Question on notice no. 68

Portfolio question number: F068

2020-21 Additional estimates

Finance and Public Administration Committee, Finance Portfolio

Senator Malcolm Roberts: asked the Australian Electoral Commission on 23 March 2021—

Senator ROBERTS: I understand your software was approved by IBM in 2017 as having a likely error rate below 0.5 per cent. Is that correct? What was your error rate in 2019?
Mr Rogers: I might have to take that one on notice, Senator.
...
Senator ROBERTS: What audit has been conducted on the software used in the Senate scrutiny centre, including comparison of the accuracy of the scanned file against the original paper record and the accuracy of the routine used to allocate preferences?
Mr Rogers: I'll take that on notice.
Answer —
Please see attached response.

Senate Finance and Public Administration Legislation Committee
ANSWERS TO QUESTIONS ON NOTICE
ADDITIONAL ESTIMATES 2020-21

Finance Portfolio
23 March 2021

Department/Agency: Australian Electoral Commission
Outcome/Program: Outcome 1
Topic: Senate software

Senator: Malcolm Roberts

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Question:

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Senator ROBERTS: What audit has been conducted on the software used in the Senate scrutiny centre, including comparison of the accuracy of the scanned file against the original paper record and the accuracy of the routine used to allocate preferences?
Mr Rogers: I'll take that on notice.

Answer:

The AEC has a robust scanning and data capture process for Senate ballot papers. This solution has increased the accuracy and efficiency of the Senate scrutiny process while maintaining full visibility for scrutineers. All preferences on all Senate ballot papers are reviewed by at least one person at the scanning site.

IBM have not approved, nor were given an opportunity to approve, the scanning solution. In 2016 IBM were engaged to provide a quality assurance process prior to the election to help validate the developed Senate scanning solution. The result of this process was IBM considered the quality of the AEC solution to be high. Based upon IBM's outputs, it was stated the error rate appears to be <0.5%. It is important to note that given the preferences on ballot papers are hand-written, interpretations on individual numbers as well as the overall intention of the voter must be made and as such a difference in interpretation may not necessarily constitute an error.

Following the 2019 federal election, an independent assurance activity of the Senate scanning process was conducted and found a lower difference rate than IBM. A statistical sample of ballot papers were viewed and found:

- Zero discrepancies between the physical ballot paper and the captured image.
- Zero discrepancies between the outputs of the scanning service provider system and the data in the AEC system.
- No notable or systemic issues were found in comparing the data captured with the paper or scanned file.
- A potential difference rate in interpretation of the ballot paper preferences that was lower than IBM's estimation. Given complex handwriting may be interpreted differently by different people (e.g. interpreting a 3 as an 8), the Senate scanning solution assists in minimising any potential errors by:
    - including a double-blind data capture process. This entails one capture of preferences by data recognition software (or by data entry operators for preferences where the software cannot interpret the number) and then a second capture of preferences by data entry operators without being able to view the previous capture.
    - for each ballot paper, both sets of preferences are compared and if there is any discrepancy, the ballot paper is escalated for checking by a senior operator.
    - every ballot paper that is identified as potentially informal or has a preference sequence issue (e.g. 1,2,3,3,4, etc) is further reviewed by another senior operator.
    - any remaining uncertainty in preferences or challenges by scrutineers are escalated directly to AEC officers to resolve.

The AEC continues to analyse and refine the workflow for the Senate ballot paper data capture process prior to each event and continues to enhance the security of the system requirements in line with Government best practice requirements.

The AEC has undertaken rigorous testing and this has provided high levels of assurance of the processes that were in place with the vendor used in 2016 and 2019.

In addition, the AEC's software used to allocate preferences has been thoroughly tested to ensure it fulfils the requirements outlined in the *Commonwealth Electoral Act 1918* and the testing process has been verified by a National Association of Testers Australia (NATA) certified external company.

Additionally, any person can use the full preference data (as published by the AEC) to run the distribution of preferences. Outputs can be compared to the detailed results the AEC publishes to identify any apparent errors in the count algorithm.