

Testing and observation plan

<i>Project/Client:</i>	NSW Electoral Commission – Specified procedures for the iVote online and telephone voting system (“iVote”) in relation to the 2019 NSW State general election.
<i>Engagement Start Date:</i>	February 1, 2019
<i>Engagement End Date:</i>	April 26, 2019
<i>Location:</i>	Sydney
<i>Subject:</i>	Testing and observation plan

Dated: [15 February 2019]



Disclaimer:

This testing and observation plan (“deliverable”) has been prepared by PricewaterhouseCoopers ABN 52 780 433 757 (PwC) pursuant to an agreement for the procurement of specified procedures in relation to iVote for the 2019 NSW State general election between PwC and the NSW Electoral Commission dated [01 February 2019].

This deliverable sets out a testing and observation plan prepared based on information made available to PwC up to the date of this deliverable. PwC and NSWEC reserve the right to change the plan, if necessary, at a later date.

For the purposes of preparing this deliverable, reliance has been placed on information and instructions provided to us. PwC has not sought to verify the accuracy or completeness of the information made available, nor has PwC conducted any procedures in the nature of an audit of the information or assumptions therein in any way.

It is the responsibility of NSWEC to determine whether PwC’s engagement satisfies NSWEC’s obligations to appoint an independent auditor to perform certain services under section 156 of the *Electoral Act 2017* (NSW) and any other requirements in that Act applicable to the appointment or role of the independent auditor.

This deliverable has been prepared subject to the provisions and qualifications stated herein, for the sole use of NSWEC. PwC, its partners, its agents and servants specifically deny any liability whatsoever to any other party who may use or rely on the whole, or any part, of this deliverable or to the parties to whom it is addressed for the use, whether in whole or in part, for any purpose other than those agreed with PwC. This report should not be used for any other purpose without PwC’s prior written consent.

PwC does not accept any duty of care (whether in contract, tort (including negligence) or otherwise) to any person other than NSWEC, and will not be responsible for any loss suffered by a third party who relies upon this deliverable.

1. Background:

Prior to the 2019 NSW State Election, the NSW Electoral Commission (NSWEC) undertook a significant refresh and uplift of iVote. A key driver for this was to increase transparency to voters and political party scrutineers. Additionally, Section 156 of the Electoral Act 2017 requires the NSWEC to appoint an independent auditor to:

- conduct audits of the information technology used under the procedures approved in accordance with section 155 of the Act; and
- provide the results of those audits to NSWEC:
 - at least 7 days before voting commences in the Election (“Pre-election Report”); and
 - Within 60 days after the return of the writs for the Election (“Post-election Report”).

In order to drive transparency and meet the requirement of the Electoral Act 2017, the NSWEC have worked to develop a controls framework drawing on guidance from the Electoral Council of Australia and New Zealand (ECANZ) principles and a number of best practice processes to help protect the security and integrity of the system. The best practice frameworks used to create the controls include:

- (i) Voluntary Voting Systems Guidelines (VVSG) published by National Institute of Standards and Technolgt(NIST), USA;
- (ii) ISO27001:2013 Information Security - Appendix A Clauses; and
- (iii) Council of Europe recommendations on standards for e-voting.

Please refer to the detailed Control Assessment Framework v 1.0 attached to this plan in Appendix 1 (the “Framework”).

To assist the Electoral Commissioner fulfil their obligation to engage an independent person under section 156 of the Electoral Act 2017, NSWEC has engaged PwC to perform the specified procedures documented in the Framework in relation to iVote.

The engagement is divided into two phases – pre and post-election.



1.1 Phase I – Specified procedures in relation to controls as described in the Framework (Pre-election).

- Perform specified procedures as per agreed test procedures defined in the Framework before the Election.
- Document the results in the Pre-election Report. The report will be contain only the details of the procedures which were found to be deficient during testing.

1.2 Phase II – Specified procedures in relation to controls as described in the Framework (Post-election)

- Perform specified procedures as per agreed test procedures defined in the Framework both during and after the Election.
- Document the results in the Post-election Report. The report will be contain only the details of the procedures which were found to be deficient during testing.

Refer to *PwC Testing Methodology* in section 2 of this document.

2. PwC testing methodology for this engagement:

PwC will perform the specified procedures during the fieldwork through a mix of inquiry, document review, system review and observations. As described in section 1, the fieldwork shall be carried out in two stages:

- (i) Pre-election, where procedures prior to lockdown will be carried out and will be reported in the Pre-Election Report; and
- (ii) Post-election, where procedures during the lockdown period, during decryption, and unlock of systems will be carried out and will be reported in the Post-Election Report.

2.1 Fieldwork

To initiate specified procedures in relations to iVote, PwC will commence fieldwork from February 4, 2019, whereby interviews with key stakeholders will be performed to understand the online voting process and system components involved.

Upon gaining an understanding of the system’s functionality, PwC will adopt the following testing methodologies to perform the procedures defined in the Framework. The approach will consist of:

- Reviewing policies and procedures to confirm documented processes are established in accordance to the defined Framework;
- Undertaking inquiries, walkthroughs and document reviews to evaluate procedures related to usability and accessibility.
- Undertaking inquiries, walkthroughs and document reviews to evaluate procedures related to accuracy and integrity of iVote.
- Undertaking inquiries, observations and document reviews to evaluate procedures related to cybersecurity and privacy of iVote.
- Conducting physical security reviews and taking samples where necessary to validate the effectiveness of procedures.

PwC will observe the logic and accuracy testing procedures (March 8, 2019) performed by the NSWEC to secure iVote prior to the commencement of voting, in order to assess the effectiveness of implemented security controls.

In addition, PwC will observe lockdown and decryption procedures throughout the dedicated lockdown period, March 6 – 24, 2019, to perform the specified procedures. Additionally, PwC will be present onsite during election night (March 23, 2019) to perform the procedures in accordance with the Framework.

2.2 Fieldwork methodology

<i>Method</i>	<i>Description</i>
Inquiry	PwC will identify and perform interviews with the key stakeholders to gain a better understanding of key processes involved.



Document Review	PwC will request further documentation supporting a process described, to review and inspect for reasonable accuracy and completeness.
System Review	PwC will perform an onsite review of iVote, including taking samples as evidence to test the effectiveness of the processes/procedures (up to five samples will be taken per system tested).
Observation	PwC will witness the lockdown, decryption and un-lock processes executed by electoral commission during the election period.

2.3 Documentation of work paper and evidences

In the course of performing the specified procedures, PwC will document its work (obtained from meetings, walkthroughs, interviews, onsite system review and documentation review) and findings.

2.4 Pre-election report

Following completion of the specified procedures, the draft pre-election report will be issued to the NSWEC to ensure testing procedures, outcomes, findings and remediation plans are captured in accordance with the Framework. The documented report shall be exception only, where only procedures where deviation is noted will be reported. Subject to the timely performance of NSWEC's obligations, the final report will be published and made available to the NSWEC, on March 1, 2019.

2.5 Post-election report

The additional procedures which are anticipated to be carried out from March 1-24, 2019 will be reported in the post-election report. The draft post-election report will be sent to the NSWEC a week prior to the final submission date, to ensure testing procedures, outcomes, findings and remediation plans are captured in accordance with the Framework. The documented report shall be exception only, where only procedures where deviation is noted will be reported. Subject to the timely performance of NSWEC's obligations, it is anticipated that the final report will be published on April 26, 2019.

3. *Scope limitations*

PwC's engagement does not constitute an audit in accordance with Australian Auditing Standards or a review in accordance with Australian Auditing Standards applicable to review engagements. Accordingly, no such assurance will be provided in PwC's reports or deliverables.

PwC is not required under this engagement to provide any recommendations on the current control design, nor does the engagement require PwC to design any future controls. All control design decisions are the sole responsibility of NSWEC management.

In order to conduct the engagement, PwC will not be involved in or undertake any of the following activities:

- Determining whether a person is an "eligible elector" within the meaning of section 152 of the Act;
- Approving procedures for technology assisted voting in accordance with section 155 of the Act;
- Providing or sourcing the information technology used under the approved procedures;
- Reviewing the source code underlying such information technology ;
- Performing the role of "independent monitor" within the meaning of section 157 of the Act; or
- Reviewing the devices used by a voter and the accuracy of the conversion of inputs provided by devices into iVote.

Additionally, while PwC will perform the specified procedures set out in the Framework, PwC will not perform those procedures in relation to the following elements of iVote:

- Design and operational effectiveness of the legal, operational and technical Standards for e-Voting.
- Design and operational effectiveness of the cyber security controls in place to protect iVote.
- Design and operational effectiveness of the cyber security monitoring and protection mechanisms in place during live voting.
- Design and operational effectiveness of the controls in place to prevent fraudulent or inaccurate online voting.
- Review of the system architecture and supporting infrastructure.
- Review of NSWEC's alignment to the Australian Privacy Principles or any other privacy laws or policies.


Lastly, PwC will not assess the adequacy of NSWEC's information technology security testing, nor will PwC otherwise manage the risk of critical failure in iVote caused by a Distributed Denial-of-Service attack or other adverse event. It is a matter for NSWEC, and the third party contractors used in operating iVote, to ensure that iVote operates as intended.

4. Timelines

The following timeline of activities is proposed:

Stage	Requirement	Activity	Details	Date
1	Performance of specified procedures defined in the Framework	Fieldwork – Performance of specified test procedures as defined in Framework	<ul style="list-style-type: none"> Perform walkthrough of security controls through: <ul style="list-style-type: none"> Perform enquiry and document reviews. Perform system reviews and testing. 	Feb 4 - Feb 15, 2019
		Preparation of work papers, evidences, and draft report	<ul style="list-style-type: none"> Document the results and findings. Document the recommendations. Discuss the findings with NSWEC. 	Feb 18 - Feb 22, 2019
		Issue of draft Pre-election Report to NSWEC	<ul style="list-style-type: none"> Share draft Pre-election Report with NSWEC Discuss the findings with NSWEC 	Feb 23, 2019
Issue of final Pre-election Report				March 1, 2019
2	Performance of specified procedures defined in the Framework	Observation and test of controls during the lockdown period	<ul style="list-style-type: none"> Observe the lockdown procedures and review the relevant controls implemented. 	March 6-8, 2019
		Observation and test of controls during the decryption/end of election	<ul style="list-style-type: none"> Observe the decryption procedures and review the relevant controls implemented. 	March 23-24, 2019
		Preparation of work papers and evidences	<ul style="list-style-type: none"> Document the review results and findings. Document the recommendations. Discuss the findings with NSWEC. 	March 25 – April 11, 2019
		Issue of draft Post-election Report to NSWEC	<ul style="list-style-type: none"> Share draft Post-election Report with NSWEC Discuss the findings with NSWEC. 	April 12, 2019
Issue of final Post-election Report				April 26, 2019

5. Appendix 1

#	Document Name	Attachment
1	NSWEC Control Assessment Framework version 1.0	 NSWEC - Control Assessment Framewo