

Trial of remote electronic voting for Australian Defence Force personnel serving overseas

Evaluation approach

- 3.1 Prior to the 2007 federal election, Australian Defence Force (ADF) personnel serving overseas primarily utilised postal voting services in order to cast their votes. In some limited cases, defence force personnel took advantage of pre-poll facilities provided by the Australian Electoral Commission (AEC) in major overseas centres or those that were established in operational areas to take pre-poll votes.
- 3.2 The 2007 trial of remote electronic voting allowed pre-registered ADF personnel in four selected areas of operation to cast a vote using a computer terminal.
- 3.3 The committee's consideration of the success of the trial and its future implementation hinges on several issues:
 - Does the remote electronic voting system provide a greater opportunity for selected ADF personnel serving overseas to cast a valid and timely vote?
 - Did the remote electronic voting system, which used the Department of Defence's secure 'Defence Restricted Network' (DRN) satisfy the technical expectations of electoral officials and the confidence of electors?
 - Did the provision of remote electronic voting services impede the operation of defence force personnel, and, if so, are there means of

reducing the operational impact of providing personnel with the opportunity to cast a valid and timely vote?

- 3.4 The committee's evaluation of the trial relies heavily on material prepared by the AEC, including the AEC's own review and an evaluation undertaken by a consultant. In addition to this material, the committee has drawn on information provided by the Department of Defence (Defence) and the AEC in evidence to the 2007 election inquiry.

Background

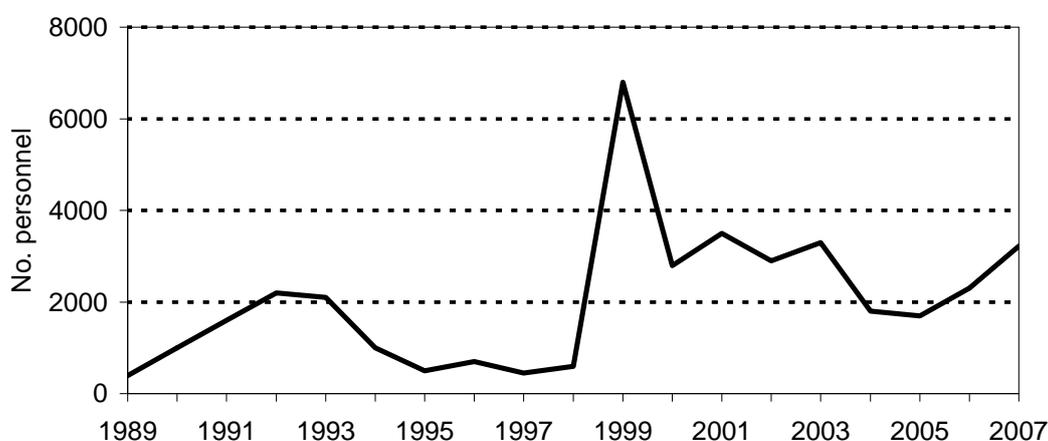
- 3.5 While voting is compulsory for electors residing in Australia, electors who are outside of Australia on election day are not penalised if they do not vote.¹ Nevertheless, it is important that defence force personnel serving overseas be given the maximum possible opportunity to vote.
- 3.6 The number and location of ADF personnel serving overseas and the areas of operation can vary from year to year (figure 3.1). At the time of the federal election in November 2007, there were around 3,500 personnel serving in a number of overseas locations including Iraq (1,575), Afghanistan (970), Timor-Leste (780) and the Solomon Islands (140).²
- 3.7 Prior to the trial, postal voting had been the main method by which defence force personnel serving overseas cast votes, although some limited pre-poll voting services have been provided at times – in 2001 mobile polling was undertaken in Timor-Leste where 1975 pre poll and postal votes were cast, although some of these votes may have been cast by other Australian Citizens at the consulate.³

1 *Commonwealth Electoral Act 1918*, s 245(4).

2 Parliamentary Library, 'Briefing book for the 42nd parliament, Current Australian Defence Force Deployments', viewed on 6 January at <http://www.aph.gov.au/library/pubs/BriefingBook42p/09DefenceSecurityandTerrorism/CurrentADFDdeployments.htm>.

3 Australian Electoral Commission, *The 2001 Election Report* (2002), Appendix B: List of Overseas Posts and Votes Issued, Behind the Scenes, CD Rom.

Figure 3.1 Indicative numbers of Australian Defence Force personnel deployed 1989–2007



Source *Australian Strategic Policy Institute, Special Report Issue 5 - The final straw: Are our defence forces overstretched? (2007), p 2.*

3.8 The *Commonwealth Electoral Act 1918* imposes deadlines for the delivery and receipt of postal ballots which the AEC and Defence headquarters need to take into consideration in the handling of postal voting applications and voting packs:

- Applications for postal votes – Postal vote applications (PVAs) may not be made until after the issue of the writ for the election or the public announcement of the proposed date for the polling, whichever is the earlier. The deadline for receipt of PVAs by the AEC is 6pm on the Thursday that is 2 days before polling day.⁴ At the 2007 election, the AEC accepted scanned postal voting applications delivered electronically for the first time.
- Following the 2004 election, the *Commonwealth Electoral Act* was amended to allow defence force personnel serving overseas to become registered General Postal Voters (GPVs).⁵
- Postal voting packs are distributed to GPVs and to those other electors who's PVAs are on hand at the AEC commencing on the Monday following the close of nominations for the election. Postal voting packs are generally distributed from the AEC's contracted central mail house to Defence as a matter of priority. From Defence, mail is sorted and sent through the internal Defence mail system at the first opportunity to each area of operation. Depending on the area of operation, mail may

4 *Commonwealth Electoral Act 1918*, s 184.

5 *Commonwealth Electoral Act 1918*, s 184A(2)(h).

again be re-sorted to be distributed to personnel within the particular area of operation.

- Postal voting envelopes containing completed ballot papers need to be received by the relevant Divisional Returning Officer within 13 days after the close of the polls.⁶ This 13 day timeframe is immutable under the Act and Divisional Returning Officers must exclude postal votes if they are not received in the divisional office within that time.
- Generally, completed postal votes are sent back from areas of operation (which may involve movement and collection within an area of operation) to Defence in Australia via the Defence internal mail network. The timeliness of these movements may be subject to operational requirements within the areas of operation. Defence in Australia then lodges those postal votes into the Australia Post network where they are posted to respective divisional offices.

3.9 As noted in chapter 2, the 2007 election trial of remote electronic voting for selected ADF personnel serving overseas was a recommendation of the then Joint Standing Committee on Electoral Matters' review of the 2004 federal election.

3.10 In coming to its recommendation that a trial of remote electronic voting be undertaken for overseas Australian Defence Force and Australian Federal Police (AFP) personnel and for Australians living in the Antarctic, the committee noted that postal voting is sometimes not a realistic option for these electors.⁷

3.11 The government response indicated its support for a remote electronic voting trial for defence force personnel, subject to satisfactory resolution by the AEC and the Department of Defence of systems and associated security issues. However, the inclusion of AFP personnel and Australians living in the Antarctic was not supported as part of the initial trial.⁸

3.12 An important change to the Commonwealth Electoral Act was made in 2007 to allow ADF and AFP personnel to be enrolled as General Postal Voters.⁹ This issue was raised with the committee by the Department of

6 *Commonwealth Electoral Act 1918*, s 228(5A).

7 Joint Standing Committee on Electoral Matters, *The 2004 election: Report of the inquiry into the conduct of the 2004 federal election and matters related thereto* (2005), p 270.

8 Australian Government, 'Government Response to the Report of the Joint Standing Committee on Electoral Matters, The 2004 Federal Election; Report of the Inquiry into the Conduct of the 2004 Federal Election and Matters Related Thereto', p 20, viewed on 3 November 2008 at www.aph.gov.au/house/committee/em/elect04/Report/govres.pdf.

9 Australian Electoral Commission, submission 169, Annex 3, p 34.

Defence as a way of overcoming delays in the issue and return of Postal Voting Applications.¹⁰

- 3.13 As noted in chapter 2, remote electronic voting is a feature in several countries. However, it is usually confined to sub-national jurisdictions such as state or local government elections and in most cases is conducted on a trial basis.
- 3.14 The only country that has utilised remote electronic voting for national elections is Estonia.¹¹ The committee is also aware of the development by the US Department of Defence of an Internet-based electronic voting system to facilitate remote electronic voting for US military personnel serving overseas and US citizens residing overseas for the 2004 presidential election. That system ('SERVE') was subsequently shelved following concerns over system security.¹²

Overview of the trial

- 3.15 The 2007 election trial of remote electronic voting for ADF personnel serving overseas was limited to those who had access to the Defence Restricted Network (DRN) and who would be serving in Afghanistan, Iraq, Timor-Leste and the Solomon Islands at the time of the election.¹³
- 3.16 The trial specifically excluded naval ships on overseas deployment due to bandwidth and connectivity constraints.¹⁴
- 3.17 The DRN is a secure Department of Defence intranet site which is accessible remotely by Australian Defence Force personnel. Voting was not available on the world wide web.
- 3.18 The limited time available to develop the remote voting system resulted in the use of an abbreviated procurement process involving three selected service providers with experience in developing electronic voting systems. Some of the requirements for the system specified by the AEC included:

10 Department of Defence, submission 132 to the 2004 election inquiry, p 4.

11 Estonian National Electoral Committee, 'Internet voting in Estonia', viewed on 7 January 2009 at http://www.vvk.ee/english/Internet_Voting_in_Estonia.pdf.

12 Jefferson D, Rubin A, Simons B and Wagner D, *A security analysis of the Secure Electronic Registration and Voting Experiment (SERVE)* (2004).

13 Australian Electoral Commission, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel* (2008), p 4.

14 Australian Electoral Commission, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel* (2008), p 4.

- A system to allow for the specific requirements of the Australian federal electoral system, that is, a voting system that allows for full preferential voting for the House of Representatives, proportional representation for the Senate, and caters for a referendum if necessary;
- Modification of any offered system to ensure compatibility with the Department of Defence's secure intranet;
- The voting application to reside on stand-alone servers in AEC's data centre, and be connected with the DRN via the Intra-government Communications Network. The connection was to include hardware encryption; and
- Printing of completed ballot papers from data stored in servers located on AEC premises in Canberra with Senate votes loaded directly into the AEC's Central Senate Scrutiny System.¹⁵

3.19 The preferred contractor, Registries Limited, was formally awarded the contract on 3 April 2007. Everyone Counts was a major subcontractor to Registries and was responsible for providing the voting software.¹⁶ The voting system, 'eLect', has been used by Everyone Counts to conduct internet-based elections for organisations and political parties.

3.20 The voting system was audited by a contractor accredited with the National Association of Testing Authorities. The contractor was asked to ensure that the voting system met the following criteria:

- resistant to malicious tampering by users;
- resistant to malicious tampering by external parties;
- free from malicious source code;
- presents an accurate representation of votes cast in the printed record without gain or loss; and
- does not allow the association of a voter with the vote cast.¹⁷

15 Australian Electoral Commission, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel* (2008), p 34.

16 Australian Electoral Commission, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel* (2008), p 34.

17 BMM Australia, *Audit and certification of a remote electronic voting system for overseas Australian Defence Force personnel* (2007), p 1.

- 3.21 The audit contractor made the following findings and certified that the voting system complied with the specified criteria:
- that the eLect system implementation includes features that provide the level of security required by the AEC;
 - that the eLect system has been tested with due diligence;
 - there is no evidence of malicious source code in the eLect system;
 - there were no errors detected in tests for security, accuracy and compliance of the system; and
 - that risks identified in this report have been avoided or minimised to a level that would allow the eLect system to comply with AEC requirements regarding security, accuracy and voting functionality.¹⁸
- 3.22 Internal and external communication by the Department of Defence was primarily relied on to inform potential users about the opportunity to cast a remote electronic vote. Approaches by Defence included:
- provision of information during force preparation training prior to deployment;
 - warning order from Defence Headquarters in early August 2007;
 - support order from the Chief of Joint Operations, Defence Headquarters in early October 2007;
 - provision of information to Commanding Officers to provide to their troops in September 2007;
 - video conferencing with the Commanding Officers in the areas of operation, which included participation of staff from the AEC's Electronic Voting Section; and
 - information posted on the Defence intranet.¹⁹
- 3.23 Information about the remote electronic voting trial was also available on the AEC's website and an AEC officer visited Solomon Islands and Timor-Leste in September and October 2007 to raise awareness about the trial.²⁰

18 BMM Australia, *Audit and certification of a remote electronic voting system for overseas Australian Defence Force personnel* (2007), p 1.

19 Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report* (2008), p 27.

20 Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report* (2008), p 27.

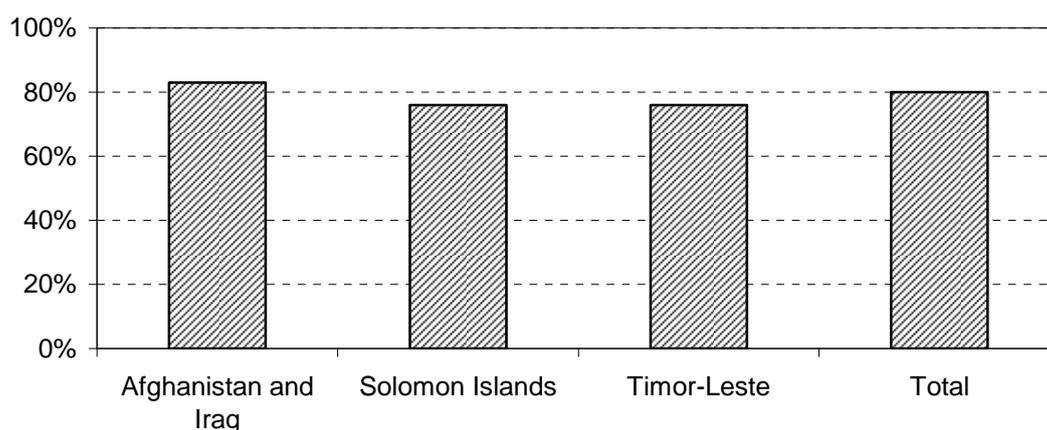
- 3.24 Eligible personnel were required to register prior to the election. The registration process involved a number of steps:
- within the AEC the enrolment was checked. If the applicant was enrolled they were then registered as a general postal voter and remote electronic voter within the AEC's election management system;
 - the registered general postal voter then received an acknowledgement letter informing them of their status;
 - the AEC produced a PIN mailer for each new applicant. The PIN was used to authenticate an elector's identity as part of the voting process. The mailing of PINs via the Defence internal postal system commenced on 9 October 2007 and the last mail out occurred via that system on 2 November 2007; and
 - the PIN mailer comprised a letter with a security panel which, when peeled off, revealed the voter's PIN. The letter also contained instructions to the voter and a 'How to cast your vote' pamphlet.²¹
- 3.25 A full paper-based contingency process involving the distribution of postal votes to all Defence personnel registered as General Postal Voters was also put in place to provide all registered personnel with the opportunity to cast a postal ballot if required. Some of the reasons for this contingency included:
- should unforeseen issues arise with the software or connectivity during the election timetable;
 - the amount of time it takes to get mail to the Middle East area of operations;
 - concerns that voters should not suddenly find themselves in a situation where they were relying on being close to a computer to vote; and
 - remote electronic voting no longer being an option due to the voter's own or unforeseen circumstances.²²

21 Australian Electoral Commission, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel* (2008), p 17.

22 Australian Electoral Commission, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel* (2008), p 17.

3.26 In all, 2,012 personnel registered to participate in the trial, representing 80 per cent of those eligible. Of these, 1,511 personnel cast their votes electronically.²³ The proportion of registered eligible personnel was similar across each of the areas of deployment covered by the trial (figure 3.2).

Figure 3.2 Remote electronic voting registrants as a proportion of ADF personnel deployed, by area of operation (per cent)



Source Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report (2008)*, p 20.

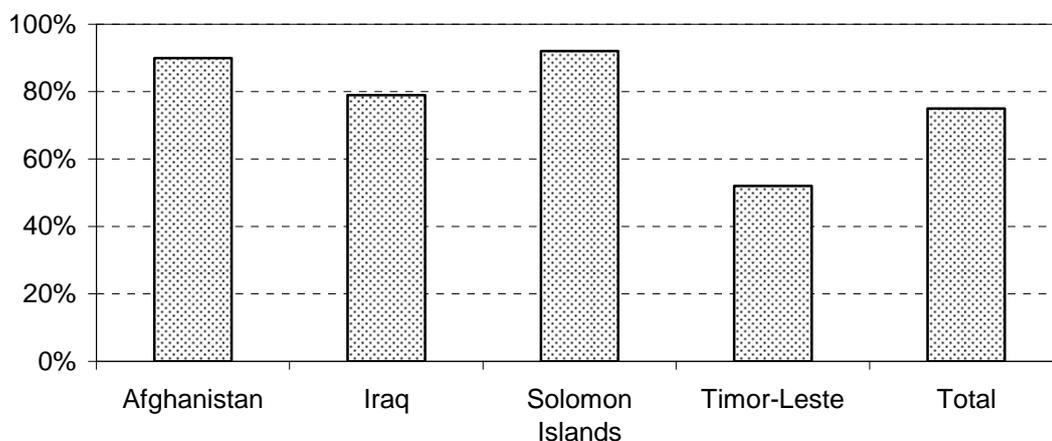
3.27 Around 50 per cent of defence personnel participating in the trial nominated 'force preparation training' and 'information from commanding officer' as the means by which they learned about the trial. The evaluation report noted the importance of force preparation training and of direct communication, although the relative importance of these means of communication varied across operational areas, with 'warning order' and 'operational order' being more prominent in the Solomon Islands than other locations.²⁴

3.28 The proportion of registered voters that cast their vote electronically varied significantly across the areas of deployment covered by the trial, with 90 per cent of registered voters in Afghanistan and the Solomon Islands casting their vote electronically compared to 52 per cent in Timor-Leste (figure 3.3).

23 Australian Electoral Commission, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel* (2008), p 5.

24 Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report* (2008), p 29.

Figure 3.3 Remote electronic voters as a proportion of registrants (per cent)



Source *Sheridan and Associates, Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report (2008), p 23.*

3.29 Based on responses from participants in the trial, the main reason provided for not voting electronically in Timor-Leste was that operational requirements prevented access to the DRN to allow voting. A secondary reason was a preference not to vote electronically. The evaluation report notes that:

This preference may have been to do with the lack of availability of terminals to vote in private leading to a sense of frustration, as illustrated by the following comment made by one respondent from Timor-Leste: "There were only two terminals for over 300 soldiers. This is ridiculous. I deserve complete anonymity like every other Australian."²⁵

3.30 The total cost of the remote electronic voting trial to the AEC and Defence was \$1,750,915 (table 3.1). Defence received no additional resources for the conduct of the trial, with existing resources reprioritised.²⁶

25 *Sheridan and Associates, Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report (2008), p 24.*

26 *Australian Electoral Commission, Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel (2008), p 22.*

Table 3.1 2007 federal election remote electronic voting trial estimated costs

Cost component	Cost
Australian Electoral Commission	\$786,915
Salary	\$245,375
Operating expenses	\$375,754
Capital	\$165,786
Special items (included above)	
Total contractor costs	\$479,186
Audit	\$59,801
Defence	\$964,000
Salary	\$582,000 (a)
Operating expenses	\$382,000

Note (a) Salary costs include direct salary comprising annual salary, allowances and accrued expenses (superannuation and accrued leave). Salary costs for ADF members also include indirect salary. Figure excludes fixed overheads. Unit Costs used in calculations are sourced from Defence Financial Manual (4). Calculations are based upon the estimated days worked by Defence resources for the trial for the period covering project commencement to end of January 2008.

Source Australian Electoral Commission, Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel (2008), p 22.

3.31 Based on the estimated project costs and the number of votes cast, the average cost per vote was \$1,159. When only the AEC's costs are taken into account the average cost per vote falls to \$521.²⁷ Had all 2,500 eligible participants cast their vote electronically average costs would have been around \$700 per vote. This compares to an average cost per elector of \$8.36 at the 2007 federal election.²⁸

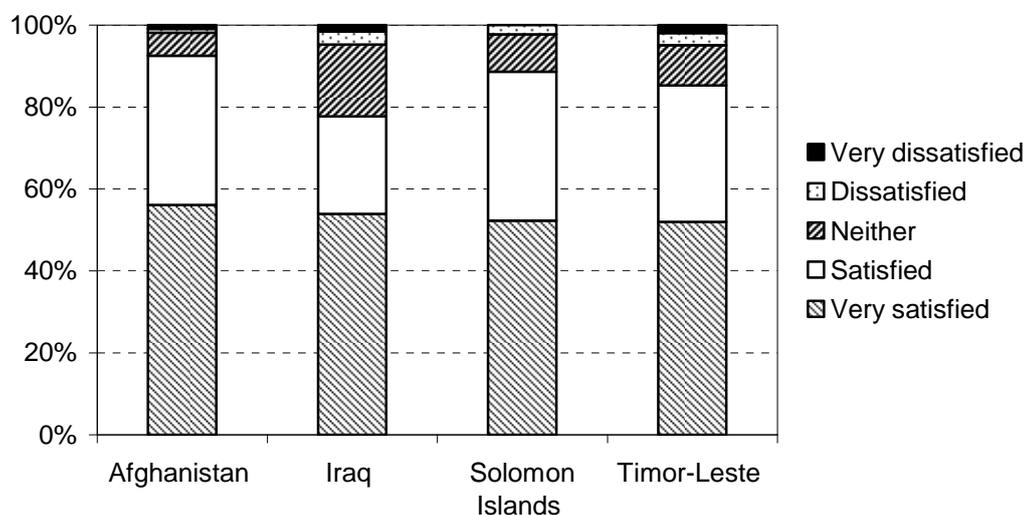
3.32 The contractor's evaluation of the trial highlighted the very high level of satisfaction with remote electronic voting among those who participated in the trial. Overall, 86 per cent of respondents to the evaluation survey were *very satisfied* or *satisfied* with the use of electronic voting machines. Those in Iraq had significantly lower levels of satisfaction compared to other locations (figure 3.4). This was attributed to a lack of information about candidates and parties and a lower level of knowledge regarding remote electronic voting.²⁹

27 Australian Electoral Commission, Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel (2008), p 22.

28 Australian Electoral Commission, Electoral Pocketbook 2007, p 73.

29 Sheridan and Associates, Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report (2008), p 31.

Figure 3.4 Satisfaction with levels of service that remote electronic voting provided, by location (per cent)



Source Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report (2008)*, p 31.

3.33 When asked whether they would consider using electronic voting were it to be available at the next federal election or referendum, 95 per cent of survey respondents indicated that they would do so.³⁰

The future of remote electronic voting for Australian Defence Force personnel serving overseas

3.34 The success of the trial can be demonstrated in a number of ways including the technical operation of the voting system over the DRN, the high level of acceptance by personnel casting their votes and the significantly higher number of overseas defence force personnel who are known to have voted at the 2007 federal election compared to previous elections.

3.35 These successes need to be balanced against concerns over the potential impact of remote electronic voting in operational areas, the cost of the trial and concerns over security and transparency.

30 Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report (2008)*, p 56.

- 3.36 Both the AEC and Defence considered the remote electronic voting trial to be an overall success. The AEC considered that:

The trial demonstrated that remote electronic voting for personnel deployed overseas provided a convenient, reliable and secure method of voting in a federal election with voter feedback indicating a high level of satisfaction with the level of service provided by remote electronic voting.³¹

- 3.37 Defence shared this but noted the significant challenges in delivering the trial:

Defence considers the trial to be a significant achievement given the tight implementation schedule and the complexity of conducting the trial in a military operational environment with long and sometimes difficult lines of communication. The trial demonstrated that remote electronic voting for personnel deployed overseas can provide a convenient, reliable and secure method of voting in a federal election. Individual voter feedback also indicated a high level of satisfaction with the level of service provided by remote electronic voting.

Technical challenges in hosting electronic voting on the defence restricted network were experienced initially, which placed the trial at risk. Some very innovative work by members of Defence Information Group produced an excellent technical solution that worked well and enabled the trial to be conducted successfully.³²

- 3.38 In its initial submission to the committee, the AEC supported continuation of the remote electronic voting for ADF personnel serving overseas, and stated that eligibility should be extended to include members of the AFP serving overseas, remotely posted AusAid or Department of Foreign Affairs and Trade staff and Antarctic electors.³³ To gain some perspective on the potential numbers of such an extension, in early 2007 there were around 375 AFP personnel deployed overseas and around 200 staff are based in the Antarctic during the summer period, falling to around 80 staff in winter.³⁴

31 Australian Electoral Commission, submission 169, p 60.

32 Needham A, Department of Defence, transcript, 17 October 2008, pp 43-44.

33 Australian Electoral Commission, submission 169, p 60.

34 Australian Federal Police, 'The Senate Standing Committee on Foreign Affairs, Defence and Trade: Inquiry into Australia's involvement in peacekeeping operations: The Australian Federal Police submission March 2007' viewed on 20 January 2009 at http://www.afp.gov.au/__data/assets/pdf_file/37608/MAR_-_Senate_Inquiry_into_peacekeeping_-_Submission_doc_-_29_Mar.pdf; Department of the

3.39 The AEC told the committee that it had undertaken preliminary discussions with the Australian Antarctic Division on their communication network with the Antarctic bases, which have an 'in-confidence' rating on their network.³⁵ Although this network was acknowledged by the AEC to be not as secure as the DRN, the AEC nevertheless considered that:

Secure electronic voting for Australian Antarctic personnel is technically achievable. However, more detailed investigation would need to be undertaken to determine suitability of the network for electronic voting, and which would also involve working with the successful e-voting application contractor. For the Defence Trial of electronic voting PINs were issued by mail. An alternate means of delivery would need to be implemented to cater for Antarctic electors.³⁶

3.40 While no other inquiry participants commented directly on continuing remote electronic arrangements for ADF personnel serving overseas at future elections, there was support for an expansion of this facility to other groups or the general community via the internet.³⁷

Operational impact

3.41 It is clear that there was an additional burden on the AEC and Defence to develop the remote electronic voting system and ensure that the system runs smoothly. There is also some additional work for the AEC at divisional office level to follow up on voter registration to confirm that an elector's details are accurate.³⁸ Although 'back office' administrative burdens are relevant, the key issue for the committee is whether remote electronic voting places a significant additional burden on defence personnel in operational areas.

Environment, Water, Heritage and the Arts Australian Antarctic Division, 'People in Antarctica', viewed on 20 January 2008 at <http://www.aad.gov.au/default.asp?casid=6236>.

35 Australian Electoral Commission, submission 169.6, p 9.

36 Australian Electoral Commission, submission 169.6, p 10.

37 Software Improvements, submission 138, p 1; Southern Cross Group, submission 158, pp 45-46; Registries and Everyone Counts, submission 160, p 3; Blind Citizens Australia, submission 81, p 4.

38 Australian Electoral Commission, *Report into Remote Electronic Voting at the 2007 Federal Election for Overseas Australian Defence Force Personnel* (2008), p 25.

- 3.42 Feedback from Defence on the workloads experienced by their operational headquarters in Australia and in areas of operation noted the considerable extra effort that was required as part of the trial:

This reliance upon paper based mechanisms to support electronic voting had unintended impacts and caused a significant workload for people in operational headquarters in Australia and in the areas of operation. The main tasks involved were to confirm registration of deployed ADF members for the trial and to ensure the distribution of envelopes containing PINs in the areas of operation. The need for redundant processes via GPV ballots in the event of technical failure further increased the administrative workload on taskforce personnel. The paper-based registration systems for electronic voting and for the GPV had similar administrative requirements for voter registration and the distribution of enabling information to the voter by mail. That said, it is recognised that the distribution of postal votes in areas of operation would have been a normal federal election requirement.

... Defence views the joint electronic voting trial with the AEC as a success. The trial proved that an electronic voting capability can be provided. A key lesson was that the reliance on paper based mechanisms can create an unintentional additional administrative workload in the operational environment.³⁹

- 3.43 While the electronic delivery of PINs was suggested by the evaluation contractor as a means of reducing reliance on paper, it is not clear that the postal voting contingency can be done away with for several reasons. These include the potential for the DRN to be unavailable for operational reasons, deployed personnel not being able to attend facilities to connect to the DRN and technical failures with on-site equipment.

- 3.44 Defence acknowledged that their preference was to utilise a voting system that minimised the administrative burdens on personnel in operational areas:

My preference, or Defence's preference, would be, I expect, for the greatest efficiency in the areas of operation, because we do not want to burden our people in the areas of operation with extra administrative tasks that distract them from the tasks at hand that they are there for. That is why I would state that preference.

39 Needham A, Department of Defence, transcript, 17 October 2008, p 44.

... I think refining GPV would make it more efficient than last time. The aspirational goal that you could probably reach is having electronic voting that needed no paper-based administration. I guess that was the aspirational goal you could aim at. The problem is whether that is actually achievable.⁴⁰

- 3.45 It is clear that the feedback from Defence indicates that an electronic voting system which also requires a full paper-based contingency imposes additional administrative requirements on operational areas.

Turnout

- 3.46 In addition to the technical success of the trial, the contractor's evaluation pointed to the associated higher turnout on the part of Defence force personnel in 2007 compared to the 2004 election.⁴¹
- 3.47 At the 2007 federal election, of a potential pool of around 2,500 participants eligible to utilise remote electronic voting and around 3,500 personnel deployed overseas, 1,740 votes were cast (1,511 electronically, 212 postal vote and 17 using another type of vote). It is unknown whether votes were cast by 488 personnel eligible to vote using remote electronic voting or whether the 969 who were not eligible to cast their vote electronically voted.⁴²
- 3.48 At the 2004 election, the contractor's evaluation noted that there were 472 postal voting applications from around 1,361 ADF personnel who may have been deployed at the time of the election. Of these, 219 postal votes were received and 92 pre-poll votes issued to those who had registered for a postal vote. It is unknown how, or whether, the remaining 889 overseas deployed personnel voted.⁴³
- 3.49 While the 'known' number of defence force personnel serving overseas who cast a vote at the 2007 election appears significantly higher than in 2004, strict comparisons between turnout at the last two federal elections are affected by differences in place in 2007:
- More than double the number of personnel were deployed in 2007 than in 2004;
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40 Needham A, Department of Defence, transcript, 17 October 2008, p 53.

41 Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report* (2008), p 26.

42 Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report* (2008), p 26.

43 Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report* (2008), p 25.

- Allowing defence force personnel serving overseas to register as GPs increased the overall likelihood that postal voting materials could be sent to electors and that they would be received back in Australia in time to be included in the count; and
 - A higher level of general awareness of the election and the voting opportunities existed in 2007 due to the preparations and communications about the remote electronic voting trial.
- 3.50 Given that it is not possible to conduct an ‘apples with apples’ comparison, the committee considers that in terms of turnout, the benefits of the trial can be overstated. While the conduct of the trial undoubtedly increased awareness of the election, it is difficult to determine what the turnout would have been using paper-based voting systems in the absence of the remote electronic voting option. Even so, the opportunity for defence personnel serving overseas will always be subject to the operational needs within the area of deployment at the time of the election.
- 3.51 With many of the costs associated with the trial fixed, the level of turnout directly affects the average costs per vote. As previously highlighted, the average cost for the 1,511 personnel who voted electronically was \$1,159 and had all 2,500 eligible participants cast their vote electronically average costs would have been around \$700 per vote. This compares to an average cost per elector of \$8.36 at the 2007 federal election.⁴⁴ Given the uncertainty over both the number and location of future deployments of ADF personnel overseas, it is difficult to determine the average cost if remote electronic voting for overseas ADF personnel was implemented generally.

Security and transparency

- 3.52 The restricted nature of the trial and the use of the DRN rather than another Defence network or the internet was seen by the AEC as creating a secure environment for remote electronic voting.⁴⁵
- 3.53 In chapter 3, the committee noted general concerns with remote electronic voting overseas which have, in the opinion of the Computing Research and Education Association Australasia, raised uncertainty over the adoption or expansion of remote electronic voting in a number of countries.⁴⁶

44 Australian Electoral Commission, *Electoral Pocketbook 2007*, p 73.

45 Australian Electoral Commission, submission 169, p 59.

46 Computing Research and Education Association Australasia, submission 116.2, p 3.

- 3.54 While ADF personnel using remote electronic voting were able to check that their vote had been cast as intended, the Computing Research and Education Association Australasia, pointed out that this does not necessarily mean that the vote actually printed on to the ballot paper reflected the vote cast. Contrasting the verification process with postal voting, the Association considered that using the DRN for the trial did not necessarily overcome security and transparency issues:

Running the system on the DRN does not automatically solve these issues. It certainly does not solve the issue of transparency and accountability, namely providing evidence that the votes printed out by the system genuinely reflect the intentions of the voters. It is inappropriate for the legislation to treat these printouts as equivalent to real ballots – they are not, because there is a gap between the voter and the printout in which a malicious hacker, an accidental program error or a hardware fault could produce an incorrect result. There is no evidence of vote privacy that is nearly as convincing as the postal voter’s chance to put their own vote in their double envelope.⁴⁷

- 3.55 Although high confidence levels were expressed by ADF personnel in the value of the vote checking service, survey responses by one user did reveal some possible distrust in the system, with the respondent noting that ‘if the system was flawed, the check would be too’.⁴⁸

- 3.56 The Computing Research and Education Association Australasia also noted some concerns with the audit report of the eLect system and considered that a number of comments in the report are ‘particularly unclear’.⁴⁹ The Association noted that:

The most disturbing aspect of this report is that it makes no mention of having inspected the source code for security vulnerabilities. Instead the source code evaluation focused on detecting deliberately malicious code within the source itself. Although this is important, it is far more likely that the designers and programmers accidentally left security holes that could be exploited by an external hacker. Such vulnerabilities would not be obvious from even quite extensive testing (though such testing is also important), because they would be extremely subtle. It is vitally important for experts to inspect the source code and

47 Computing Research and Education Association Australasia, submission 116.2, p 3.

48 Sheridan and Associates, *Evaluation of the remote electronic voting trial for overseas based ADF personnel electors at the 2007 Federal Election: Final evaluation report* (2008), p 39.

49 Computing Research and Education Association Australasia, submission 116.1, pp 5–6.

evaluate the design, and thus form an argument about why the system is secure. Designing and evaluating secure software is notoriously difficult. Even under considerable expert scrutiny, some vulnerabilities may still slip past unnoticed. ... That the audit report does not even mention attempting this kind of analysis is very unfortunate. Their comment that the system was “designed, written and documented in a manner that could broadly be described as industry standard” is not encouraging.⁵⁰

3.57 The issue of vote verification with remote electronic voting systems was acknowledged by the Computing Research and Education Association Australasia as virtually impossible to achieve.⁵¹ Given this limitation, the Association considered that a range of alternative options should be considered:

We understand that there is a large group of voters who are, most unfortunately, disenfranchised by communications problems. We agree that it is important to address their needs, but don't believe that remote electronic voting is justified before the security and accountability problems are solved.

We suggest considering alternative ways of using the communications infrastructure of the Internet (or the DRN) without necessarily trusting it. Some possibilities worth considering are:

- Perhaps ballot materials could be delivered via the electronic network, then printed out by voters and mailed to the AEC as postal ballots. Of course, this introduces its own security issues, particularly the oversupply of ballot papers, which are otherwise very carefully controlled.
- Perhaps the DRN could be used to establish a variant of mobile polling stations in which the computer running the voting application was placed in a proper ballot box and supplied with a printer. The votes could be sent back to the AEC over the network as they were in the recent trial, but afterwards the paper trail could be produced and mailed in a batch for verification.

We are not advocating either of these strongly, simply pointing out that there may be ways to use the communication advantages of an electronic network while preserving security and

50 Computing Research and Education Association Australasia, submission 116.1, pp 5–6.

51 Teague V, Computing Research and Education Association Australasia, transcript, 12 August 2008, p 58.

accountability. A similar proposal is included in the SERVE security report.⁵²

- 3.58 While the committee is confident that the remote electronic voting system hosted by the DRN used for the trial operated securely and effectively, it should be acknowledged that such a remote electronic voting system is not able to provide as transparent a process as alternatives such as postal voting.
- 3.59 That said, there may be delays associated with the delivery of mail into and out of operational areas. Defence told the committee that the time period for the delivery of mail from Australia varies across operational areas, with weather delaying mail in some cases by two to three days and sometimes up to a week and that unserviceable aircraft could also lead to delays. There was a 'very small risk' that delays could be as long as 15 days.⁵³
- 3.60 Any proposals to extend the system to networks other than the DRN (including the internet) will need to clearly demonstrate that the system is reliable and secure and be able to be confidently relied on by the community.

Committee conclusion

- 3.61 The committee appreciates the work of the Department of Defence and the Australian Electoral Commission on conducting the remote electronic voting trial.
- 3.62 While a higher number of votes were known to have been cast by defence force personnel serving overseas at the 2007 federal election, not all of the increase can be solely attributed to the remote electronic voting trial.
- 3.63 It is unlikely that any single voting system will guarantee that defence force personnel serving overseas will be able to cast a vote and have that vote included in the count.
- 3.64 This suggests that multiple systems should be deployed to maximise voting opportunities. However, the committee considers that while the objective should always be to give ADF personnel the maximum available opportunity to vote, the chief concern should be that the voting system imposes the least possible burden on personnel in operational areas.

52 Computing Research and Education Association Australasia, submission 116.2, p 4.

53 Robinson G, Department of Defence, transcript, 17 October 2008, p 49.

- 3.65 Remote electronic voting may increase the likelihood that a vote cast by personnel serving overseas will be included in the count by avoiding some of the logistical delays that can be associated with the movement of paper-based postal voting systems in areas of operation.
- 3.66 While remote electronic voting without a paper backup would impose a lesser burden on operational areas than the system trialled at the 2007 election, the committee considers that risks remain that personnel may not have the opportunity to cast their vote remotely for operational reasons. Therefore, a paper-based backup would continue to be a required feature of any remote electronic voting model. As a result, in the committee's view, any remote electronic voting model will bring with it an increased impact on operational areas because of the technical facilities required to support remote electronic voting and the requirement to move increased amounts of paper based mail into and around operational areas.
- 3.67 The average cost per vote cast for the remote electronic voting trial, at \$1,159 per vote, is significantly higher than the average cost per elector of \$8.36 at the 2007 federal election. While an average of 2,200 ADF personnel have been deployed overseas in recent federal election years, this can change significantly between elections. For example, only 600 ADF personnel were deployed overseas in 1998 but by 2001 there were 3,300 ADF personnel overseas, most of whom were in East Timor.
- 3.68 Given the uncertainty over both the number and location of future overseas deployments of ADF personnel, the committee considers that the additional costs associated with electronic voting are not warranted, particularly if overseas deployments do not rise significantly from the current level of around 3,000 personnel across 12 areas of operation.
- 3.69 Under a purely paper-based system, the impact of operations on the likelihood of personnel being able to complete their vote is lower, as personnel have more opportunity to complete their vote without relying on the availability of terminals and a connection to the DRN. However, paper-based postal voting systems will continue to be subject to the potential risks associated with delays in the delivery and return of mail from operational areas.
- 3.70 The committee considers that, on balance, a solely paper-based system is more reliable, and imposes fewer burdens on ADF personnel in operational areas, than a system based on remote electronic voting which inevitably requires a paper-based backup.

- 3.71 The committee therefore considers that remote electronic voting for ADF personnel serving overseas should be discontinued and there should be a renewed focus on making paper-based systems more efficient than they currently are.

Recommendation 1

- 3.72 **Given the additional burden imposed by remote electronic voting with its paper-based backup systems on defence force personnel in operational areas and the relatively high average cost of voting at \$1,159 per vote compared to an average cost per elector of \$8.36 at the 2007 federal election, the committee recommends that remote electronic voting for defence force personnel should not be continued at future federal elections.**
- 3.73 The committee has examined a number of different approaches to improving paper-based voting systems for ADF personnel in the following section. In the committee's view these appear to offer more reliable opportunities for overseas defence personnel to cast their votes and have them included in the count than a remote electronic voting model with paper-based contingency arrangements.

Alternative voting arrangements for Australian Defence Force personnel serving overseas

- 3.74 Given Defence's preference to move away from a remote electronic voting model with the additional workloads required to ensure contingency arrangements and the committee's belief that a paper-based system imposes less of a burden in operational areas, the committee explored with Defence and the AEC a number of alternative models that could be used.
- 3.75 In considering the proposed arrangements, it is important to re-state that the objective is to find a solution that both maximises voting opportunities for ADF personnel overseas and at the same time imposes the least possible burden in operational areas.

- 3.76 While the solution may require considerable additional effort on the part of the AEC and Defence headquarters in Australia, such an outcome is preferable to one that imposes lower costs overall but has a greater impact in areas of operation.
- 3.77 There are two main models examined by the committee involving:
- Postal voting only but with streamlining of general postal voting arrangements and delivery and receipt of postal votes; and
 - An 'Assistant Returning Officer' model with the AEC appointing ADF personnel to take pre-poll votes and facilitate the distribution of postal votes in areas of operation as required.

Streamlining postal voting arrangements

- 3.78 It is recognised that a paper-based postal voting system is currently subject to a number of constraints that may lead to personnel not being able to cast a vote or those postal votes not being included in the count as a result of delays in returning mail to AEC divisional offices within the deadlines provided for in the Commonwealth Electoral Act. However, during discussions with Defence and the AEC it became apparent that there are a number of opportunities to further streamline the postal voting system for defence personnel to both maximise voting opportunities and increase the likelihood that a vote can be included in the count.

General postal voter registration

- 3.79 As previously discussed, prior to the 2007 election the Commonwealth Electoral Act was amended to allow defence force personnel serving overseas to become general postal voters.
- 3.80 Being registered as a general postal voter is more likely to ensure that a postal voting pack will be dispatched by the AEC at the earliest opportunity, usually on the Monday following the close of nominations.
- 3.81 If ADF personnel have not registered as general postal voters, they may apply for a postal vote using normal means, which could include downloading a Postal Vote Application (PVA) from the AEC's website, filling in and signing the form and posting (or emailing the scanned and signed form) to the AEC. If this method is utilised from an area of operation, the timelines for moving postal vote applications back to Australia may mean that postal voting packs are not able to be dispatched at the earliest opportunity, thereby reducing the time available for a vote to be cast and returned.

- 3.82 One possible method of streamlining postal voting arrangements is for the Commonwealth Electoral Act to be amended to provide for 'automatic' registration of personnel serving overseas as general postal voters. This would require some collaboration between Defence and the AEC to identify the relevant enrolled electors and their area of operation mailing address. This could be done on a regular basis in the lead up to an election or possibly as soon as an election is called.

Meeting deadlines for the return of postal votes

- 3.83 As previously noted, the Commonwealth Electoral Act imposes a deadline of 13 days after polling day for the receipt of postal votes by the relevant Divisional Returning Officer.
- 3.84 There are several opportunities to improve the likelihood that postal votes from overseas defence personnel are included in the count which would require amendments to the Commonwealth Electoral Act and changed administrative arrangements including:
- lengthening the period of time for accepting postal votes beyond the current 13 days, for overseas defence personnel only, to provide additional time for postal ballots to be received. Such an option, however, might result in delays in declaring polls in close seats where the number of postal votes outstanding might affect the result in a division;
 - facilitating changed postal voting processing arrangements that may allow for conducting preliminary scrutines of postal votes offshore in major overseas centres, thereby eliminating the requirement for transport to Australia before being subject to preliminary scrutiny and eligible votes being included in the count; and
 - electronic delivery of ballot papers to personnel using the DRN but with returned votes coming back to divisional returning officers for inclusion in the count via the postal voting system.⁵⁴

54 Computing Research and Education Association Australasia, submission 116.2, p 4.

Assistant returning officer model

3.85 The 'Assistant Returning Officer' (ARO) model is largely based on existing systems used by the AEC to conduct polling in more than 100 overseas posts.⁵⁵ The AEC supported the use of the ARO model and noted that this is similar to that used in Timor-Leste in the 2001 federal election.⁵⁶

3.86 In consultation with Defence, the AEC outlined some of the key features of such a model:

- Assistant returning officers are not provided by the AEC, but comprise personnel trained using a distance education package in how to conduct overseas and/or mobile polling;
- All non-critical polling equipment is dispatched in advance of the election so that only ballot papers are dispatched at election time.
- For Defence, ballot papers would also be posted on the Defence intranet for use by AROs prior to the receipt of printed ballot papers. AROs would need to undertake some assembly of downloaded Senate papers given their size;
- In consultation with the AEC and Defence, AROs may issue pre-poll votes at static locations or conduct mobile polling in smaller out-posted camps (not always achievable due to force protection requirements);
- AROs would typically have 24/7 telephone support from the AEC (although telephone access may not be guaranteed in more remote areas of operation);
- Defence personnel would vote without the need to apply for a postal vote, general postal vote or remote electronic vote;
- Application for registration as a general postal voter, and postal voting, would remain available to all Defence personnel in case they are not in the service area of an ARO;
- At the conclusion of polling, ballot boxes would be returned to the AEC via a secure pre-agreed process with Defence. This may include an ARO escorting ballot papers back to Australia from several issuing areas within that country; and
- Defence would need to supply dedicated staff to manage each overseas post within each area of operation.⁵⁷

55 Australian Electoral Commission, submission 169.11, p 5.

56 Australian Electoral Commission, submission 169.11, p 1.

57 Australian Electoral Commission, submission 169.11, p 5.

3.87 Defence outlined the possible advantages and disadvantages of the ARO model, relative to the postal voting only and remote electronic voting models. Possible advantages included:

- Personnel have more options as to how to cast their vote in an area of operation;
- Dedicated defence personnel appointed as AROs would have responsibility for the project;
- Ships could be serviced by mobile polling meeting the ship at port (subject to operational priorities);
- Department of Foreign Affairs and Trade overseas posts could supplement the voting service in some countries;
- AROs could plan their three week polling timetable well in advance of the election so that all transport and accommodation is made available to the overseas defence voting team in order to access the majority of personnel in that area of operation; and
- It would be significantly cheaper than remote electronic voting.⁵⁸

3.88 Disadvantages highlighted by Defence were:

- Difficulties with materials/equipment in the pre-election period reaching areas of operation and being retained in readiness for the election in sometimes adverse conditions;
- Difficulties for AROs in printing sufficient ballot papers from the Defence intranet if the AEC printed ballot papers are delayed arriving in the areas of operation;
- Operational needs may prevent personnel from attending to vote or for the AROs conducting mobile polling;
- Defence would need to provide staff at their own cost as the AEC is unable to supply civilians in areas of operation; and
- There may be an additional demand on operational air assets to provide transport to the overseas defence voting team.⁵⁹

3.89 The committee notes that such a voting system is likely to be undertaken without the presence of scrutineers, thereby possibly reducing the transparency of the voting process compared to pre-poll voting in Australia where polling is undertaken in the presence of scrutineers.

58 Australian Electoral Commission, submission 169.11, p 5.

59 Australian Electoral Commission, submission 169.11, p 5.

Committee conclusion

- 3.90 The committee considers that in addition to minimising impacts on operational areas, it is important that voting systems for defence force personnel deployed overseas provide flexibility both within and across areas of operation so that voting opportunities are maximised.
- 3.91 The ARO model proposed and supported by Defence and the AEC appears to provide for maximising voting opportunities at the same time as increasing the likelihood that votes are returned in time to be included in the count.
- 3.92 The committee recognises that there may be a reduction in transparency in this model through the absence of scrutineers at the time of voting. However, this is largely offset by the provision of more reliable voting services.
- 3.93 Such a model also gets the necessary 'buy in' by Defence into the voting process. While voting will always be subject to operational requirements, it is important that voting receives sufficient attention and priority from Defence to ensure that systems are in place to facilitate voting wherever possible.
- 3.94 The electronic voting trial demonstrated that a high turnout could be achieved where awareness about voting opportunities was well publicised and where dedicated resources were directed to making this happen. It is important that the AEC and Defence build on the cooperation that has developed as a result of this experience so that, whatever model is put in place at future elections, there remains a strong commitment to facilitate voting for our overseas defence force personnel.
- 3.95 The committee considers that the ARO model proposed by the AEC and Defence as their preferred model for voting by overseas ADF personnel, is the most appropriate and should be used at the next federal election. While there may be a significant amount of detail to be resolved the model builds on existing systems used by the AEC to support voting overseas.
- 3.96 Implementation of the ARO model will require some changes to the *Commonwealth Electoral Act 1918*. These include allowing for the appointment of assistant returning officers, arrangements to facilitate the return and counting of votes and streamlining of postal voting processes for areas of operation where the ARO model is not appropriate. It is important that maximum flexibility is provided in the Act to allow Defence and the AEC to provide voting services in the many different circumstances that are experienced in areas of operation.

Recommendation 2

3.97 Given the support of the Department of Defence and the Australian Electoral Commission for the 'Assistant Returning Officer' (ARO) model that is likely to increase the probability that defence force personnel serving overseas can cast a vote and have it included in the count, the committee recommends that the *Commonwealth Electoral Act 1918* be amended to facilitate the implementation of the ARO model for voting by selected Australian Defence Force personnel serving overseas. The model should have the following features:

- AROs may be appointed to issue pre-poll votes from static locations and provide mobile pre-poll facilities to smaller out posted camps in areas of operations;
- AROs may be appointed to issue pre-poll or postal votes to electors who are serving on naval ships on overseas deployment where this service is suitable and appropriate;
- AROs may be appointed to receive postal vote applications and issue postal votes to electors within operational areas and may receive completed postal votes from electors in order to facilitate their prompt return to the relevant DRO;
- Registration as General Postal Voter to remain available to all Australian Defence Force personnel serving overseas, in case they are not in the service area of an ARO; and
- Streamlined postal voting procedures should be implemented for those areas of operation where the ARO model will not be utilised.

Recommendation 3

3.98 Given the importance of gaining full commitment by the Department of Defence to the implementation of the 'Assistant Returning Officer' model, the committee recommends that the Department of Defence ensure that an officer at a suitable level of rank be appointed to oversee electoral operations and to ensure those operations are conducted and resourced effectively.

