The Parliament of the Commonwealth of Australia

Report on the 2007 federal election electronic voting trials

Interim report of the inquiry into the conduct of the 2007 election and matters related thereto

Joint Standing Committee on Electoral Matters

March 2009
Canberra

Chair's Foreword

One feature of the 2007 election was the conduct of two electronic voting trials; the first a trial of electronically assisted voting for blind and vision impaired electors; and the other, a trial of remote electronic voting for selected Australian Defence Force (ADF) personnel serving overseas.

The trials had their origins in recommendations that the Joint Standing Committee on Electoral Matters of the 41st parliament made in its review of the 2004 election.

The Australian Electoral Commission (AEC) and its partners, including the Department of Defence and non-government organisations representing or providing services to people who are blind or have low vision, should be recognised for their work in delivering the trials. The committee acknowledges that there was a sustained effort over a relatively short period to develop solutions to a number of technical, logistical, administrative and legislative issues.

The combined costs of the trials was over $4 million, with an average cost per vote cast of $2,597 for the trial of electronically assisted voting for blind and low vision electors and $1,159 for the remote electronic voting trial for selected defence force personnel serving overseas. This compares to an average cost per elector at the 2007 election of $8.36.

The committee has recommended that electronically assisted voting for blind and vision impaired electors and remote electronic voting for Australian Defence Force personnel serving overseas be discontinued due to a combination of the unsustainable costs involved in the delivery of these solutions along with more general concerns about the low level of participation experienced during the trials and the ready availability of suitable alternate solutions.

It is clear to the committee that there is a strong value placed by some electors who are blind or have low vision on the ability to cast an independent and secret vote.

The committee recognises that those who support the continuation of electronically assisted voting will be disappointed in these recommendations. In this respect the committee expresses a degree of regret that it is unable to support

continuation, however, the committee encourages the AEC and relevant advocacy organisations to explore other avenues for providing sustainable solutions to these problems into the future. In the interim, the committee has recommended that electronic magnifiers be deployed at sites where there is likely to be a demand for them.

In respect of remote electronic voting for ADF personnel serving overseas, the committee accepts that electronic voting systems require substantial paper-based backup and that the use of two full systems, one electronic and one paper-based, places an unrealistic burden on the ADF. However, the committee remains concerned to ensure that all ADF personnel are provided with the opportunity to cast votes in federal elections where operational circumstances permit.

The Assistant Returning Officer model under which pre-poll and postal voting arrangements will be facilitated appears to provide a realistic alternative to electronic voting and builds on processes already used effectively in the past. The committee recommends therefore that the ARO model proposed jointly by the AEC and Defence be utilised for future elections and that the legislative changes required to enable its use be made.

The committee notes also that there have been suggestions that remote electronic voting may be used to allay difficulties faced by electors in remote areas of Australia who have been disenfranchised because of delays experienced in the return of postal votes to the AEC. The committee has taken much evidence on this particular aspect of postal voting at the 2007 federal election and possible solutions will be canvassed in the committee's final report into the conduct of the 2007 federal election and related matters.

Daryl Melham MP
Chair

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Chair	Mr Daryl Melham MP	
Deputy Chair	Mr Scott Morrison MP	
Members	Mr Michael Danby MP	Senator Simon Birmingham
	Hon Bruce Scott MP	Senator Bob Brown
	Mr Jon Sullivan MP	Senator Carol Brown
		Senator Steve Hutchins
		Senator the Hon Michael Ronaldson

Committee Secretariat

Secretary	Mr Stephen Boyd
Inquiry Secretary	Mr Kai Swoboda
Technical Advisor	Mr Terry Rushton
Administrative Officers	Ms Renee van der Hoek
	Ms Natasha Petrovic

Terms of reference

On 27 February 2008, the Special Minister of State requested the Committee to conduct an inquiry with the following terms of reference:

> That the Joint Standing Committee on Electoral Matters inquire into and report on the conduct of the 2007 election and matters related thereto.

List of abbreviations

ADF   Australian Defence Force

AEC   Australian Electoral Commission

AFP   Australian Federal Police

ARO   Assistant Returning Officer

DRE   Direct recording electronic [voting machine]

DRN   Defence Restricted Network

EVM   Electronic voting machine

GPV   General Postal Voter

Summary and recommendations

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

The committee appreciates the work of the Department of Defence and the Australian Electoral Commission on conducting the remote electronic voting trial.

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.

That said, the cost of the trial for the 2,500 Australian Defence Force personnel who were eligible to participate in the trial, at $1,159 per vote, is relatively high compared to an average cost per elector of $8.36 at the 2007 federal election. The additional cost associated with electronic voting is not warranted, particularly if overseas deployments do not rise significantly from the current level of around 3,000 personnel across 12 areas of operation.

Further, remote electronic voting imposes a significant additional burden on ADF personnel in operational areas. 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 Defence Restricted Network. However, paper-based postal voting systems will continue to subject to the potential risks associated with delays in the delivery and return of mail from operational areas.

On balance, a solely paper-based system is more reliable, and imposes fewer burdens on Australian Defence Force personnel in operational areas, than a system based on remote electronic voting which inevitably requires a paper-based backup.

Remote electronic voting for Australian Defence Force 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 (paragraph 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.

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.

The Assistant Returning Officer model proposed and supported by the Department of Defence and the Australian Electoral Commission 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.

Such a model also gets the necessary 'buy in' by the 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 the Department of Defence to ensure that systems are in place to facilitate voting wherever possible.

Recommendation 2 (paragraph 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 (paragraph 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.

4 Trial of electronically assisted voting for electors who are blind or have low vision

The strong value placed by some electors who are blind or have low vision on their ability to cast a secret and independent vote is recognised by the committee. The ability to cast secret and independent votes in this way should be facilitated where practicable.

That said, electors who are blind or have low vision are still able to cast a vote at an election with the assistance of a person of their choosing. An assisted vote, whilst not a secret and independent vote, still allows electors who are blind or have low vision to participate in the electoral process.

The current cost of delivering electronically assisted voting for electors who are blind or have low vision, at $2.2 million or $2,597 per vote, compared to an average cost per elector of $8.36 at the 2007 federal election, appears to be unsustainable especially given the low participation in the trial.

Extending eligibility to electors with a print disability appears to provide some opportunity to increase participation in electronically assisted voting. However, it does not appear that this can be done in a way that will drive average costs down to sustainable levels.

Recommendation 4 (paragraph 4.80)

Given the high average cost per vote of $2,597 for electronically assisted voting compared to an average cost per elector of $8.36 at the 2007 federal election and a concern that participation will not increase to sustainable levels, the committee recommends that electronically assisted voting for electors who are blind or have low vision should not be continued at future federal elections.

For some electors who have low vision, casting a secret and independent vote could be achieved using aids such as electronic magnifiers. The committee considers that electors who have low vision may benefit from the provision of such alternate facilities in accessible locations and should be able to do so where practicable.

Recommendation 5 (paragraph 4.83)

Assisted voting provisions in the *Commonwealth Electoral Act 1918* give people who are blind or have low vision the opportunity to seek assistance from a person appointed by them in casting a vote at federal elections and referenda. Electors who have low vision may benefit from the provision of electronic magnifiers. The committee recommends that the government provide sufficient resources to the Australian Electoral Commission for the deployment of electronic magnifiers at sites where there is likely to be demand from electors who have low vision.

1

Introduction

Background

1.1 A joint committee of the parliament, now known as the Joint Standing Committee on Electoral Matters, has examined the conduct of every federal election and related matters for the past 25 years.

1.2 The Joint Standing Committee on Electoral Matters of the 42nd parliament is continuing this practice with its review of the 2007 federal election and related matters.

1.3 A feature of the 2007 election was the conduct of two electronic voting trials:

- Electronically assisted voting for blind and vision impaired electors; and

- Remote electronic voting for selected Australian Defence Force (ADF) personnel serving overseas.

1.4 The trials had their origins in recommendations that the Joint Standing Committee on Electoral Matters of the 41st parliament made in its review of the 2004 election.

1.5 The Australian Electoral Commission (AEC) and its partners, including the Department of Defence and non-government organisations representing or providing services to people who are blind or have low vision, should be recognised for their work in delivering the trials. The committee acknowledges that there was a sustained effort over a relatively short period to develop solutions to a number of technical, logistical, administrative and legislative issues.

Should electronic voting be continued?

1.6   The threshold issue for the consideration by the committee is different for each of the trials:

- For the trial of electronically assisted voting for electors who are blind or have low vision the key issue is whether the improvement in the quality of the franchise, which allowed electors to cast a secret and independent vote, should be continued given the significant cost incurred in providing this service. The committee recognises, however, that it is difficult to place a monetary value on being able to cast a secret ballot — something that most of us take for granted;

- For the trial of remote electronic voting for selected ADF personnel serving overseas the key issue is whether the voting system maximises voting opportunities while at the same time imposing as little a burden as possible in operational areas.

1.7   For electors who are blind or have low vision, a key benefit was the ability to cast a secret and independent vote — an experience normally taken for granted by the majority of Australians.

1.8   For ADF personnel serving overseas, a key benefit was a higher likelihood that a vote would be included in the count by bypassing the possibility of logistical delays involved in alternative forms of voting such as postal voting.

1.9   The combined costs of the trials was over $4 million, with an average cost per vote cast of $2,597 for the trial of electronically assisted voting for blind and low vision electors and $1,159 for the remote electronic voting trial for selected defence force personnel serving overseas.[1]

1.10   This compares to an average cost per elector at the 2007 election of $8.36.[2]

1.11   Beyond the threshold issue for each of the trials, the committee has examined what changes, if any, should be made if these forms of voting were to continue. The committee has also examined a number of alternative and complementary voting methods that should be considered in relation to the trials.

1.12   For the electronically assisted voting trial for people who are blind or have low vision some of the issues that the committee has addressed include:

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1   Australian Electoral Commission, submission 169, pp 60 and 62.

2   Australian Electoral Commission, *Electoral Pocketbook* (2008), p 73.

- Can other groups in the community who also need assistance with voting, such as people with a print disability, also benefit from the voting system used for the trial?

- Are there any other technologies, such as electronic magnifiers, that could also be used to improve the voting experience?

- What improvements, if any, can be made to the voting system to strengthen the integrity of the vote and facilitate greater participation by electors?

1.13 For the remote electronic voting trial for selected ADF personnel serving overseas some of the issues the committee has considered include:

- What is the impact on operational areas of accommodating the necessary technical infrastructure involved in the trial?

- Could the system used for the trial be adapted to provide others, such as Australian Federal Police officers stationed overseas and Australians working in Antarctica, with similar opportunities to vote remotely?

- Can some of the logistical issues involved in delivering alternative forms of voting such as postal voting be overcome by other means?

Conduct of the inquiry

1.14 The inquiry was referred by the Special Minister of State on 27 February 2008. On 12 March 2008, a Senate resolution specified a number of matters that the committee should give particular reference to as part of the inquiry, mainly covering issues related to funding and disclosure.

1.15 The committee advertised for submissions on 30 April 2008 in an advertisement in The Australian newspaper. Public hearings commenced in June 2008.

1.16 Details of the submissions and hearings drawn on for this interim report are listed in appendices A and B respectively. Full copies of the submissions and public hearing transcripts can be found at the committee's website on www.aph.gov.au/em.

1.17 The committee's review of the electronic voting trials has also been informed by the AEC's own reviews of each of the trials and separate reviews of each trial undertaken by a contractor on behalf of the AEC. These reports were incorporated as exhibits to the inquiry and are available on the committee's website.

These reports were incorporated as exhibits to the inquiry and are available on the committee's website.

1.18   The AEC arranged in November 2008 for the committee to have a 'hands on' demonstration of some of the equipment used as part of the electronic voting trials. This demonstration proved invaluable to the committee in understanding, from a user's perspective, how electronically assisted voting and remote electronic voting was conducted.

Report structure

1.19   Chapter 2 provides a general background to electronic voting and examines a number of recent domestic and international developments in electronic voting. This provides contextual information for the committee's evaluation of the two electronic voting trials.

1.20   Chapter 3 reviews the conduct of the remote electronic voting trial for selected ADF personnel serving overseas. The evaluation framework considers whether the trial provided greater opportunities for these personnel to vote than previous federal elections (where voting had been predominantly based on postal voting) and whether remote electronic voting has a greater impact in operational areas. Other elements of the trial, including the security and transparency of the voting system and options for the future are also considered.

1.21   The trial of electronically assisted voting for electors who are blind or have low vision is examined in detail in Chapter 4. The evaluation framework is based around the benefits to electors who are blind or have low vision being able to cast a secret and independent vote and the relative cost of providing this service. Other elements of the trial, including the potential number of electors and options for the future are also examined.

2

Electronic voting

What is electronic voting?

2.1   Electronic voting is a general term used to describe a variety of practices
       and technologies that can facilitate voting, recording and counting. Each
       of these is described below:

       ■ Voting — Any system where the elector casts their vote using an online
          system, such as the internet, touch-tone phone voting using interactive
          voice recognition, mobile telephone SMS text facility, or interactive
          digital television. Once recorded, the elector's vote is despatched in real
          time to a secure electronic vote store, where it is held prior to counting;

       ■ Recording — Any system where the elector casts their vote on a voting
          machine (punch card, push button, touch screen). Once recorded, the
          elector's vote is stored in the machine. After voting has concluded, data
          is transferred from each machine to a counting system; and

       ■ Counting — Any system where votes are loaded into a computerised
          counting system, which then tallies the votes and performs subsequent
          actions required by the particular method of voting being used, such as
          eliminating unsuccessful candidates and distributing their preferences
          or striking quotas and transferring the surpluses of successful
          candidates, thereby determining the successful candidate(s). The
          loading of votes can be undertaken in a variety of forms, such as keying
          ballot papers, scanning ballot papers using optical mark recognition or
          optical character recognition readers, downloading data from voting
          machines, or downloading data from an electronic vote store.[1]

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1   Barry C, Dacey, P, Pickering, T and D Byrne, *Electronic VotingStatus Report 2* (2002), p 3.

2.2   While all of these systems can be collectively referred to as electronic voting, it is important to differentiate between them in discussions of electronic voting experiences in Australia.

Background to 2007 electronic voting trials

2.3   In its 2004 election report, the Joint Standing Committee on Electoral Matters included recommendations for a trial of assisted electronic voting for blind and vision impaired electors and a trial of remote electronic voting for Australian Defence Force (ADF) personnel serving overseas, Australian Federal Police serving overseas and for Australians living in the Antarctic.[2]

2.4   The government response to the committee's report in August 2006 supported the recommendations to establish a trial of assisted electronic voting for blind and vision impaired electors.[3] The government noted that:

> Consultation between the AEC and appropriate organisations is well advanced to allow the AEC to develop appropriate trial arrangements for electronically assisted voting for blind and visually impaired voters to cast a secret printed paper ballot at the next federal election. It is proposed that the trial would be available to eligible electors at 30 pre-poll locations across Australia. The consultations will also inform the AEC's decision on the proposed location of the trial sites and the degree to which the trial could be extended to electors with a print disability.[4]

2.5   While the government also indicated its support for a remote electronic voting trial for selected personnel serving overseas, the scope of the trial was narrowed to exclude Australian Federal Police and people working in the Antarctic:

> The AEC will arrange a trial of remote electronic voting for overseas Australian Defence Force (ADF) personnel, subject to

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2   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), pp 135, 258 and 272.

3   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', pp 15, 19 and 20, viewed on 3 November 2008 at www.aph.gov.au/house/committee/em/elect04/Report/govres.pdf.

4   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 15, viewed on 3 November 2008 at www.aph.gov.au/house/committee/em/elect04/Report/govres.pdf.

satisfactory resolution by the AEC and the Department of Defence of systems and associated security issues. The results of this trial will enable the AEC to inform the development of the broader proposal on remote electronic voting as recommended by the JSCEM. The AEC will keep the Special Minister of State informed on progress and outcomes of the trial and the development of the proposal for the JSCEM.

The Government may consider the extension of remote electronic voting to overseas Australian Federal Police personnel and Australians living in the Antarctic, subject to the outcomes of the ADF trial.[5]

2.6   In addition to the logistical and technical arrangements to support the trials, enabling legislation was required to be drafted and enacted by the parliament. As a precaution against technological solutions not being available within the required timeframe, provisions were included in the Act for the Minister to decide that the voting trials not proceed.[6]

2.7   The bill that became the *Electoral and Referendum Legislation Amendment Act 2007* was introduced in the House of Representatives on 30 November 2006 and was passed by the House on 6 December 2006.

2.8   Upon introduction in the Senate the following day, the bill was referred to the Senate Finance Public Administration Committee. The committee's report, tabled on 20 February 2007, recommended that the Senate pass the bill unamended.[7]

2.9   The bill was passed by the Senate on 26 February 2007 and given royal assent on 15 March 2007.

2.10   Supporting regulations were then developed by the AEC.[8] The AEC noted that due to the complexity and scope of the proposed regulations, the regulations took some time to finalise and that as a consequence of this, the regulations were drafted to commence retrospectively on 1 August 2007.[9]

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5   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

6   *Commonwealth Electoral Act 1918*, ss 202AF and 202AM.

7   Senate Finance Public Administration Committee, *Electoral and Referendum Legislation Amendment Bill 2006* (2007), p 6.

8   Australian Electoral Commission, submission 169, p 58.

9   Australian Electoral Commission, *Report into Electronically Assisted Voting at the 2007 Federal Election for Electors who are Blind or have Low Vision* (2008), p 21.

Electronic voting in Australia and overseas

2.11   Electronic voting, particularly electronically assisted voting for electors who are blind or have low vision, has been provided on a restricted basis for a number of state and territory elections. Only in the ACT is electronically assisted voting offered as a voting alternative to the entire community.

Electronically assisted voting

2.12   Electronically assisted voting, which allows people to complete a ballot paper in private, has been a feature of elections in three states and territories in recent years.

2.13   All voters in the ACT have had the opportunity to vote in a limited number of pre-poll voting facilities in the period leading up to polling day and on polling day at elections in 2001, 2004 and 2008.[10]

2.14   In Victoria, electronically assisted voting for electors who are blind or have low vision was trialled for the first time at the 2006 State election. Limited to six locations operating as pre-poll centres in the lead up to the election and on polling day, 199 votes were cast.[11] A Victorian parliamentary committee review of the state election has supported the continuation of electronic voting trials at future state elections.[12]

2.15   In Tasmania, electronically assisted voting for electors who are blind or have low vision was trialled at the 2007 election for the Legislative Council. Only two electors cast a vote using the system at the one pre-poll centre where the facility was available.[13]

2.16   Electronically assisted voting using a range of technologies and devices is a feature of national, state or local government elections in a number of overseas countries including the United States, France, India, and Canada.[14]

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10   ACT Electoral Commission, 'Electronic voting and counting', viewed on 8 January 2009 at http://www.elections.act.gov.au/elections/electronicvoting.html.

11   Victorian Electoral Commission, *Report to Parliament on the 2006 Victorian State Election* (2007), pp 72–73.

12   Victorian Parliament Electoral Matters Committee, *Inquiry into the conduct of the 2006 Victorian state election and matters related thereto* (2008), p 192.

13   Tasmanian Electoral Commission, *2nd Annual Report 2006-07* (2007), p. 26.

14   ACE Electoral Knowledge Network, 'Countries with e-voting projects', viewed on 10 December 2008 at http://aceproject.org/ace-en/focus/e-voting/countries/.

Remote electronic voting

2.17   Remote electronic voting, whether by telephone, internet or email, is replacing attendance or postal voting for a range of elections in the community including industrial elections and elections for boards of management.

2.18   Apart from the remote electronic voting trial for selected Australian Defence Force personnel serving overseas (examined in chapter 4), there is no remote electronic voting in Australia for state or local government elections. The ACT Electoral Commission has noted that:

> Security concerns and the difficulty of providing electors with unique on-line identifiers are still seen as obstacles that have not yet been overcome. Therefore the Commission continues to hold the view that electronic voting should only be provided in a controlled environment at polling centres.[15]

2.19   Remote electronic voting is a feature of national, state or local government elections in a number of countries including the United Kingdom, Switzerland, France and Estonia.[16]

Where to for electronic voting?

2.20   The committee is mindful of the need to balance the demands for convenient and accessible forms of voting with maintaining trust in the integrity of elections. Experiences and perceptions of electronic voting, both overseas and in response to the 2007 election electronic voting trials, provide important context to assessing the desirability of electronic voting at future federal elections.

2.21   With a range of electronic options now available to vote in competitions and polls (internet, SMS and telephone) and for the election of office bearers in community organisations and corporations (email and internet) it is likely that there will be strong and growing demand for electronic voting in the future.

2.22   While making it clear that they did not endorse any particular voting method and acknowledging that there may be a number of flaws, NSW

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15   ACT Electoral Commission, 'Frequently asked questions – Electronic voting and counting', viewed on 4 December 2008 at http://www.elections.act.gov.au/faqsvoting.html.

16   ACE Electoral Knowledge Network, 'Countries with e-voting projects', viewed on 10 December 2008 at http://aceproject.org/ace-en/focus/e-voting/countries/.

Young Labor told the committee that electronic voting could increase participation by young people in elections:

> We are simply saying that technology has come a long way and, since there is a lack of participation or a reduction in participation by young people in the system, we think we should be looking at things like maybe online voting or SMS voting—taking that technology that is now available to us and looking at ways that we can incorporate that to improve people's participation in the Australian political system.[17]

2.23   Everyone Counts, a provider of electronic voting services, told the committee about the benefits of remote electronic voting to electors, particularly those in remote areas:

> Internet voting is in broad active use and so far has had quite a high success rate, reaching remote voters in perhaps tens of thousands of elections… ranging from popular voting such as for sporting awards right up to binding elections at the national government level in several countries.
>
> … Controversy and reported problems around real internet elections are infrequent. In contrast, calls for remote internet voting in the US press in the lead-up to the 4 November presidential elections are gaining in frequency and sonority. The most appropriate group of remote voters to be given a new electronic channel on which to vote is those voters that postal voting most struggles to reach.[18]

Recent overseas experiences

2.24   In the United States, where the use of electronically assisted voting machines (and voting machines generally) is widespread, there is much discussion and debate about the merits of electronic voting. While most of this discussion focuses on the closeness of the 2000 presidential election and concerns with voting machines at this election, debate has continued in recent years despite the replacement of many of the manual voting machines with electronic voting methods. The Institute of Governmental Studies Library of the University of California summarised the different views in the following way:

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17   Parkin C, NSW Young Labor, transcript, 24 July 2008, p 59.

18   Burton C, Everyone Counts, transcript, 12 August 2008, p 43.

In sum, views about electronic voting fall into two basic camps. On one side are those who put a premium on accessibility and improving political participation. They welcome electronic voting on the grounds that its advantages outweigh security and reliability concerns — which in their view will always plague voting systems to some extent.

On the other side are those who put a premium on security and reliability and the need to maintain voter confidence in the electoral process. In their view, unless electronic voting is backed up with a verfiable record of some kind, the risks are too great — the potential for mishap and mischief looms large.[19]

2.25   It is not difficult to find analyses of electronic voting based on US experiences that appear to strongly support either of these two views.[20] It is easy to be persuaded about the relative merits of each side of these accounts. For example, a supporter of electronic voting in the United States noted that:

Voting fraud can take place with any kind of voting system, including paper ballots. In fact, mechanical voting machines were developed to prevent people from stuffing the ballot box. Electronic machines are even more secure than earlier systems due to sophisticated encryption software and increased physical security of the machines. Although it is true that any computer can be hacked by a dedicated attacker, it is not likely that a hacker would be successful in undermining an entire election. It is more likely that election problems will be the result of untrained poll workers.[21]

2.26   Similarly, it is easy to locate more sceptical views about the security of electronic voting. For example, one author with a background in computer engineering has noted that:

The use of direct-recording electronic (DRE) voting machines makes U.S. elections highly vulnerable to attack at many points during the voting process. Computer experts have already

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19   Staff of the Institute of Governmental Studies Library of the University of California, 'Electronic voting: An overview', *Should the United States move to electronic voting?* (2008), p 13.

20   See for example, Henningfield D (ed), *Should the United States move to electronic voting?* (2008); Alvarez R and Hall E, *Electronic elections: The perils and promises of digital democracy* (2008); National Research Council of the National Academies, *Asking the right questions about electronic voting* (2006).

21   Rash W, 'Electronic voting machines are not likely to be hacked', in Henningfield D (ed), *Should the United States move to electronic voting?* (2008), p 25.

> demonstrated the ways that vote-stealing software could be built into the machines by dishonest programmers or introduced into unattended machines. They have also shown how DREs can be infected with viruses and how the central vote-tallying machines can be attacked. Any group capable of hacking an election and putting themselves into power could maintain that power forever; this is the greatest danger of electronic voting.[22]

2.27   It is possible that solutions to technical security issues will emerge as newer and better technologies become available. A number of non-technical solutions have also been identified as a way of overcoming some of the issues, including the use of auditable paper trails, better training for polling officials and banning wireless components from voting machines.[23]

2.28   The Computing Research and Education Association of Australasia noted that internet voting had been criticised in a number of countries where it had been used:

> Although internet voting is still being used in some small and emerging democracies, and in Switzerland and Estonia, most advanced democracies that have trialled internet voting have abandoned it. The United States' SERVE project, which was specifically for military personnel, was cancelled before deployment on the recommendation of the security experts commissioned to evaluate it. …

> The government of the United Kingdom recently declared that there were no plans to run further trials of internet voting, stating "Serious concerns persist about the security and transparency of e-voting systems and their vulnerability to organised fraud." A French trial of internet voting for overseas French citizens was widely criticised and its future is uncertain.

> The concerns about security and transparency of electronic voting expressed by experts overseas apply in Australia too.[24]

2.29   It is not clear that continued growth of electronic voting is necessarily assured, with the Netherlands, an early adopter of both assisted electronic voting and remote electronic voting, recently announcing that electronic

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22   Stokes J, 'Electronic voting machines can be easily hacked', in Henningfield D (ed), *Should the United States move to electronic voting?* (2008), p 30.

23   Norden L, *The machinery of democracy: Protecting elections in an electronic world* (2007), pp 133–139.

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

voting was to be discontinued as a result of the identification of security problems with voting machines.[25]

Recent Australian experiences

2.30   Similar concerns, and reassurances, about the security and transparency of the 2007 federal election electronic voting trials and the future of electronic voting in Australia were presented to the committee by providers of electronic voting services and others with technical expertise in computer programming and electronic voting. Where relevant, these are discussed in relation to each of the trials in the following chapters.

2.31   A cautious approach to the adoption of electronic voting was supported by Mr Wen:

> Electronic elections certainly have considerable advantages, and there has been a positive response from participants in the electronic voting trials. But there must be more discussion about the trade-offs between the benefits and the risks. If Australia moves to adopt this new technology, we must exercise great care and caution to limit the risk of electoral fraud and avoid compromising the integrity of our elections.[26]

2.32   A more optimistic view of future arrangements was held by Software Improvements, an Australian-based provider of electronic voting services, which provided an insight into potential developments in electronic voting, with the development of an electronic identification system to enable remote electronic voting.[27]

2.33   Another electronic voting services provider, Registries, told the committee about the momentum that was developing for internet voting:

> Other internet-based elections and pilot results contribute to the notion of a tipping point in the uptake of this technology. In February of 2008, EIC provided the online channel for Democrats Abroad. It was the first time in history that US voters living all over the world were able to remote-vote electronically in a Presidential Primary. Adding the online channel alone increased turnout seven-fold. Voters living in 164 countries, including US Antarctic Territory, were able to cast their votes and be counted.

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25   Loeber L, 'E-voting in the Netherlands: From general acceptance to general doubt in two years', presentation to the 3rd International Conference on electronic voting, viewed on 10 December 2008 at www.e-voting.cc/static/evoting/files/Session01_LeontineLoeber.pdf.

26   Wen R, submission 181, p 5.

27   Software Improvements, submission 138, pp 5–23.

> While these voters were given the option of voting by post, by fax, by internet or in person, more than 50% chose to vote online.[28]

2.34   A more tempered view of electronic voting was offered by Computing Research and Education Australasia, which highlighted the trust that the voting public must place in voting systems:

> Australians are rightly accustomed to trusting the AEC to handle paper ballots securely, but this trust follows from the transparency of the process: candidates and voters know that scrutineers representing their interests may be present at all stages of the count. Electronic voting requires much more trust, but in Australia has no scrutineers at all. Not only must the voter trust the programmers, the providers of the computers, and the auditors (none of whom are direct AEC employees) to act in good faith, but they must trust them not to make any serious mistakes. Writing secure software is notoriously difficult, as is checking it.[29]

2.35   While not wanting to downplay these concerns, the relatively small scale of the 2007 federal election electronic voting trials, the use of paper output for the electronically assisted voting trial and the use of a more secure electronic network for the remote electronic voting trial rather than the internet, means that some of the general security concerns applying to electronic voting are less of a factor in the committee's deliberations of the trials. However, the committee is mindful that in assessing proposals to expand electronic voting in Australia, greater attention will need to be paid to addressing security and transparency concerns to build trust in electronic voting systems.

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28   Registries and Everyone Counts, submission 160, p 3.
29   Computing Research and Education Association of Australasia, submission 116, p 2.

3

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]

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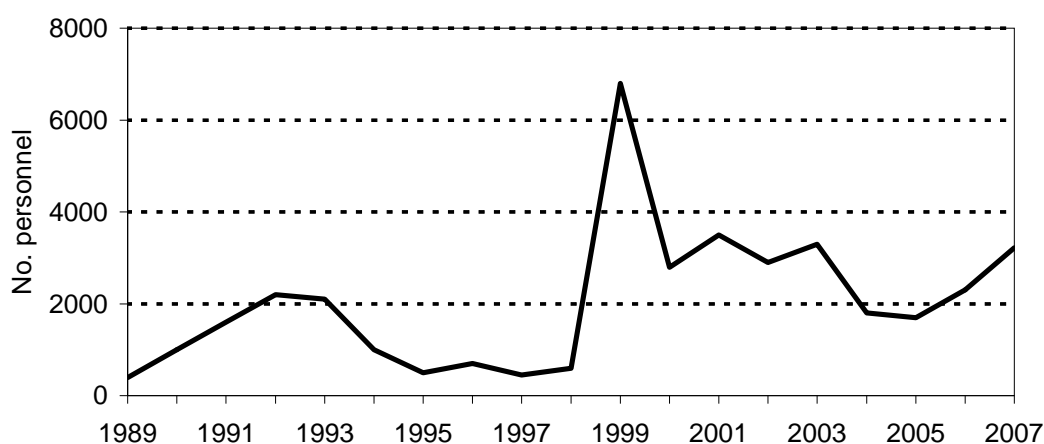
3.8   The *Commonwealth Electoral Act 1918* imposes deadlines for the delivery and receipt of postal ballots which the AEC and Defence headquarters need to take into consideration in the handling of postal voting applications and voting packs:

- 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 mater 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

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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

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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:

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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]

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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]

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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 unforseen 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 unforseen 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)
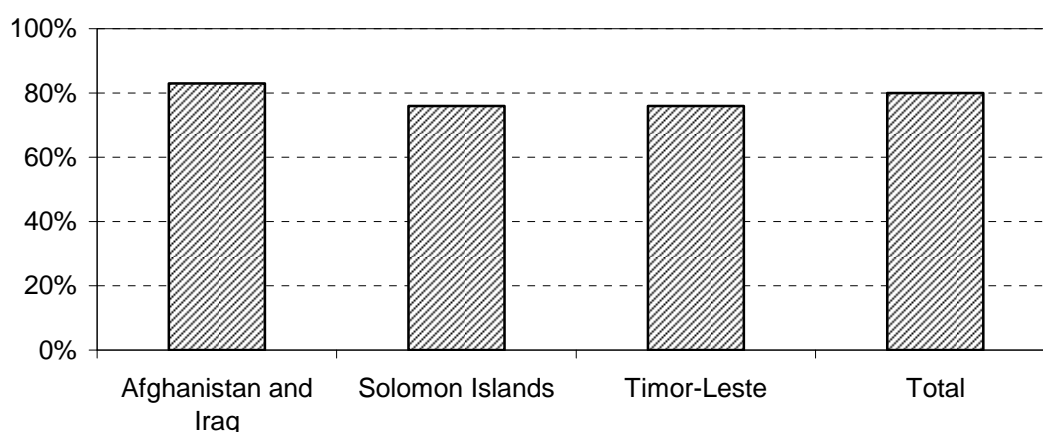
3.27   Around 50 per cent of defence personnel participating in the trial
        nominated 'force preparation training' and 'information from
        commanding officer' as the means by which they learned about the trial.
        The evaluation report noted the importance of force preparation training
        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).

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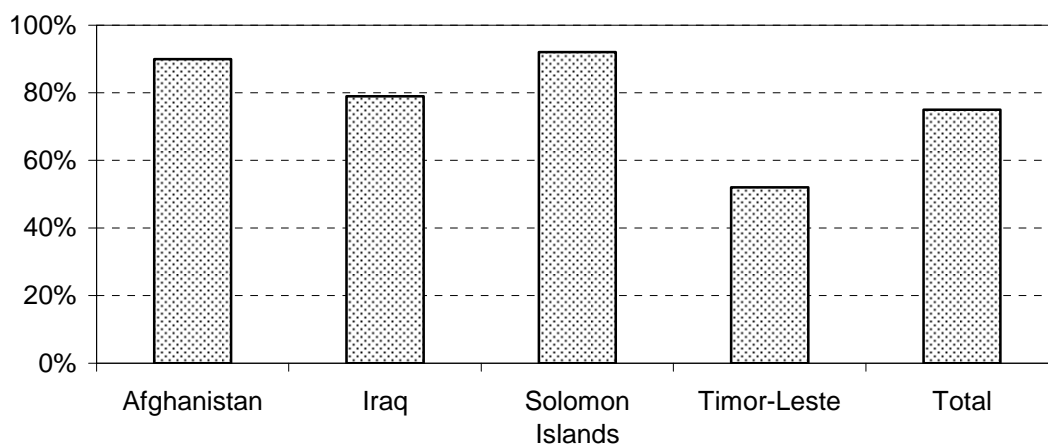
3.29   Based on responses from participants in the trial, the main reason provided for not voting electronically in Timor-Leste was that operational requirements prevented access to the DRN to allow voting. A secondary reason was a preference not to vote electronically. The evaluation report notes that:

> 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]

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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]

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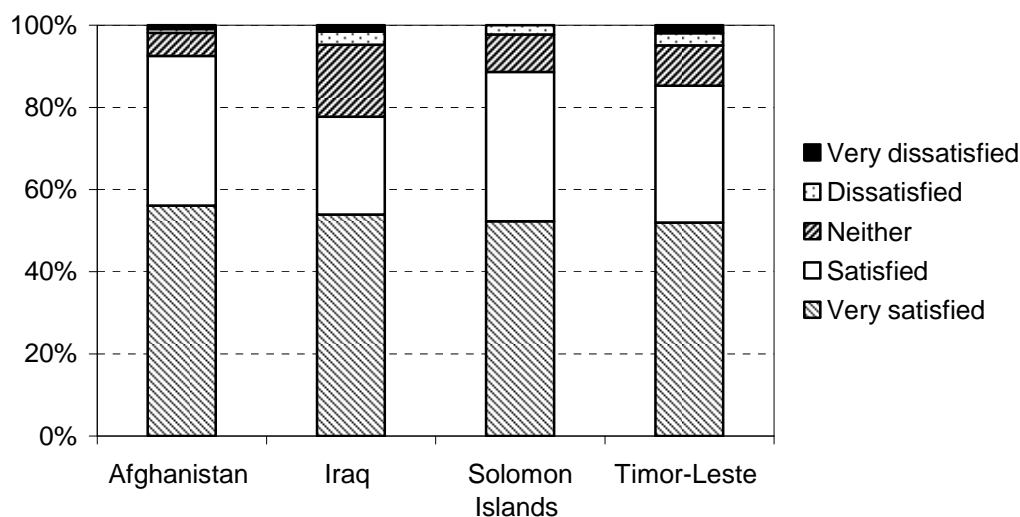
3.33   When asked whether they would consider using electronic voting were it
        to be available at the next federal election or referendum, 95 per cent of
        survey respondents indicted that they would do so.[30]

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.

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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]

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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 Anarctic 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.

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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 GPVs 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]

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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

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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

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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.

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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 scrutinies 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]

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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]

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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.

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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.**

4

Trial of electronically assisted voting for electors who are blind or have low vision

Evaluation approach

4.1   Prior to the 2007 federal election trial of electronically assisted voting, some electors who are blind or had low vision were only able to vote at federal elections by having another person assist them to complete their ballot papers. While this enabled these electors to participate in elections, it meant that their votes were not secret and independent.

4.2   As noted in chapter 1, the threshold issue for the committee is whether the improvement in the quality of the franchise for electors who are blind or have low vision who, by using electronically assisted voting were able to cast a secret and independent vote, should be continued given the significant cost incurred in providing this service.

4.3   The committee has also looked at a number of broader considerations including:

- the number of people who participated, or who might have otherwise benefited from the technology adopted for the trial;
- the usability of the voting system and its possible use by others;
- alternative voting systems; and
- planning and consultation by the Australian Electoral Commission (AEC).

4.4   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 contractor on behalf of the AEC. In addition to this material, the committee has drawn on submissions to the 2007 election inquiry and experiences in other jurisdictions.

Background

Number of electors who are blind or have low vision

4.5   How many blind or low vision electors require assistance in casting their vote? There are a number of sources of information that put the number of electors who are blind or have low vision at around 160,000.

4.6   Vision Australia has noted estimates in 2002 of approximately 3.5 million Australians who have difficulty accessing standard printed material for a variety of reasons. Of these, 193,300 people were blind or had low vision.[1] Another estimate quoted by the Fred Hollows Foundation puts this figure at 293,000 Australians who are blind or have low vision.[2]

4.7   A 2003 survey by the Australian Bureau of Statistics estimated that there were 22,600 people in Australia with total loss of sight and 261,800 people who had a partial loss of sight. People aged 65 years or over make up almost two-thirds of those with a total or partial loss of sight.[3]

4.8   Another data source included in the contractor's evaluation report of the trial put the number of potential electors who are blind or have low vision at around 158,000.[4]

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1   Vision Australia, 'Financial literacy, banking and identity conference, 25-26 October 2006, RMIT University', viewed on 17 November 2008 at http://www.visionaustralia.org.au/docs/services/RMIT%20FINANCIAL%20LITERACY%20 ETC%20CONF%20PAPER.doc

2   The Fred Hollows Foundation, 'Blindness statistics information sheet', viewed on 17 November 2008 at http://www.hollows.org.au/Assets/Files/info_sheet_blindness_statistics.pdf.

3   Australian Bureau of Statistics, *Disability, Ageing and Carers: Disability and Long Term Health Conditions* (2003), Tables 1 to 11, cat no 4430.0.55.001, viewed on 17 November 2008 at http://www.ausstats.abs.gov.au/ausstats/subscriber.nsf/0/CA2568A90021A807CA256F3B00 761DA5/$File/4430055001_oct2004.xls (table 4).

4   Sheridan and Associates, *Evaluation of the electronic voting trial for blind and sight impaired electors at the 2007 federal election: Final evaluation report* (2008), p 27.

4.9   While it is clear that estimates of the potential number of electors who are blind or have low vision and who may benefit from electronically assisted voting vary, there is strong evidence that with the Australian population ageing, increasing numbers of electors will be affected by age-related vision loss.[5]

4.10   It is important to recognise that not all electors who are blind or have low vision would utilise electronically assisted voting facilities should they be provided at future elections. It has been noted that many electors who are blind or have low vision are comfortable with the range of options already available to them including casting an assisted vote at a pre-poll centre or ordinary polling booth, or, for those with limited vision, completing postal votes using electronic magnifiers in their own homes or in other locations.[6]

Electronically assisted voting in other Australian jurisdictions

4.11   Prior to the 2007 federal election, electronically assisted voting for electors who were blind or had low vision had been possible at selected pre-poll voting centres for ACT elections in 2001 and 2004 and at special 'e-centres' for the Victorian state election in 2006. An assisted voting system has also recently been developed in Tasmania and was provided for use at a single location in a recent election. The systems used in each of these jurisdictions differ and they are all different to the system trialled at the 2007 federal election.

Australian Capital Territory

4.12   The ACT's system ('eVacs'), uses standard personal computers as voting terminals, with voters using a barcode to authenticate their votes. Voting terminals are linked to a server in each polling location using a secure local area network. eVacs is not restricted to voters who are blind or vision impaired — it may be used by any voter wishing to do so.[7]

4.13   Prior to voting a polling official marks the elector's name on the roll in the normal way and issues a card containing a barcode for the relevant electorate. To activate the system, the barcode is swiped through a reader,

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5   Vision 2020 Australia, *2006-07 Annual Report* (2007), p 11.

6   Frost T, Royal Society for the Blind of South Australia, transcript, 20 August 2008, p 43.

7   ACT Electoral Commission, 'Electronic voting and counting', viewed on 4 December at www.elections.act.gov.au/elections/electronicvoting.html.

which then causes the ballot paper for the electorate to be displayed on the computer screen.[8]

4.14   Electors voting electronically sit in a normal cardboard polling booth and face a horizontally mounted computer monitor. Electors are directed by the monitor, or by audio instructions via headphones (in their choice of 12 different languages), and make their selections through a standard numerical keypad. If an elector makes a mistake in numbering the ballot paper that would result in an informal vote, a notice is given, and the elector can choose either to continue or go back and make the required corrections to the ballot paper. Once an elector is satisfied with their vote, they are asked to swipe the barcode again to register their vote. Once the barcode is swiped for the second time the vote cannot be changed. The barcode card is then placed in a ballot box on the way out of the polling place.[9]

4.15   Votes are recorded electronically with no paper output. Votes are later downloaded and included in the count.[10]

4.16   Assisted electronic voting has been available at three elections (2001, 2004 and 2008) in the ACT. The system is used in five pre-poll voting centres, which are open for 3 weeks before polling day and on election day as ordinary polling places. At the 2004 election more than 28,000 votes were cast electronically.[11]

Victoria

4.17   The Victorian system uses non-networked computers which allow users to receive instructions via a computer touch screen or by audio instructions (in English only), via headphones.

4.18   Prior to voting, eligible electors wishing to vote electronically are directed to an electronic issuing point where their enrolment details are checked and then they are issued with a smartcard ('electorate card') that contains the elector's district and any accessibility options that the elector has selected (eg: font size, font colour and volume).

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8   ACT Electoral Commission, 'Frequently asked questions – electronic voting and counting', viewed on 16 January 2009 at http://www.elections.act.gov.au/faqsvoting.html.

9   ACT Electoral Commission, 'Frequently asked questions – electronic voting and counting', viewed on 16 January 2009 at http://www.elections.act.gov.au/faqsvoting.html.

10   ACT Electoral Commission, 'Electronic voting and counting', viewed on 4 December at www.elections.act.gov.au/elections/electronicvoting.html.

11   ACT Electoral Commission, *ACT Legislative Assembly Election 2004 Electronic Voting and Counting System Review* (2005), p 1.

4.19   Selections are made via the touch screen or by a standard keypad with important keys identified with raised plastic 'bumps'. Electors may cast an informal vote but are given a warning and a further opportunity to revise selections before a vote is finalised.

4.20   After an elector completes their vote they return their electorate cards to election officials, who wipe and re-encode them for the next elector. Preferences are stored in the voting kiosks and then sent to the Victorian Electoral Commission's head office where the files are loaded onto one computer, the ballot papers are printed, sorted and distributed to counting centres.

4.21   Electronically assisted voting for vision impaired electors was trialled for the first time at the 2006 Victorian state election and was limited to six locations operating as pre-poll centres in Melbourne and selected regional centres and also on polling day, with 199 votes cast.[12]

4.22   Electronically assisted voting for electors who are blind or have low vision will continue to be provided by the Victorian Electoral Commission at future state elections. However, the Victorian Government is yet to determine whether it will expand access to other groups such as those with a print disability.[13]

Tasmania

4.23   The Tasmanian system ('VI-Vote'), allows voters to use a keypad to enter preferences by following audio prompts or to use magnification to allocate preferences using a mouse. If a voter tries to print their ballot paper before marking enough preferences to cast a formal vote a warning is given and an opportunity provided to revise the selections. At the completion of voting a ballot paper is printed in a font that closely resembles handwriting and the voter places the ballot paper in a nearby ballot box.

4.24   Electronically assisted voting for electors who are blind or have low vision was trialled at the 2007 election for the Legislative Council. Only two electors cast votes using the system at the one pre-poll centre where the facility was available.[14]

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12   Victorian Electoral Commission, *Report to Parliament on the 2006 Victorian State election* (2007), pp 66–75.

13   Victorian Government, 'Government response: Electoral Matters Committee inquiry into the conduct of the 2006 Victorian State election', viewed on 8 December 2008 at http://www.parliament.vic.gov.au/emc/Government%20Reponse.pdf.

14   Tasmanian Electoral Commission, *2nd Annual Report 2006-07* (2007), pp 26–27.

Assisted voting in federal elections

4.25   In the absence of electronically assisted voting, electors who are blind or have low vision may seek assistance in completing a ballot paper. Assisted voting is also available to electors who satisfy a polling official that they are 'so physically incapacitated or illiterate that he or she is unable to vote without assistance'.[15]

4.26   Electors requiring an assisted vote may do so with the assistance of a person appointed by the elector. If an elector fails to appoint a person to assist them the officer in charge of a polling place or mobile polling team is required to assist the elector in the presence of scrutineers or another polling official if no scrutineers are present.[16]

4.27   In practice, some electors who are blind or have low vision choose to vote by postal vote, and seek the assistance of friends or relatives in completing the ballot paper. Electors who have low vision and are able to utilise electronic magnification equipment may be able to cast a secret and independent vote using such equipment if it is available.[17]

Overview of the 2007 federal election trial

4.28   The 2007 election trial of assisted electronic voting was limited to 29 locations operating as pre-poll centres for the election across a mix of metropolitan, urban, regional and remote locations (table 4.1).

4.29   The 29 locations used for the trial were open for 14 days in the leadup to the election and on election day. Of the sites used for the trial, only six (Kooyong, Ballarat, Shepparton, Warragul, Geelong and Gilles Plains), were newly-created pre-poll voting centres, having not been used as pre-poll centres in previous federal elections. These were usually in disability service centres where they had not been established previously.[18]

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15 *Commonwealth Electoral Act 1918*, s 234.
16 *Commonwealth Electoral Act 1918*, s 234.
17 Frost T, Royal Society for the Blind of South Australia, transcript, 20 August 2008, p 41.
18 Australian Electoral Commission, *Report into Electronically Assisted Voting at the 2007 Federal Election for Electors who are Blind or have Low Vision* (2008), pp 43–44.

Table 4.1   2007 election assisted electronic voting trial locations and votes cast

Location	Jurisdiction	Division	Expected voter numbers	No. of voters who tried to use machines	No. of voters who completed voting using machines
Albury	NSW	Farrer	50-70	12	12
Chatswood	NSW	Bradfield	25-50	18	18
Coffs Harbour	NSW	Cowper	30-60	16	16
Dubbo	NSW	Parkes	25-50	20	20
Enfield	NSW	Lowe	50-70	60	60
Parramatta	NSW	Parramatta	25-50	15	15
Wollongong	NSW	Cunningham	30-60	31	28
Melbourne	Victoria	Melbourne	30-50	50	49
Kooyong	Victoria	Higgins	60-80	118	114
Ballarat	Victoria	Ballarat	60-70	59	56
Shepparton	Victoria	Murray	25-50	9	6
Warragul	Victoria	McMillan	20-35	48	47
Geelong	Victoria	Corangamite	30-50	48	47
Brisbane City	Queensland	Brisbane	30-50	61	61
Brisbane North	Queensland	Lilley	30-70	18	18
Gold Coast	Queensland	McPherson	40-70	6	6
Hervey Bay	Queensland	Hinkler	35-65	15	13
Cairns	Queensland	Leichhardt	40-70	19	19
Perth	WA	Swan	40-70	81	69
Mandurah	WA	Brand	30-50	5	5
Bunbury	WA	Forrest	15-25	11	10
Adelaide	SA	Adelaide	25-50	17	17
Gilles Plains	SA	Sturt	50-70	32	32
Noarlunga	SA	Kingston	10-20	23	23
Hobart	Tasmania	Denison	30-50	15	15
Launceston	Tasmania	Bass	25-40	12	12
Darwin	NT	Solomon	20-40	12	12
Alice Springs	NT	Lingiari	10-25	5	5
Canberra	ACT	Fraser	30-60	45	45
Total			910-1550	881	850

Source   *Sheridan and Associates,* Evaluation of the electronic voting trial for blind and sight impaired electors at the 2007 federal election: Final evaluation report *(2008), pp 26–27.*

4.30   A total of 881 electors attempted to vote using the machines and 850 voters successfully completed a vote using the machines. Actual takeup was below expectations, which was estimated to be between 910 and 1,550 voters.[19]

4.31   The cost of the trial was estimated to be $2.2 million (table 4.2). Based on the total cost and number of votes cast, the average cost per vote cast was $2,597.[20] Had voter turnout been at the higher end of expectations (1,550) the average cost per vote would still have been in the order of $1,425 per vote. This compares to an average cost per elector of $8.36 at the 2007 federal election.[21]

Table 4.2   2007 election assisted electronic voting trial estimated costs

Component	Cost ($'000)
Salary	487,409
Operating expenses	1,032,933
Capital	786,861
Total	2,207,203
Special items (included above)	
Communication (a)	213,036
Contractor costs	1,028,092
Audit	36,364

Note   *(a) Communication costs are for the formal communication strategy. Additional expenditure was incurred in demonstrating machines — which generate free radio, television and newspaper coverage.*

Source   *Australian Electoral Commission,* Report into Electronically Assisted Voting at the 2007 Federal Election for Electors who are Blind or have Low Vision *(2008), pp 61–62.*

4.32   The committee notes that in considering the choice of sites for the trial, the objective of maximising participation was subject to satisfying a range of other criteria:

■   At least one centre should be located in each capital city;

■   Any other centres should be located in disability service centres where suitable premises are available as these centres are generally located near public transport and the majority of the target group are familiar with them;

■   Rural areas should have representation; and

19   Sheridan and Associates, *Evaluation of the electronic voting trial for blind and sight impaired electors at the 2007 federal election: Final evaluation report* (2008), pp 25–26.

20   Australian Electoral Commission, submission 169, p 62.

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

- Expected voter turnout should be such that the trial can be adequately evaluated in terms of system suitability and demand.[22]

4.33   The independent evaluation of the trial highlighted the very high level of satisfaction with the electronic voting machines amongst electors who are blind or have low vision who participated in the trial. Overall, 97 per cent of respondents to the evaluation survey were *very satisfied* or *satisfied* with the use of electronic voting machines.[23]

4.34   While only 1.5 per cent of survey respondents expressed that they were *dissatisfied* or *very dissatisfied* with using the electronic voting machines, the independent evaluation noted that these users were:

- likely to be older than average;

- almost half as likely to be a computer user;

- more than 50 per cent more likely to be a screen user;

- likely to spend marginally more time in travel to the location;

- over three times less likely to be satisfied with ease of use of the electronic voting machines;

- less than half as likely to be satisfied with the clarity of the audio instructions;

- less than a third as likely to be satisfied with the clarity of the screen instructions;

- less than half as likely to be satisfied with the usability of the screen; and

- 25 per cent less likely to be satisfied with the privacy that they had in using the electronic voting machine.[24]

Support for the trial

4.35   Submissions to the committee from electors who are blind or have low vision and who had used electronically assisted voting at the 2007 federal election were positive, with many electors reiterating views previously put to the committee of the value that they placed in being able to cast an

22   Australian Electoral Commission, *Report into Electronically Assisted Voting at the 2007 Federal Election for Electors who are Blind or have Low Vision* (2008), p 41.

23   Sheridan and Associates, *Evaluation of the electronic voting trial for blind and sight impaired electors at the 2007 federal election: Final evaluation report* (2008), p 40.

24   Sheridan and Associates, *Evaluation of the electronic voting trial for blind and sight impaired electors at the 2007 federal election: Final evaluation report* (2008), p 43.

independent and secret vote, many for the first time in their lives.[25] A selection of these comments is presented in box 4.1.

Box 4.1 Comments by electors who are blind or have low vision on casting a independent and secret vote at the 2007 federal election

"As a vision impaired person who has an intense interest in politics I was delighted to be able for the first time in my 53 years of life to be able to vote independently and with dignity at the last federal election. This was due to the availability of an electronic voting system designed for use by blind and vision impaired persons."

"This measure provided me with my first opportunity to exercise my right to an independent and secret vote. At previous elections I had been obliged to ask an AEC officer to mark a print ballot paper on my behalf because I am vision-impaired to the extent that I cannot read print or write by hand. I commend the AEC for implementing this initiative. While I had been looking forward to casting a vote for myself for many months leading up to the election, I was nonetheless overwhelmed by the positive and empowering experience of voting. I found the technology used … very easy to use."

"I am a 65-year-old person, totally blind from birth. I have never been able to vote independently - until last year! I am lucky enough to live in one of the constituencies taking part in the trial. I was able to vote completely unaided, once the system had been explained to me. Information material was available in braille, large print and audio. The help function on the computer was excellent."

 "As a blind person I would like to applaud Government for taking onboard the trial for electronic voting for the 2007 Federal election it enabled me to vote unassisted for the first time in my voting life. The sense of total independence was liberating."

Source   Stewart C, submission 65, p 1; Tyrell S, submission 76, p 2; Nilsson B, submission 80, p 1;
           Madson G, submission 114, p 1; Fela K, submission 150, p 1.

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25   See Stewart C, submission 65; Tyrell S, submission 76, Altamore R, submission 78; Nilsson B, submission 80; Slucki S, submission 105; Chan M, submission 107; Madson G, submission 114; Stillman P, submission 113; Chapman B, submission 140; Fela C, submission 150; Jones M, submission 154.

4.36   The trial was also supported by a number of organisations representing the blind or vision impaired community including Vision Australia, Blind Citizens Australia and the Human Rights and Equal Opportunity Commission.[26] These organisations supported making electronically assisted voting a permanent feature at future federal elections. Blind Citizens Australia noted that:

> Feedback from our members tells us that the opportunity was greatly appreciated by many. We believe that electronically assisted voting should be introduced as a permanent measure with at least one polling booth made accessible in every polling station at the next federal election so that more of the 500,000 Australians who are vision impaired or blind can exercise this critical right.[27]

Voting systems

4.37   While three different existing electronically assisted voting systems had been used at state and territory elections in the ACT, Victoria and Tasmania prior to the 2007 federal election, a different system was developed by the AEC for the 2007 federal election.

4.38   The need for a new system was based on a number of considerations including usability, voting systems (as well as the possibility of the need to accommodate referendum questions) and counting systems.

4.39   A statement of requirements was issued to two contractors who had been involved in developing the Victorian and ACT electronically assisted voting systems. This was done under an abbreviated procurement process that specified a number of features that were different to the systems previously used in these jurisdictions but allowed some flexibility in delivering a solution that met the AEC's requirements including:

- A system that can accommodate full preferential voting for the House of Representatives, proportional representation for the Senate and caters for a referendum if necessary;

- The requirement for a printed ballot paper in barcode format, and the module to decode and print the contents of those barcodes; and

- Hardware which includes but is not limited to the computer or processor itself, a computer screen suitable for vision impaired electors (which may include touch screen capability), an input device suitable

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26   Vision Australia, submission 142; Blind Citizens Australia, submission 81; Human Rights and Equal Opportunity Commission, submission 97.

27   Blind Citizens Australia, submission 81, p 2.

for blind and vision impaired voters (including tactile indicators on the device) and headphones.

4.40   The preferred contractor, Software Improvements, was formally awarded the contract on 30 March 2007. Software Improvements had developed the system used in ACT elections.

4.41   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;

- 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.[28]

4.42   The audit contractor made the following findings and certified that the voting system complied with the specified criteria:

- that the system design includes features that provide the level of security required by the AEC;

- that the AEC conducted its testing of the electronic voting machine (EVM) with due diligence;

- no evidence was found of malicious source code in the EVM;

- 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 EVM to comply with AEC requirements regarding security, accuracy and voting functionality.[29]

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28   BMM Australia, *Audit of AEC's electronic voting machine for blind and vision impaired voters* (2007), p. 1.
29   BMM Australia, *Audit of AEC's electronic voting machine for blind and vision impaired voters* (2007), p. 1.

4.43   Some of the key differences between the system used at the 2007 federal election from that provided by Software Improvements at ACT elections included:

- The inclusion of a printer that produced a machine-readable barcode for insertion into a declaration envelope, with no votes recorded on the machine. The declaration votes were then forwarded to the relevant division for decoding and counting. For ACT elections, there is no printed output, with votes stored on the machine;

- As no votes were stored on the machines, votes were counted using paper ballot papers, which were produced at the relevant divisional office using barcode readers. For ACT elections, votes cast electronically are stored on machines and downloaded directly into the count early on election night;

- The use of a telephone-style numeric keypad to enter choices to visual or audio prompts. For ACT elections a numeric keypad is also used, but choices are made by selecting arrow keys, rather than choices being assigned to specific numbers; and

- Only English audio instructions were available. For ACT elections, voters could choose to receive instructions in up to 12 languages.

The future of electronically assisted voting

4.44   It is clear to the committee that there is a strong value placed by some electors who are blind or have low vision on the ability to cast an independent and secret vote.

4.45   The AEC recognises the value of an independent and secret vote to all electors, including those who are blind or have low vision. However, the AEC also noted that:

> The high cost of the trial must be balanced against this important principle. The provision of facilities of this type on a large scale, if not matched by a significant level of take-up, would ultimately give rise to costs which would, in an era of scarce resources, impact on the services provided to other electors.[30]

4.46   There is of necessity a trade off in allowing one group of electors to exercise the same quality of franchise as most of the community and the

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30   Australian Electoral Commission, submission 169, p 62.

availability of resources. Compared to an average cost per elector of
$8.36 at the 2007 federal election,[31] the average cost per vote of $2,597 for
the electronically assisted voting trial is significant given the low levels of
participation.

4.47   Some inquiry participants supported a more general rollout of assisted
        electronic voting:

        ■ Blind Citizens Australia considered that electronically assisted voting
          should be introduced as a permanent measure with at least one polling
          booth made accessible in every polling station at the next election;[32]

        ■ Vision Australia noted that the 29 sites used for the 2007 federal election
          trial constituted only 0.36 per cent of the over 8,000 polling places used
          at the election and considered that the number of polling places with
          electronically assisted voting facilities be increased each election until
          all electorates have at least one polling place which has e-voting
          capability; and

        ■ The Human Rights and Equal Opportunity Commission considered
          that electronically assisted voting should be made available in as many
          locations as possible and at least in every electorate.[33]

4.48   Blind Citizens Australia and the Royal Society for the Blind of South
        Australia supported moving to on-line voting for all voters, rather than
        developing specific solutions for blind and vision impaired voters.[34]

4.49   While there appears to be a number of electors who are blind or have low
        vision who would benefit from assisted electronic voting if it was
        available, not all of these electors are necessarily going to take advantage
        of this opportunity.

4.50   Firstly, as electors who are blind or have low vision are more likely to be
        older, there is likely to be a general and continuing reluctance to use a
        computer to cast a vote, although this is expected to decline over time.[35] A
        community educator with the Royal Blind Society for South Australia told
        the committee that:

            Our client database, for example, shows the average age of our
            clients is around 78, 79 years of age and, because of that advanced

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31   Australian Electoral Commission, *Electoral Pocketbook 2007*, p 73.
32   Blind Citizens Australia, submission 81, p 2.
33   Human Rights and Equal Opportunity Commission, submission 97, p 10.
34   Blind Citizens Australia, submission 81, p 2; Royal Society for the Blind of South Australia,
     submission 73, p 1.
35   Australian Electoral Commission, submission 169, p 62.

age, they are predominantly females, because females live longer than males. Everything that I have read in the way of suggested answers to these problems revolves around quite complex technology. If I can use my mother as an example: like myself, she is legally blind. She is well and truly into her 80s. She has never sat in front of a computer in all of her life. If she were to sit in front of a computer, she is unable to see the keyboard, so she is not even able to respond to any audio prompts and things like that.

I would put to the committee that this is the situation of most blind people in this country. Nearly half the people we deal with are over 80 years of age. So when you talk about electronically assisted voting—I am not talking from the organisation here; I will probably get a smack on the wrist for this—personally, I think it is a bit of a nonsense to expect most blind people to sit down and operate a computer in a polling booth.[36]

4.51   Secondly, a significant proportion of people with low vision are able to utilise other lower-cost technologies, such as electronic magnification, to assist them to make an independent and secret ballot.[37] The same representative from the Royal Blind Society for South Australia told the committee that:

Most people imagine that, in order to call yourself blind, it must follow that you cannot see. Again, this is a very common misunderstanding out there. Most blind people can see. According to the social security system and the medical profession—in fact, according to the World Health Organisation—I am a blind person, but I can see. I am more comfortable with a term like 'partially sighted'. I might meet the standards to be classified as a blind person but, with mobility, I have very few problems. But, again, this is the case with the majority of blind people. When you are talking about the majority of blind people being elderly, obviously they are more frail, more cautious with their movements, less adventurous with their independent movement, and that sort of thing, so there are other factors as well.

… The majority of blind people cannot and do not want to use a computer; in fact, they are totally intimidated by computers. For the partially sighted population, it has been suggested that electronic magnification is a solution, and it is: it is a great

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36   Frost T, Royal Society for the Blind of South Australia, transcript, 20 August 2008, p 43.

37   Royal Society for the Blind of South Australia, submission 73, p 2.

solution. Unfortunately, this equipment costs, for an effective unit, about $4,000.[38]

4.52   Greater availability of electronic magnifiers may be one way that the AEC can facilitate a secret and independent vote for vision impaired electors. The AEC told the committee that:

> For the 2007 election, electronic magnifiers (Closed Circuit TVs) were available at a number of the 29 trial sites. These were either hired or loaned for the trial period, and they were utilised by some electors to cast their votes. Purchasing and storing these machines for a 2 week voting period every three years is not practical, or cost effective. The AEC could consider making this equipment available at more locations in the future, subject to appropriate hire equipment being available, but this technology provides no aid to voters who are completely blind.[39]

4.53   Deployment of electronic magnifiers across the AEC's divisional offices, which operate as pre-poll centres in the lead up to elections, was not considered practicable by the AEC, as divisional offices are not the main point of contact for voters and often had limited available space. The AEC considered that such facilities, which cost in the order of $5,000 each, would be more accessible if they were deployed in the major pre poll centre in a division.[40]

4.54   The committee does not believe that in its current form, and given the low participation levels experienced during the trial, electronically assisted voting for electors who are blind or have low vision provides sufficient benefits to justify the high cost involved in providing this service.

4.55   However, there are a number of proposals that have been put to the committee that appear to provide a more sustainable basis for continuing with a limited form of assisted electronic voting in the future. These will largely rely on maintaining or lowering fixed costs in combination with increasing participation levels.

Uncertainty over fixed technology and service costs

4.56   It appears that most of the costs involved in delivering electronically assisted voting are largely fixed, including the development of the voting software, AEC staffing costs and auditing costs. Variable costs, such as the

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38   Frost T, Royal Society for the Blind of South Australia, transcript, 20 August 2008, pp 43–44.
39   Australian Electoral Commission, submission 169.6, p 10.
40   Australian Electoral Commission, submission 169.9, p 2.

number of machines deployed, number of sites, training for polling staff and additional site costs are likely to be relatively low but may be significantly higher than average program costs, particularly in locations where only small numbers of votes are cast.

4.57   The 'trial' nature of electronically assisted voting at the 2007 election and tight timeframes for developing a voting system allowed the AEC to enter into select tender arrangements with service providers. The AEC has indicated that were electronic voting to continue into the future, procurement guidelines would require a lengthy open tender process to be undertaken.[41]

4.58   It is difficult to determine the likely final fixed costs of continuing electronically assisted voting given the uncertainty over the administration costs of running the program within the AEC, the extent of competitive pressures on potential providers and the development and hardware costs as technology changes.

Increasing participation

4.59   While turnout of electors at the electronically assisted voting trial, at 881, was well below expectations, it is clear that increasing participation by even several hundred would have significantly lowered the average cost per vote. For example, had turnout been at the higher end of expectations (1,550 electors), the average cost would have fallen from $2,597 to $1,425 per vote.

4.60   There are two main options for expanding participation — increasing the proportion of electors who are blind or have low vision utilising the voting machines and/or expanding eligibility for participation to include other groups including those with a print disability.

Blind and low vision elector participation

4.61   It is not clear to the committee that an increasing number of electors who are blind or have low vision would use electronically assisted voting if it were to be continued.

4.62   At the 2006 Victorian State election, 199 electors cast a secret and independent vote at one of six pre-poll voting centres using electronically assisted voting. The 2007 federal election trial utilised five of these sites, four of which were Vision Australia premises. While participation at the

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41   Australian Electoral Commission, submission 169, p 58.

five sites was up by 41 per cent overall there were also two sites where
participation declined (table 4.3).

Table 4.3   Assisted electronic voting for electors who are blind or have low vision: Number of votes
cast at the 2006 Victorian state election and 2007 federal election

Location	No. of electronic votes		Increase (per cent)
	2006 state election	*2007 federal election*	
Kooyong Vision Australia	65	114	75%
Melbourne City	31	49	58%
Ballarat Vision Australia	64	56	-13%
Warragul Vision Australia	19	47	147%
Shepparton Vision Australia	14	6	-57%
Total	193	272	41%

Source   Sheridan and Associates, Evaluation of the electronic voting trial for blind and sight impaired electors at the
2007 federal election: Final evaluation report *(2008), p 34.*

4.63   While the committee understands the desirability of including trial sites in
areas with low expected turnout to ensure that the services were offered in
areas other than major population centres, the viability of continuing
electronic voting is dependent on maximising overall participation by
targeting areas where a greater number of electors who are blind or have
low vision reside and where there is a high likelihood that they will utilise
the facilities.

4.64   The AEC told the committee that if the electronic voting machines were to
remain for the exclusive use of voters who are blind or have low vision
then, subject to funding, the AEC would recommend that no more than
40 sites in total be considered.[42]

4.65   The contractor's evaluation of the trial noted that one option for increasing
participation, particularly in country areas was for 'mobile polling'.
Feedback on the trial suggested that in non-metropolitan areas there was a
tendency for electors who are blind or have low vision not to travel
between population centres.[43]

4.66   The committee understands that this mobile polling proposal would
involve some electronically assisted voting machines moving between
pre-poll facilities in the election period. Such an option appears to offer
some opportunities to modestly increase participation at little extra cost,
with the AEC having some flexibility in gazetting pre-poll locations and

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42   Australian Electoral Commission, submission 169.9, p 2.

43   Sheridan and Associates, *Evaluation of the electronic voting trial for blind and sight impaired electors
at the 2007 federal election: Final evaluation report* (2008), p 65.

the strong likelihood that a more 'portable' electronically assisted voting machine can be developed.

4.67   The experience in Victoria through the 2006 state election and 2007 federal elections demonstrated that where electronically assisted voting was provided to electors who are blind or have low vision at successive elections, only a modest increase in participation was achieved. It is not clear to the committee that electronically assisted voting can be sustained with these low levels of participation.

4.68   Further, there is no indication, apart from Victoria and the ACT, that electronically assisted voting will be provided by other jurisdictions in the near future. In NSW for example, a parliamentary committee examining the conduct of the 2007 state election did not support the implementation of electronically assisted voting at this stage, instead recommending that the NSW Electoral Commission further examine possible options.[44]

Extension to other print disability electors

4.69   The AEC noted that widening the eligibility criteria to include any voter who requires assistance with printed format or who may be regarded as print handicapped was a possible way of increasing participation to lower the cost per vote. To achieve this, the voting machines would need to be enhanced in order to operate as 'audio assisted' or 'accessible voting' machines.[45]

4.70   Vision Australia supported extending eligibility to a range of other groups in the community such as people with other disabilities, including those with a print disability, people with cognitive or neurological impairment, or with language barriers.[46]

4.71   The Human Rights and Equal Opportunity Commission supported removing restrictions on eligibility, noting that print disability was not restricted only to those who are blind or have a vision impairment, but also included:

- Australians who cannot complete a secret ballot using pencil and paper by reason of physical disability; and

- people who (by reason of intellectual or learning disabilities, or other language or literacy difficulties) cannot effectively use written

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44   NSW Parliament Joint Standing Committee on Electoral Matters, *Administration of the 2007 NSW election and related matters* (2008), pp 43–44.

45   Australian Electoral Commission, submission 169, p 62.

46   Vision Australia, submission 142, p 3.

instructions in completing a ballot paper, but could have effective access to a secret and independent ballot through being able to have their input read back to them electronically.[47]

4.72   In addition to allowing groups with a print disability the opportunity to cast a secret and independent vote, the in-built feature of the electronically assisted voting machines that provides a warning to electors if their choices would result in an informal vote being cast provides an opportunity to address high rates of informality.[48]

4.73   Broad estimates of the incidence of print disability suggest that around 47 per cent of Australian adults have poor literacy skills so that tasks such as reading bus timetables and filling in forms would be difficult.[49] While this indicates that there is potentially a large group of electors that could benefit from electronically assisted voting, it is difficult to determine their likely uptake of electronically assisted voting. Potential electors are likely to be relatively dispersed and may be reluctant to utilise such facilities even if they were made available.

4.74   The AEC told the committee that if eligibility were to be extended to electors with a print disability then, subject to funding, it would support up to 20 additional sites for electronically assisted voting in locations yet to be determined, depending on the demographics of the target audience.[50]

Committee conclusion

4.75   The strong value placed by some electors who are blind or have low vision on their ability to cast a secret and independent vote is recognised by the committee. The ability to cast secret and independent votes in this way should be facilitated where practicable.

4.76   That said, electors who are blind or have low vision are still able to cast a vote at an election with the assistance of a person of their choosing. An assisted vote, whilst not a secret and independent vote, still allows electors who are blind or have low vision to participate in the electoral process.

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47   Human Rights and Equal Opportunity Commission, submission 97, p 9.

48   Registries and Everyone Counts, submission 160, p 2; Software Improvements, submission 138, p 19.

49   Department of Education, Science and Training, 'Snapshot', viewed on 16 December 2008 at http://www.dest.gov.au/NR/rdonlyres/1CD7627F-79A0-4988-B168-60A9F1BB549B/16532/AlmosthalfofAustralianshaveliteracyskillsetc.pdf.

50   Australian Electoral Commission, submission 169.9, p 2.

4.77   The current cost of delivering electronically assisted voting for electors who are blind or have low vision, at $2.2 million or $2,597 per vote, compared to an average cost per elector of $8.36 at the 2007 federal election, appears to be unsustainable especially given the low participation in the trial.

4.78   Given the lack of adoption of electronically assisted voting for people who are blind or have low vision by state and territory electoral authorities, it is not clear that there will be any momentum generated to lift participation levels to a more sustainable basis. While extending eligibility to electors with a print disability appears to provide some opportunity to increase participation in electronically assisted voting, the committee is not convinced that this can be done in a way that will drive average costs down to sustainable levels.

4.79   The committee therefore does not consider that electronically assisted voting for electors who are blind or have low vision should be made a permanent feature of federal elections at this time.

Recommendation 4

4.80   **Given the high average cost per vote of $2,597 for electronically assisted voting compared to an average cost per elector of $8.36 at the 2007 federal election and a concern that participation will not increase to sustainable levels, the committee recommends that electronically assisted voting for electors who are blind or have low vision should not be continued at future federal elections.**

4.81   The Commonwealth Electoral Act provides that electors who require an assisted vote may do so with the assistance of a person appointed by the elector. In practice, some electors who are blind or have low vision choose to vote by postal vote, and seek the assistance of friends or relatives in completing the ballot paper. Electors who have low vision and are able to utilise electronic magnification equipment may be able to cast a secret and independent vote using such equipment if it is available.

4.82   The committee recognises that for some electors who have low vision, casting a secret and independent vote could be achieved using aids such as electronic magnifiers. The committee considers that electors who have low vision may benefit from the provision of such alternate facilities in accessible locations and should be able to do so where practicable.

Recommendation 5

4.83   **Assisted voting provisions in the *Commonwealth Electoral Act 1918* give people who are blind or have low vision the opportunity to seek assistance from a person appointed by them in casting a vote at federal elections and referenda. Electors who have low vision may benefit from the provision of electronic magnifiers. The committee recommends that the government provide sufficient resources to the Australian Electoral Commission for the deployment of electronic magnifiers at sites where there is likely to be demand from electors who have low vision.**

Daryl Melham MP
Chair
10 March 2009

10 March 2009

Mr Daryl Melham MP

Chair

Joint Standing Committee on Electoral Matters

Fax: 6277 4710

Dear Chair

Dissenting Report – Report on the 2007 federal election electronic voting trials

I do not agree with Recommendation 4 of the committee's Report on the 2007 federal election electronic voting trials.

Recommendation 5 should have been timed to ensure that the touted electronic system was in place for the next election as scheduled.

The committee has recognised "the strong value placed by some electors who are blind or have low vision on their ability to cast a secret and independent vote" but offered no timetable or concrete mechanism to meet the plea those electors have made.

This is 2009. Instead of abandoning electronically assisted voting, Australia should be promoting it for disadvantaged voters, on the established principle that the more who use it, the cheaper it gets. In abandoning the electronic system trialled in 2007, a recommendation should have followed specifying which of the computer-assisted voting systems already in use in the Australian Capital Territory and overseas should be ready for trial at next year's national election.

Yours sincerely

Senator Bob Brown

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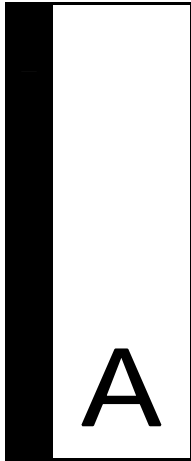
Appendix A: List of submissions

Submissions to the Inquiry into the 2007 federal election that relate to the electronic voting trials:

12	Association for the Blind of WA (Guide Dogs WA)
12.1	Association for the Blind of WA (Guide Dogs WA)
65.	Mr Chris Stewart
73.	Royal Society for the Blind of South Australia
76.	Mr Sean Tyrell
78.	Mr Robert Altamore
80.	Mr Bertil Nilsson
81.	Blind Citizens Australia
94.	Electoral Reform Society of South Australia
97.	Human Rights and Equal Opportunity Commission
105.	Mr Stefan Slucki
107.	Mr Matthew Chan
113.	Ms Patricia Stillman
114.	Mr Greg Madson
116.	Computing Research and Education Association Australasia
116.1	Computing Research and Education Association Australasia
116.2	Computing Research and Education Association Australasia

B
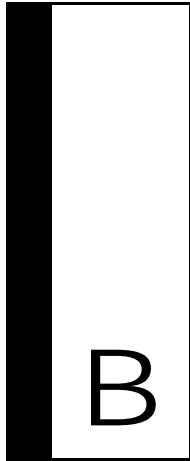
Appendix B: Public Hearings

Public hearings for the Inquiry into the 2007 federal election that relate to the electronic voting trials:

Thursday, 24 July 2008 – Sydney

New South Wales Young Labor

> Mr Christopher Parkin, President

> Ms Elizabeth Larbalestier, Secretary

Tuesday, 12 August 2008 – Melbourne

Registries and Everyone Counts

> Mr Craig Burton, Chief Technology Officer

> Ms Debra Pitman, Business Manager

Computing Research and Education Association of Australasia

> Dr Vanessa Teague

Wednesday, 20 August 2008 – Adelaide

Royal Society for the Blind of South Australia

> Mr Trevor Frost, Community Educator

Friday, 17 October 2008 – Canberra

Australian Electoral Commission

Ms Judy Birkenhead, Assistant Director, Electronic Voting

Mr Paul Dacey, Acting Electoral Commissioner

Ms Barbara Davis, First Assistant Commissioner, Business Support

Ms Kathy Mitchell, Acting Assistant Commissioner, Roll Management

Mr Doug Orr, Assistant Commissioner, Elections

Mr Tim Pickering, First Assistant Commissioner, Electoral Operations

Department of Defence

Air Commodore Anthony Needham, Director-General Workforce Planning

Group Captain Geoffrey Robinson, Acting Director-General, Headquarters Joint Operations Command

Mr Ross McAllister, Program Director, Common Services, SOE

Mr William Meldrum, Defence Project Director, Electronic Voting Trial 2007