

## Performance Audit Report No. 9 (2015-16)

### Test and Evaluation of Major Defence Equipment Acquisitions

- 4.1 Chapter 4 focuses on the Joint Committee of Public Accounts and Audit (JCPAA) inquiry into Australian National Audit Office (ANAO) Audit Report No. 9 (2015-16), *Test and Evaluation of Major Defence Equipment Acquisitions*, Department of Defence (Defence). The chapter comprises:
- inquiry context and background
  - ANAO report overview
  - Committee review of evidence
  - Committee comment

#### Inquiry context and background

- 4.2 Defence's capital equipment acquisition program includes aircraft, maritime vessels and land-based equipment in various stages of engineering development and delivery. In 2013-14 the program comprised some 180 approved projects, with a total value of \$79 billion.<sup>1</sup> The 2012 *Defence Capability Plan* contains an additional 111 projects, or project phases, planned for either First or Second Pass government approval over the four-year forward estimates period, worth some \$153 billion in capital costs.<sup>2</sup>

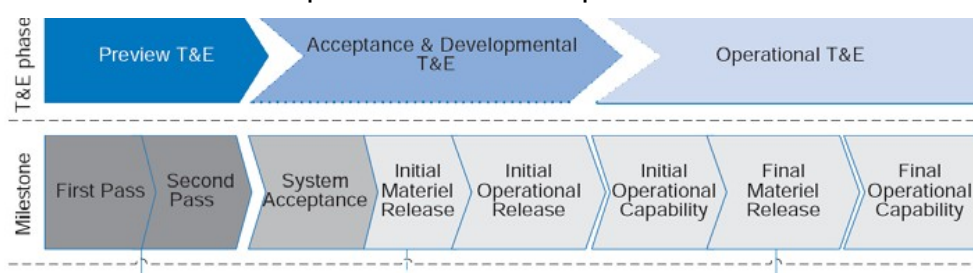
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1 ANAO Report No. 9 (2015-16), *Test and Evaluation of Major Defence Equipment Acquisition*, p. 7.

2 ANAO Report No. 9, p. 7.

- 4.3 Each of these projects relies on test and evaluation (T&E) processes to identify areas of cost, schedule and capability risk to be reduced or eliminated. T&E is a key component of systems engineering and its primary function is to provide feedback to engineers, program managers and capability managers on whether a product or system is achieving its design goals in terms of cost, schedule, function, performance and sustainment. It also enables capability acquisition and sustainment organisations to account for their financial expenditure in terms of the delivery of products or systems that are safe to use, fit for purpose and meet the requirements approved by government.<sup>3</sup> Figure 4.1 provides an overview of the T&E phases and Defence acquisition milestones.

Figure 4.1 Overview of T&E phases and Defence acquisition milestones



Source ANAO Report No. 9, p. 16.

- 4.4 Key developments in Defence T&E include the establishment of the Australian Defence Test and Evaluation Office (ADTEO) in 2007; the finalisation of an overarching T&E policy, the *Defence Capability Development Manual* (DCDM) in 2015; and the 2015 First Principles Review: Creating One Defence, which recommends significant organisational design change affecting T&E governance and seeks to encourage:

- A stronger and more strategic centre able to provide clear direction, contestability of decision-making, along with enhanced organisational control of resources and monitoring of organisational performance;
- An end-to-end approach for capability development with Capability Managers having clear authority and accountability as sponsors for the delivery of capability outcomes to time and budget, supported by an integrated capability delivery function and subject to stronger direction setting and contestability from the centre;
- Enablers that are integrated and customer-centric with greater use of cross-functional processes, particularly in regional locations; and

- A planned and professional workforce with a strong performance management culture at its core.<sup>4</sup>

## ANAO report overview

### Audit objective, scope and criteria

- 4.5 The ANAO's audit objectives were to examine the effectiveness of Defence's management of the T&E aspects of its major capital equipment acquisition program, and to report on Defence's progress in implementing T&E recommendations made in the Senate Foreign Affairs, Defence and Trade References Committee's August 2012 report, *Procurement Procedures for Defence Capital Projects*.<sup>5</sup>
- 4.6 To form a conclusion against the objectives, the ANAO adopted the following high-level criteria:
- Defence's organisational structures, roles and responsibilities enable the coordinated application of adequate T&E at each stage of the capital equipment project life cycle
  - Defence's T&E policy and procedures are suitably designed and applied as intended
  - Defence invests in a broad range of training and skills development for T&E personnel to enable the application of necessary T&E expertise throughout the capital equipment project life cycle; and
  - the T&E aspects of capital equipment acquisition are transparently reported to inform decision making and management of technical risks that may impact the development and maintenance of the major systems component of the Fundamental Inputs to Capability.<sup>6</sup>

### ANAO overall conclusion

- 4.7 Overall, the ANAO report concluded that:
- the conduct of T&E remains distributed across 12 Defence organisations, placing a premium on the effectiveness of Defence's T&E governance as a means of mitigating the risk of inconsistent conduct of T&E. Defence's administration of T&E would be further strengthened by introducing arrangements to provide enterprise-level advice to senior responsible leaders on key issues,

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4 First Principles Review: Creating One Defence, 2015, pp. 5-6. See the ANAO report for a detailed description of Defence T&E.

5 ANAO Report No. 9, p. 7.

6 ANAO Report No. 9, pp. 7-8. (See p. 18 for audit method and scope.)

introducing performance measures and compliance assurance for T&E, and completing reforms to T&E personnel competency and training arrangements ...

The case studies examined in this audit highlight the important role played by T&E in managing acquisition risks for major capital equipment ... In the case of the first Landing Helicopter Dock (LHD), *HMAS Canberra*, key management decisions were usefully informed by Defence's T&E, which identified numerous defects and deficiencies for resolution. Defence decided, on balance, to accept *HMAS Canberra* on the understanding that the deficiencies would be addressed during the ship's operational phase. In doing so, the Chief of Navy accepted greater risks than would have been the case had System Acceptance been based on more complete objective quality evidence of compliance with contracted specifications, and had Initial Materiel Release been based on less qualified findings by Defence's regulators concerning compliance.<sup>7</sup>

## ANAO recommendations and agency response

4.8 Table 4.1 sets out the recommendations from ANAO Report No. 9—Defence agreed to all three recommendations without qualification.<sup>8</sup>

Table 4.1 ANAO recommendations, Audit Report No.9 (2015-16)

1	To strengthen the enterprise-level management of the T&E workforce, the ANAO recommends that Defence: <ul style="list-style-type: none"> <li>(a) identifies the training and competencies of the existing Defence T&amp;E workforce;</li> <li>(b) conducts a T&amp;E personnel competency and training needs analysis for the whole entity; and</li> <li>(c) monitors the availability of sufficient, appropriately trained T&amp;E personnel in specific competency areas and takes steps to address any gaps identified.</li> </ul>
2	To reduce risk and assist the transition of capability from the acquisition phase to operations, the ANAO recommends that prior to System Acceptance, Defence ensures that material deficiencies and defects are identified and documented, and plans for their remediation established.
3	In the context of its implementation of reforms arising from the First Principles Review, the ANAO recommends that Defence introduce arrangements to provide the Vice Chief of the Defence Force and Capability Managers with enterprise-level advice on the coordination, monitoring and evaluation of the adequacy and results of Defence T&E activities.

<sup>7</sup> ANAO Report No. 9, p. 8.

<sup>8</sup> For details of Defence's response to the ANAO's recommendations, see ANAO, Audit Report No. 9, pp. 11-12.

## Committee review of evidence

- 4.9 The Committee's key sources of evidence for this inquiry were the ANAO's audit report, evidence given by representatives from the ANAO and Defence at the Committee's public hearing on 3 March 2016, and agency submissions (see details of public hearings and submissions at Appendixes A and B).
- 4.10 The Committee also investigated relevant public sector frameworks, and past reviews, reports and audits as detailed below.

## Key audit themes and relevant public sector frameworks

- 4.11 The key audit theme that emerged from the Committee's inquiry into ANAO Report No. 9 is effective risk management in terms of the role of test and evaluation (T&E) in managing acquisition risks for major Defence equipment.
- 4.12 Key frameworks for Defence T&E are the *Defence Capability Development Manual* (December 2014) and *First Principles Review – Creating One Defence* (April 2015). Broader frameworks here are the relevant sections of the *Public Governance, Performance and Accountability Act 2013* (PGPA Act) and PGPA Rule 2014, and associated guidance. As the primary piece of Commonwealth resource management legislation, the PGPA Act establishes a single system of governance and accountability for public resources. In particular, s16 of the PGPA Act, supported by the *Commonwealth Risk Management Policy* (2014), requires agencies to establish appropriate systems for the management of risk. As regards Defence T&E of major equipment acquisition, this includes ensuring Defence managers have the information needed to effectively manage risk as regards assessing investment costs and benefits; resolving equipment function, performance and sustainment issues; and maximising reliable operational effectiveness. T&E is a key risk mitigation technique capable of providing managers with the information feedback needed to effectively manage risk.<sup>9</sup>

## Relevant reviews, reports and audits

- 4.13 There have been a range of reviews, reports and audits concerning Defence and T&E:

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<sup>9</sup> Chapter 1 further discusses risk management in the Commonwealth public sector as a key audit theme across the three ANAO reports covered by the Committee's report.

- Senate Foreign Affairs, Defence and Trade References Committee, *Report on the Inquiry into Materiel Acquisition and Management in Defence* (2003)
- ANAO Report No. 30 (2001-02), *Test and Evaluation of Major Defence Equipment Acquisitions* (2002) – aspects of T&E have also featured in a range of other recent ANAO audits<sup>10</sup>
- Kinnaird Review, *Defence Procurement Review* (2003)
- Department of Defence, *Defence Test and Evaluation Roadmap* (2008)
- Senate Foreign Affairs, Defence and Trade References Committee, *Procurement Procedures for Defence Capital Projects* (2012)

## Key issues

4.14 The Committee focused on the following three matters:

- implementation of ANAO recommendations and other review findings
- T&E enterprise-level governance, including policy and procedures, performance information, and competency and training
- managing acquisition risks, including HMAS *Canberra* case study

## Implementation of ANAO recommendations and other review findings

4.15 Defence agreed to all three recommendations from the ANAO audit without qualification. At the public hearing and in its submission to the inquiry, Defence provided an update on implementation of the recommendations (this is further discussed in the relevant sections below). In particular, Defence confirmed that, as part of the First Principles Review process, a range of activities are currently underway to strengthen T&E arrangements across the department, to ‘better achieve the outcomes and the recommendations that have been put forward by the ANAO’.<sup>11</sup>

4.16 The ANAO emphasised that a ‘well-managed T&E program consists of suitably qualified and experienced personnel undertaking T&E in accordance with sound policy and with support from appropriate institutional arrangements’.<sup>12</sup> However, several recent ANAO audits and external reviews of Defence, as listed earlier, have identified deficiencies in these aspects of Defence’s T&E program and made recommendations for improvement – Figure 4.2 sets out common themes from these reports.

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10 See list of audit reports, ANAO Report No. 9, p. 16.

11 Air Vice Marshal Mel Hupfeld, Acting Chief, Capability Development Group, Defence, *Committee Hansard*, 3 March 2016, p. 10.

12 ANAO Report No. 9, p. 19.

4.17 One of the ANAO's two audit objectives was to report on Defence's progress in implementing T&E recommendations made in the Senate Foreign Affairs, Defence and Trade References Committee's August 2012 report, *Procurement Procedures for Defence Capital Projects*.<sup>13</sup> The Senate report identified several deficiencies in the way T&E was being utilised to support Defence major capital equipment acquisitions and made five recommendations directly related to T&E.<sup>14</sup>

Figure 4.2 Common themes in previous reviews (ticks indicate whether an issue was raised)

Theme	2002 ANAO T&E audit	2003 Senate Inquiry	2003 Kinnaird Review	2008 T&E Roadmap	2012 Senate Inquiry
Inconsistent conduct of T&E.	✓	✓	✓	✓	✓
Inadequate oversight of T&E training.	✓	✗	✗	✓	✓
Inadequate resources for T&E.	✓	✓	✓	✓	✓
Poor translation of T&E policy and process into practice.	✓	✓	✗	✓	✓
Misunderstanding of T&E's role as an assurance mechanism for the delivery of expected capability.	✓	✓	✗	✓	✓

Source ANAO Report No. 9, p. 17

4.18 The ANAO particularly identified the need for further progress by Defence with regard to two Senate report recommendations relating to T&E competency and training requirements' (recommendations 23 and 24), concluding that Defence had made 'slow progress'<sup>15</sup> (this matter is further discussed below in the section on 'T&E governance').

4.19 On the three remaining Senate report recommendations related to T&E, the ANAO identified progress in a number of areas:

- The Senate report recommended improvements in Defence's Technical Risk Assessment and Technical Risk Certification processes (recommendation 11). The ANAO confirmed that, in conducting this audit, it had 'observed significant improvements in Defence's Technical Risk Assessment policy and process manual'; however, the 'DCDM

13 ANAO Report No. 9, p. 7.

14 See p. 74 of the ANAO report for details of these recommendations.

15 ANAO Report No. 9, p. 9.

would be improved if it included a more complete reference to this manual'.<sup>16</sup>

- The Senate report recommended that Defence capability managers require their developmental T&E practitioners to be an equal stakeholder with the Defence Science and Technology Organisation in the pre-First Pass risk analysis and to conduct the pre-contract evaluation so they are aware of risks before committing to a project (recommendation 22). The ANAO confirmed that, in response, 'Defence included guidance covering preview T&E in the DCDM'.<sup>17</sup> The ANAO noted that well-conducted preview T&E policy should result in improved pre-First Pass risk analysis and pre-contractual cost and benefit evaluation, 'resulting in Defence being more aware of acquisition risks' and so better informing the First and Second Pass approval process'.<sup>18</sup>
- The Senate report recommended that Defence mandate a default position of engaging specialist T&E personnel pre-First Pass (recommendation 25). The ANAO confirmed that Defence had implemented this recommendation through its recently released DCDM.<sup>19</sup> The ANAO observed that, 'when implemented well, Defence preview T&E has mitigated acquisition risks, particularly with respect to off-the-shelf (OTS) equipment acquisitions'.<sup>20</sup> However, the ANAO emphasised that acquisition risks still need to be managed through the conduct of preview T&E and operational T&E.<sup>21</sup>

4.20 The ANAO's current audit also followed up its 2002 audit on this matter, Report No. 30 (2001-02), *Test and Evaluation of Major Defence Equipment Acquisitions* (January 2002). The earlier audit found there was little evidence of effective corporate initiatives to support efficient and effective use of Defence's T&E resources, and made five recommendations, including that Defence:

- review and update its T&E policy organisation and responsibilities
- establish an office responsible for common standards for, and independent oversight of, operational T&E

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16 ANAO Report No. 9, p. 26.

17 ANAO Report No. 9, p. 26.

18 ANAO Report No. 9, p. 26.

19 ANAO Report No. 9, p. 9, p. 38.

20 ANAO Report No. 9, p. 9.

21 ANAO Report No. 9, p. 9.



- T&E practitioners have training and skills adequate for their responsibilities, through a consistent policy and program that encourage training and education in T&E<sup>22</sup>
- 4.21 Against the background of these previous ANAO and Senate Committee recommendations, the ANAO found that a number of recent developments had provided Defence with a 'stronger basis for the management of T&E'.<sup>23</sup> However, the ANAO concluded that 'scope remains to improve key aspects of Defence's administration' across a number of areas, including T&E enterprise-level governance and managing acquisition risks<sup>24</sup> – as discussed in the relevant sections below.

### T&E enterprise-level governance

- 4.22 The Auditor-General noted that Defence had 'strengthened its enterprise-level management of test and evaluation in recent years'.<sup>25</sup> In particular, the ANAO pointed here to the establishment of the ADTEO in 2007 and the T&E Principals' Forum in 2008, along with the finalisation of an overarching T&E policy in 2015, the DCDM.<sup>26</sup> Importantly, the ANAO noted that publication of Part Three of the DCDM completed a 'longstanding commitment to the Parliament'.<sup>27</sup> (However, the ANAO observed that this process had taken some 12 years from when the ANAO first made a recommendation on this matter.<sup>28</sup>)
- 4.23 Notwithstanding these positive developments, the Auditor-General found that conduct of T&E was 'distributed across 12 Defence organisations, placing a premium on the effectiveness of Defence's T&E governance'.<sup>29</sup>

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22 ANAO Report No. 30 (2001-02), *Test and Evaluation of Major Defence Equipment Acquisitions*, pp. 23-24.

23 ANAO Report No. 9, p. 10.

24 ANAO Report No. 9, p. 10.

25 Mr Grant Hehir, Auditor-General, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 1.

26 ANAO Report No. 9, p. 66.

27 ANAO Report No. 9, p. 24.

28 In 2003 Defence advised the Parliament that a review of Defence T&E policies had been initiated, following a recommendation on this matter in the 2002 ANAO report. This review had not been completed by the time of the 2012 Senate Committee inquiry, with the Committee recommending immediate policy finalisation. A completed version of Part Three of the DCDM was finally published in June 2015, 'some 12 years after Defence had originally advised Parliament that a review and redevelopment of Defence T&E policy and procedures was underway', ANAO Report No. 9, pp. 24-25.

29 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 1. The 12 Defence T&E agencies are listed in ANAO Report No. 9, pp. 22-23. Each of these organisations has its own T&E manuals and reports T&E activities independently to its respective capability manager, and are all required to comply with one or more of defence's three technical

The Auditor-General concluded that Defence's administration of T&E would be therefore be strengthened by completing reforms to T&E personnel competency and training arrangements, and introducing arrangements to provide 'enterprise-level advice to senior responsible leaders' through integrated T&E policy and procedures and improved performance measures.<sup>30</sup> These measures would provide 'greater assurance' as regards administration of Defence T&E and be 'consistent with reforms underway within Defence to establish a stronger "strategic centre"', through the First Principles Review.<sup>31</sup> A summary of the relevant key points on these matters from the ANAO report is set out below:

- **Competency and training:** Defence has made slow progress in implementing the 2012 Senate Inquiry recommendations relating to T&E personnel competency and training requirements. No whole-of-Defence T&E personnel competency and training needs analysis has been conducted and T&E personnel training and competency requirements management vary significantly between the armed Services ... and the Capability Acquisition and Sustainment Group (CASG) ... Defence's approach to the training of T&E personnel has been the subject of ongoing concern. In 2001, the ANAO found that Defence's approach to providing T&E training was decentralised and ad hoc, and not well linked in terms of coordination or information sharing<sup>32</sup>
- **Policy and procedures:** Defence has more to do to provide a comprehensive and integrated T&E framework to its project offices by ensuring: the DCDM aligns with Navy, Army and Aerospace regulatory management manuals; the DCDM is aligned with new organisational structures arising from the implementation of the First Principles Review; and that subsidiary T&E policy and procedural guidance manuals used by the various project offices are consistent with the DCDM<sup>33</sup>
- **Performance information:** The ANAO has ... suggested that the T&E Principals' Forum should make the establishment of key T&E performance indicators a matter of priority<sup>34</sup>

4.24 On the ANAO's recommendation that, to strengthen the enterprise-level management of the T&E workforce, Defence conduct a T&E competency and training needs analysis, and monitor the availability of appropriately

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regulatory management manuals. The exception to those arrangements is the Army, which has embedded a significant proportion of its operational T&E staff in ADTEO, p. 9.

30 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 1.

31 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, pp. 1-2.

32 ANAO Report No. 9, p. 9, p. 30. See ANAO Report No. 30 (2001-02).

33 ANAO Report No. 9, p. 9.

34 ANAO Report No. 9, p. 65.

trained T&E personnel and address any gaps identified (Recommendation 1), Defence noted that a tender had been released to contract a training needs analysis between 7 March 2016 and 27 May 2016 and, following the outcomes of this analysis, Defence would 'develop processes to monitor the availability of training of test and evaluation staff, leading to closing out the recommendation from the ANAO report'.<sup>35</sup> It is also intended under the First Principles Review that ADTEO (as part of the Vice Chief of the Defence Force Group) be accountable for this matter within Defence.<sup>36</sup>

- 4.25 On the ANAO's recommendation that Defence introduce arrangements to provide the Vice Chief of the Defence Force (VCDF) and capability managers with enterprise-level advice on the coordination, monitoring and evaluation of the adequacy and results of T&E activities (Recommendation 3), Defence noted that 'this recommendation will be closed out', by expanded T&E reporting through ADTEO to VCDF.<sup>37</sup> ADTEO currently provides a report on Defence activities covering trials, activities and test planning in support of projects, with this reporting to be 'expanded to include input from other test and evaluation agencies and promulgated to the Vice Chief of the Defence Force and the capability managers from April onwards'.<sup>38</sup>
- 4.26 There was interest at the public hearing in further exploring whether T&E had been integrated into a consistent, whole-of-Defence framework across Navy, Army and Air Force such that 'everyone has T&E firmly on the radar'. Defence again emphasised that the 'key element' here is the 2007 establishment of ADTEO, in providing a 'joint context':

From then, we have been improving the approach ... we have individual service test and evaluation organisations both in Navy and in Air Force. We have the central office under the Australian Defence Test and Evaluation Office, who also up till this point have been conducting the test and evaluation elements for Army ... most importantly, the Australian Defence Test and Evaluation Office have been providing that joint context that provides those policies, the standards, the governance and the management across all of those elements so that we do pull that together across a whole-of-Defence perspective.<sup>39</sup>

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35 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

36 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

37 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, pp. 9-10.

38 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, pp. 9-10.

39 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 15.

- 4.27 Defence explained that this approach would be further strengthened under the First Principles Review – ‘we will be strengthening the joint aspect ... of the Australian Defence Test and Evaluation Office. That may change its name ... the outcomes and structures for this are pre-decisional, but the intent is clear’.<sup>40</sup> As Defence further highlighted, ‘under the First Principles Review we are about to undergo some significant changes to both our processes and our organisational structure’, with ADTEO proposed to be relocated to the VCDF Group to ‘provide a strong strategic centre for test and evaluation in Defence’.<sup>41</sup> As to when the First Principles Review reform process is planned to be completed, Defence responded that the ‘key time line and transition ... will depend on the approvals and agreement of that new process. We estimate that it may well be by the middle of the year ... A two-year implementation time line was provided by the first principles review’.<sup>42</sup> Asked whether there would be benefit in establishing a formal legislative framework for T&E, Defence pointed to its overarching T&E policy, as set out in the DCDM, and implementation of the recommendations of the First Principles Review and the ANAO audit as sufficiently ensuring ‘consistent application of T&E principles’.<sup>43</sup>
- 4.28 Under these new arrangements, capability managers will be responsible for their respective T&E agencies, ‘allowing more direct reporting to them’ and ADTEO will provide ‘standard policy across Defence and governance of test and evaluation activities’.<sup>44</sup> Defence confirmed that the ‘recommendations and advice contained in the ANAO report informed the process that led to this direction’.<sup>45</sup> As to whether this integrated approach, devolved to capability managers, might lead to inconsistency between individuals and inconsistency between the services, Defence reiterated that ‘policy and standards associated with both training and competency assessments will be managed from a joint perspective’.<sup>46</sup> As Mr Kim Gillis, Deputy Secretary, Capability Acquisition and Sustainment Group, Defence, emphasised: ‘the vice-chief and I, working with the

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40 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 15.

41 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9 – this is the ‘proposed approach. It is still preapproval through the department, let alone government’, p. 9.

42 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 16.

43 Defence, *Submission 4.1*, p. 3.

44 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

45 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

46 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 16.

capability managers, are taking a lead on the reform of this, and the one mantra that we are pushing is commonality right across Defence':<sup>47</sup>

as the delivery agency for the vast majority of the Defence projects, I need to have a common approach to all of these things that are being delivered, in the way they are being tested and evaluated – especially when you start getting into the joint programs, where you have aspects of Navy, Army or Air Force involved in some of these components. Historically, that has sometimes caused issues because of the differences in approaches. It is about getting to that common focus and a common set of standards, qualifications, experience and training and a unified organisation while still, however, maintaining that accountability of the capability managers. That is the nuance of this, but we have to maintain that commonality.<sup>48</sup>

4.29 In terms of how the accountability of capability managers for this area would be made clear and strengthened, Defence responded that these arrangements would be 'clearly articulated in the design of the new process in terms of roles and responsibilities ... it will be for the secretary and CDF to ensure that that is clear'.<sup>49</sup> Mr Gillis also pointed to the 'joint accountability of the Defence leadership':

We have to work as a single, unified 'One Defence' organisation for all of these attributes. That is the cultural and behavioural change that we need to make, so, when I say, 'I work closely with the capability managers, the chief, the vice-chief et cetera,' who have to deliver this, we all share that accountability. None of us look at it as if it is theirs or mine; it is our responsibility to deliver this capability.<sup>50</sup>

## Managing acquisition risks, including HMAS *Canberra* case study

4.30 The ANAO examined the management of acquisition risks in terms of reducing risk in the transition of capability from the acquisition phase to operations. The focus here was T&E for Australia's evolving amphibious deployment and sustainment capability – specifically:

- development and acceptance T&E for two Canberra Class Landing Helicopter Docks (LHDs); and

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47 Mr Kim Gillis, Deputy Secretary, Capability Acquisition and Sustainment Group, Defence, *Committee Hansard*, 3 March 2016, p. 16.

48 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 16.

49 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 16.

50 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 16.

- operational T&E for the two LHDs, 47 MRH90 helicopters, and 12 LHD Landing Craft.<sup>51</sup>
- 4.31 The Auditor-General noted that the ANAO's case study on the first LHD, HMAS *Canberra*, indicated key management decisions were 'usefully informed' by T&E, which 'identified numerous defects and deficiencies for resolution'.<sup>52</sup> Defence decided, 'on balance, to accept HMAS *Canberra* on the understanding that the deficiencies would be addressed during the ship's operational phase'.<sup>53</sup> However, in doing so, the Auditor-General concluded that the 'Chief of Navy accepted greater risks than would have been the case had System Acceptance been based on more complete objective quality evidence of compliance with contracted specifications, and had Initial Materiel Release been based on less qualified findings by Defence's regulators concerning compliance with technical, operational and safety management system requirements'.<sup>54</sup> The Auditor-General observed that, as operational T&E is still underway and is not due for completion until the fourth quarter of 2017, it 'remains to be seen what impact, if any, this elevated risk has on the achievement of Final Operational Capability'.<sup>55</sup>
- 4.32 By way of background on the ANAO's finding in this area, at System Acceptance (as set out in Table 4.1 of the ANAO report), only 31 per cent of Harbour Acceptance Trials Test Reports and 39 per cent of Sea Acceptance Trials Test Reports had been approved.<sup>56</sup> Early operational T&E of HMAS *Canberra* also commenced against a 'backdrop of significant work required to verify contractual compliance with 451 function and performance specifications, which had not occurred at the time of System Acceptance and Initial Materiel Release'.<sup>57</sup>
- 4.33 On the ANAO's recommendation that, to reduce risk and assist the transition of capability from the acquisition phase to operations, Defence should ensure that material defects are documented and plans for remediation established prior to System Acceptance (Recommendation 2), Defence noted it had agreed to this recommendation 'upon the understanding that extant Defence policy and procedures were in place to satisfy the recommendation', with work in this area also being
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51 ANAO Report No. 9, p. 45. The overall total approved acquisition budget for these elements of Defence's amphibious capability is \$7.072 billion (June 2015). Of that amount, \$5.600 billion had been spent by June 2015, p. 45.

52 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 2.

53 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 2.

54 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 2.

55 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 2.

56 ANAO Report No. 9, p. 48.

57 ANAO Report No. 9, p. 10.

strengthened under the First Principles Review.<sup>58</sup> Defence further commented that it was ‘gathering evidence of compliance with these policies and procedures to close off this recommendation’.<sup>59</sup>

- 4.34 At the public hearing, the ANAO and Defence further discussed this recommendation. The ANAO commented that, as T&E is a basis for assessing risk and for advising capability managers, in this case the Chief of Navy, of the risks in making decisions, ‘we thought it would be best if at least the material deficiencies found as a consequence of T&E work were properly documented and a process was in place for providing a level of advice and assurance ... that it was being managed effectively’.<sup>60</sup> Commodore Stephen Hughes, Director General, Navy Capability Transition and Sustainment, Defence, acknowledged that the ‘ANAO audit ... hit the key issues for Navy around what we would like to see better done if we had our time again’.<sup>61</sup> However, Commodore Hughes emphasised that T&E is ‘one part of a numerous armoury of tools we use to make a decision for the Chief of Navy’ – ‘I predicate that the Chief of Navy did not make this decision, I would say, easily or haphazardly; it was a very long process we followed to come to the conclusion that the vessel was at an acceptable level of understanding and risk to move forward into the follow-on test and evaluation process’.<sup>62</sup> As Defence further noted, T&E is ‘costly in terms of both dollars and time, so we always will have to have an element of risk-based assessment on that’ – ‘we have learnt the lessons of preview T&E and how we then take test and evaluation between first and second pass and, indeed, into acceptance into service ... but there will always exist a tension between how much you would like to do and how much you can do, and we would try to balance that’.<sup>63</sup>
- 4.35 In terms of the outstanding harbour and sea acceptance trials test reports, at the time of system acceptance, as identified by the ANAO in Table 4.1 of its report, Defence explained that ‘not all those reports were about issues where we had not done a test. Those reports might have not been delivered for a number of reasons – there were spelling mistakes or they were not in the right format. There were some trials which had not been

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58 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

59 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

60 Dr Tom Ioannou, Group Executive Director, Performance Audit Services Group, ANAO, *Committee Hansard*, 3 March 2016, p. 10.

61 Commodore Stephen Hughes, Director General, Navy Capability Transition and Sustainment, Defence, *Committee Hansard*, 3 March 2016, p. 11.

62 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, p. 11.

63 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 10.

completed, so it was a mixed bag'.<sup>64</sup> As Commodore Hughes further observed, 'in a number sense I agree with the advice in Table 4.1 [of the ANAO report], but the context around that is how much understanding Navy had around what was missing at the time':

we had eyes and ears on the ground seeing the issues as they were raised and reporting back into both the project and into the Navy ... All that fed back as a body of knowledge for us to present to the CN [Chief of Navy] about the risks he was taking forward ... In summary, I think that CN at the time had a very comprehensive view of the risk he was taking.<sup>65</sup>

- 4.36 As to why, at the time of the audit report, nearly 12 months after system acceptance, the percentage of approved harbour and sea acceptance trial test reports, as listed in Table 4.1, had risen to only 38 per cent and 60 per cent (from 31 per cent and 39 per cent respectively).<sup>66</sup> Defence clarified that a 'number of those were not intended to be completed until after operational availability'.<sup>67</sup> Commodore Hughes acknowledged there were a 'number of documents that were interim type documents, not formal, signed-off, cleared OQE [objective quality evidence] as per the contract', and concluded: 'I do not think I would like to see that again, because one of the issues the ANAO rightly brought up was that it made us have to rely on our own professional judgement based on what evidence we had. It is not that there was not any evidence or the trial did not occur; it was that we did not necessarily have a formal [piece] of OQE that we could take forward with us'.<sup>68</sup> As at August 2015, 61 per cent of harbour acceptance trial test reports were outstanding, and as at February 2016, 52 per cent were still outstanding. As at August 2015, 39 per cent of sea acceptance trial test reports were outstanding, and as at February 2016, 30 per cent were still outstanding.<sup>69</sup>

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64 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, p. 11.

65 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, p. 11. For example, Commodore Hughes noted that some of the trials were 'hampered because a certain system on the day did not turn on or off' and the 'full capacity or capability of some of those systems could not be fully tested because you needed 800 people', *Committee Hansard*, 3 March 2016, p. 11.

66 ANAO Report No. 9, pp. 48-49.

67 Mr Patrick Fitzpatrick, Director-General, Future Frigate, Defence, *Committee Hansard*, 3 March 2016, p. 12. Mr Gillis, Defence, similarly noted: 'there are some practical things that stand out that we have to use in operational tests to really test them ... there is a whole detailed part where you need a fully trained and operating crew, and that is why we do it in that particular phase of the operation', *Committee Hansard*, 3 March 2016, p. 13.

68 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, p. 12.

69 Defence, *Submission 4.1*, p. 13.



- 4.37 In terms of the 451 requirements not yet certified as complying with the LHD function and performance specifications at the time of HMAS *Canberra's* Initial Materiel Release on 31 October 2014, Defence explained that 'we ... had a plan with CASG [Capability Acquisition and Sustainment Group] of how to burn down that list of defects and deficiencies between November 2014 into May 2015 ... What we did underestimate is the ability of the contractor to actually burn down that list':
- as time went on and the list was not burnt down and corrected, the risk we were carrying was increasing. That caused us a great deal of concern. We had a number of roundtables with CASG and the contractor. We got it all back on track. Then, by June 2015, when the ship achieved its unit readiness work-up state, we were a lot more comfortable about the material state of the ship.<sup>70</sup>
- 4.38 A range of contractual matters were also discussed at the public hearing. As to whether acceptance of the ship in this way by Chief of Navy might affect the contractual position of the Commonwealth, including in terms of leverage, Defence confirmed that 'we still hold the contractor fully liable for those things outstanding. That is drafted into the contractual obligations'.<sup>71</sup> On the contract options available to Defence through payment milestones and other mechanisms, particularly after acceptance of a product has been confirmed, Mr Gillis, Deputy Secretary, Capability Acquisition and Sustainment Group, Defence, responded: 'my view is that we did a better job on *Adelaide*, but we did not lose the contractual position where we told the contractor that they are still accountable and responsible to deliver that; they still have to remediate any defects'.<sup>72</sup> As Mr Gillis further emphasised, 'they do not get that final payment, and they do not get the payment for that particular milestone, until they actually complete those tests. So we still hold them contractually'.<sup>73</sup>
- 4.39 There were interest in whether a lesson learnt here by Defence related to structuring a contract so that the testing process allows a stronger position for Defence in negotiating rectification of defects. As the person who signed that contract, Mr Gillis replied: 'yes, I have learnt that lesson, and I will be applying that lesson ... I accept that recommendation'.<sup>74</sup> Mr Gillis confirmed his accountability for the contract on this project: 'I signed that contract on behalf of the Commonwealth ... I have read this audit report,

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70 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, pp. 11-12.

71 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 13.

72 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 14.

73 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 14.

74 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 13.

and I take note that we should have done this in ship 1 and in ship 2 ... So I take that accountability, and I have taken on that lesson'.<sup>75</sup>

4.40 As to whether Defence sufficiently appreciated the contractual and potential public image risks of this area, Defence responded: 'we did learn a lot from the experience of *Canberra* and we did make significant improvements in that second of class in *Adelaide*. The procedures were better; the processes were better. This was the first of class of the largest ship the Australian Navy has ever taken on board'.<sup>76</sup> Mr Gillis observed that 'one of the lessons that I have observed over the last 10 years or so is that sometimes we need to put the equipment in the hands of the war fighters to find out: what is the capability that we really have, and what is the outcome that we are achieving?'<sup>77</sup> Mr Gillis pointed to the Wedgetail program as an example of this, noting that it was a 'very, very difficult platform' to do T&E against because 'we had not actually used it in full operations' — 'what we have found is that, subsequent to the formal handover and the acceptance of that, it has achieved much better outcomes in some areas than we knew at the point of acceptance. We cannot do that until we have actually got it in the field and we have tested it. That is a difficult part of this differential between a contractual acceptance'.<sup>78</sup>

4.41 As to the ANAO's view about whether these sorts of practices might pose a contractual risk or a risk to the Commonwealth's financial position, the Auditor-General responded that 'with the nature of the decision, what we point out in our report is that by doing things the way they were done increased risk was taken on'.<sup>79</sup> As the Auditor-General further noted:

What we do not say is that that risk was taken on without the eyes of the procurer being open, so we are not making a judgment that that was a poor decision. I think they are fully aware of all of those risks, and a process that takes longer to get to conclusion changes the risk, including in how you manage the contract and hold the other party to account.<sup>80</sup>

4.42 Finally, there was interest in how HMAS *Canberra* was operating at the moment and whether there were any outstanding issues. Defence explained that, 'in a complex system of this size, there will always be small issues, small faults, in the system ... They will happen through the life of

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75 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 12.

76 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 13.

77 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 14.

78 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 14.

79 Mr Hehir, ANAO, *Committee Hansard*, 3 March 2016, p. 13.

80 Mr Hehir, ANAO, *Committee Hansard*, 3 March 2016, p. 13.

the system'.<sup>81</sup> Commodore Hughes concluded that, while there are 'still outstanding issues ... for this capability for the next ... 40 or 50 years', which will have to be managed through a risk approach, the 'vessel is exceeding our expectations of where we thought we would be 18 months into a program':

in under a year we achieved IOC, initial operating capability, which I think is unheard of for maritime capability ... One thing that I am very confident about is that we really understood the safety component of this capability. T&E did this for us in a number of ways. There has not been one issue raised in both vessels in the last 18 months which we did not foresee in our safety case. Again, I think that is a unique outcome for Navy ... to come back to your ultimate question, there is still a lot of fundamental, deep-level work being done to ensure the next 40 years sustainability of capability, and it takes a huge team out of the CASG and the industry partners.<sup>82</sup>

## Committee comment

- 4.43 The Committee identified Defence T&E as an audit priority of Parliament in December 2012 and May 2014, in recognition of the ongoing importance of this area.<sup>83</sup> The Committee notes that, over a number of years, several ANAO audits and external reviews have identified deficiencies in aspects of Defence's T&E program and provided recommendations for improvement.<sup>84</sup> Defence has made progress in a number of areas towards implementing recommendations from these reports, but this has taken considerable time. Overall, Defence still needs to improve key aspects of its T&E administration – as reflected in the ANAO recommendations – and to do so in a timely manner.
- 4.44 The Committee notes that Defence agreed to the ANAO recommendations without qualification and, at the public hearing and in its submission to the inquiry, provided an update on implementation progress. Importantly, Defence confirmed that, as part of the First Principles Review process, a

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81 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 14.

82 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, pp. 14-15.

83 ANAO Report No. 9, p. 17.

84 In particular, ANAO Report No. 30 (2001-02), *Test and Evaluation of Major Defence Equipment Acquisitions*, and the Senate Foreign Affairs, Defence and Trade References Committee report, *Procurement Procedures for Defence Capital Projects* (2012). Figure 4.2 sets out common themes from these reports.

range of activities are currently underway to strengthen T&E arrangements across the department, to 'better achieve the outcomes and the recommendations that have been put forward by the ANAO'.<sup>85</sup>

- 4.45 In terms of T&E enterprise-level governance, the Committee was pleased to note the Auditor-General's finding that Defence had strengthened its enterprise-level management of T&E conducted in support of major equipment acquisitions in recent years.<sup>86</sup> After the 2007 establishment of the ADTEO as lead authority for T&E, and with the T&E Principals' Forum to foster consistency of approach, Defence has now developed an overarching policy on T&E in the form of the DCDM. This completes a longstanding commitment to the Parliament – albeit after a significant 12-year delay.<sup>87</sup>
- 4.46 However, the Committee is mindful of the Auditor-General's overall conclusion that conduct of T&E was distributed across 12 Defence organisations, placing a premium on the effectiveness of Defence's T&E governance.<sup>88</sup> This decentralised structure increased the risk of an inconsistent approach to T&E.
- 4.47 Defence provided a detailed response at the public hearing to the ANAO recommendation that it should introduce arrangements to provide VCDF and capability managers with enterprise-level advice through integrated T&E policy and procedures, including guidance manuals that are consistent with the DCDM, and improved performance measures. Defence described their proposal for ADTEO to be relocated to the VCDF Group – with the ANAO recommendations having 'informed the process that led to this direction'.<sup>89</sup> ADTEO will provide a 'joint context' through policies, standards, governance and management to ensure a consistent 'whole-of-Defence perspective'.<sup>90</sup> Defence also assured the Committee that capability managers' accountability for consistent T&E will be strengthened through emphasis on the 'joint accountability of the Defence leadership'.<sup>91</sup> In particular, the Committee was pleased to note the confirmation from Mr Kim Gillis, Deputy Secretary, Capability Acquisition and Sustainment Group, Defence, that 'the vice-chief and I, working with the capability managers, are taking a lead on the reform of this, and the one mantra that

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85 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 10.

86 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 1.

87 ANAO Report No. 9, p. 25.

88 Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 1.

89 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

90 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 15.

91 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 16. See also Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 16.

we are pushing is commonality right across Defence'.<sup>92</sup> The Committee is also pleased to note that Defence is strengthening its performance monitoring and reporting at the enterprise-level through establishment of formal reporting arrangements to the VCDF.<sup>93</sup>

4.48 In terms of improving the T&E workforce, the Committee was disappointed to note the ANAO's finding that Defence had made slow progress in implementing the 2012 Senate inquiry recommendations on T&E competency and training, with no whole-of-Defence competency and training needs analysis having been conducted.<sup>94</sup> At the public hearing Defence confirmed that a tender has now been released to contract a training needs analysis and that ADTEO, within VCDF Group, would be accountable for implementation of whole-of-Defence competency and training in this area.<sup>95</sup> Defence further commented that they would monitor the availability of staff training. The Committee is pleased that some actions are now being taken in this area but notes that Defence will also need to take steps to address any competency and training gaps identified before the Committee would consider this ANAO recommendation to be 'closed out'.

4.49 In summary, reforms to T&E competency and training arrangements need to be completed and Defence needs to introduce arrangements to provide a more coordinated, whole-of-Defence T&E governance through enterprise-level advice to senior leaders, integrated T&E policy and procedures, and improved performance measures. The Committee notes the significant reforms underway within Defence to establish a stronger 'strategic centre', as part of the First Principles Review process which is scheduled to be completed by approximately April 2017. It also notes that Defence is addressing the ANAO recommendations as part of these reforms.<sup>96</sup> Defence – understandably – therefore made references to proposed restructures and future actions as a result of the review that are 'still preapproval through the department, let alone government'.<sup>97</sup> Against this background and in the context of the sometimes slow progress by Defence in implementing past audit and review recommendations, the Committee is of the view that Defence should report back to the JCPAA on implementation of a range of T&E matters

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92 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 16.

93 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

94 ANAO Report No. 9, p. 9. See ANAO Report No. 30 (2001-02).

95 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

96 ANAO Report No. 9, p. 11.

97 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9.

with regard to the ANAO recommendations and First Principles Review reforms.

## **Recommendation 5**

- 4.50 **To promote continued improvement in test and evaluation (T&E) of major equipment acquisitions by the Department of Defence, the Committee recommends that the department report back to the Committee at 12 months from the tabling of the Committee’s report, on:**
- **how T&E is being coordinated across the department and how this coordination is consistent with the recommended outcomes of the First Principles Review: Creating One Defence (2015)**
  - **key improvements to T&E performance monitoring and reporting**
  - **each element of the Australian National Audit Office recommendation on T&E competency and training, including the key findings of and actions from the competency and training needs analysis**
- 4.51 In terms of improved management of acquisition risks, with reference to the ANAO’s case study on Australia’s new LHD, HMAS *Canberra*, the Committee notes the Auditor-General’s finding that key management decisions were usefully informed by T&E, which identified numerous defects and deficiencies for resolution.<sup>98</sup> However, Defence decided, on balance, to accept HMAS *Canberra* on the understanding that the deficiencies would be addressed during the ship’s operational phase.<sup>99</sup> The Auditor-General concluded that the Chief of Navy had therefore accepted greater risks than would have been the case had System Acceptance been based on more complete objective quality evidence of compliance with contracted specifications, and had Initial Materiel Release been based on less qualified findings by Defence’s regulators concerning compliance with technical, operational and safety management system requirements.<sup>100</sup>
- 4.52 The Committee was pleased to note Defence’s confirmation – in response to the ANAO recommendation that it ensure material defects are documented and remediation plans established prior to System Acceptance – that this area is being strengthened under the First Principles

98 Mr Hehir, ANAO, ‘Opening statement by Auditor-General’, *Submission 3.2*, p. 2.

99 Mr Hehir, ANAO, ‘Opening statement by Auditor-General’, *Submission 3.2*, p. 2.

100 Mr Hehir, ANAO, ‘Opening statement by Auditor-General’, *Submission 3.2*, p. 2.

Review, and that Defence is 'gathering evidence of compliance with these policies and procedures to close off this recommendation'.<sup>101</sup> Defence emphasised its comprehensive view of the complexity of risks involved – that T&E is 'one part of a numerous armoury of tools' used to make a decision for the Chief of Navy'<sup>102</sup> – but acknowledged it had 'learnt the lessons of preview T&E' and that the 'ANAO audit ... hit the key issues for Navy around what we would like to see better done if we had our time again'.<sup>103</sup>

4.53 Overall, the Committee appreciated the confirmation of accountability for this matter by Mr Kim Gillis, Deputy Secretary, Capability Acquisition and Sustainment Group, Defence: 'I signed that contract on behalf of the Commonwealth, so I take the accountability and responsibility for that signature in 2007. I have read this audit report, and I take note that we should have done this in ship 1 and in ship 2 ... I take that accountability, and I have taken on that lesson'.<sup>104</sup>

4.54 In summary, while acceptance of the LHD, HMAS *Canberra*, was not ideal,<sup>105</sup> the Committee notes that risks appear to have been satisfactorily managed by Navy and that HMAS *Canberra* has been successfully deployed.<sup>106</sup> However, this example illustrates that Defence requires improved T&E to avoid the need for later, possibly heightened, risk management. A more coordinated whole-of-Defence approach to T&E has now commenced but is still a work in progress – hence the Committee's recommendation above.

**The Hon Ian Macfarlane MP**

**Chair**

**Date: 3 May 2016**

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101 Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 9. See also on this point, Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, p. 11.

102 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, p. 11. See also Air Vice Marshal Hupfeld, Defence, *Committee Hansard*, 3 March 2016, p. 10.

103 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, p. 11.

104 Mr Gillis, Defence, *Committee Hansard*, 3 March 2016, p. 12.

105 The Auditor-General noted that, as operational T&E is still underway and is not due for completion until the fourth quarter of 2017, 'it remains to be seen what impact, if any, this elevated risk has on the achievement of Final Operational Capability', Mr Hehir, ANAO, 'Opening statement by Auditor-General', *Submission 3.2*, p. 2.

106 Commodore Hughes, Defence, *Committee Hansard*, 3 March 2016, p. 14.

