# AIRBUS

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obsolescence cases do not have identified solutions. Airbus Group Australia Pacific provides a monthly obsolescence report with all declared obsolescence. Actions are planned or being undertaken to deal with all known cases and the view that this is not well managed is not supported by Airbus. There are obsolescence cases within components managed by OEMs at a repair level but such low level cases are not required to be reported and are dealt with routinely by Airbus Group Australia Pacific. Following the 2014 renegotiation of the TLS Contract, Industry is responsible for obsolescence treatment providing Defence with security on obsolescence cost for the life of the TLS Contract and a full cost has been provided in support of any contract extension.

18. **MRH90 IP Rights.** (Paragraph 3.8) The MRH90 Sustainment Contract was renegotiated in 2013 and the concerns of Defence on IP rights was fully addressed at that time such that Defence now has the full rights to compete sustainment work. This is also not relevant to the ARH TLS contract where comprehensive IP rights are provided to the Commonwealth for Defence purposes. Clause 12 of the Through Life Support Contract refers.
19. Airbus Group AP thanks the ANAO for the opportunity to comment on the Extract of the Audit Report on Tiger ARH and requests that you consider including this letter as an appendix to your final report. The Airbus Group AP point of contact for this matter is Charles (Jock) Crocombe, Email Charles.Crocombe@airbus.com.

Yours sincerely,



**Charles Crocombe**  
Vice President Governmental Helicopters

**Annex A:** Tiger ARH Cost of Ownership

## **Appendix 3      Recommendations of the ‘Project AIR87 Phase 2— Rotary Wing for Land Force Project Lessons Learned Report’**

### *Recommendation 1*

1. The AIR87 [Through-Life Support contract]. needs constant management by experienced contract management staff with ready access to legal support. The Commonwealth should not be afraid to challenge the contractor on performance nor enter into contract change discussions with the contractor should the Commonwealth not receive value-for-money for the contracted services.

### *Recommendation 2*

2. The notion that the Commonwealth can optimise resource availability by outsourcing activities needs to be challenged. This value for money hypothesis is flawed.

### *Recommendation 3*

3. Better arrangements should be put in place to ensure that appropriate consultations occur before the Commonwealth enters into similar contracts with the same contractor. AIR9000 [MRH90] did not consult AIR87 to any significant extent before signing the Multi-Role Helicopter Sustainment Contract and over time this contract has also proven to be flawed.

### *Recommendation 4*

4. [Defence] needs to re-evaluate its policy in relation to the use of 'cost-plus' contracts. A cost-plus contract for the initial years of the AIR87 [Through-Life Support contract] would have ensured effective performance parameters could be set for the mature-state stage of the contract.

### *Recommendation 5*

5. The Commonwealth must seek adequate evidence from the Contractor that its sustainment arrangements with its suppliers/subcontractors are in place and effective and that any provisions contained in the head contract have been adequately flowed down into any subcontracts. Demonstration should be linked to sustainment contract signature or as an entry obligation to the achievement of [In Service Date].