

# [EAC explains findings of investigation into failure of Electronic Poll Register system in 2023 District Council Ordinary Election \(with photos\)](#)

The following is issued on behalf of the Electoral Affairs Commission:

The Electoral Affairs Commission (EAC) today (January 26) submitted to the Chief Executive (CE) the mid-term report on the findings of the investigation into the failure of the Electronic Poll Register (EPR) system on the polling day of the District Council Ordinary Election (DCOE) (i.e. December 10, 2023) and held a press conference to present its findings.

The EPR system failed in the evening on the polling day of the DCOE, and polling stations were unable to use the system for issuing ballot papers. Subsequently, the CE instructed the EAC to set up a dedicated Investigation Group (IG) to find out the root causes of the incident, so that early preventive measures could be taken to prevent the recurrence of similar incidents in future. The IG was led by EAC member Mr Bernard Man, SC, with members from the Office of the Government Chief Information Officer, the Cyber Security and Technology Crime Bureau of the Hong Kong Police Force and the Information Technology Management Division (ITMD) of the Registration and Electoral Office (REO).

The Chairman of the IG that is responsible for the investigation, Mr Bernard Man, said that at the time of the incident, the utilisation of the central processing unit (CPU) of the server of the EPR system had reached almost 100 per cent. Simulations conducted by the IG revealed that there were design issues with two programmes of the system, causing computation time to increase as polling went along. Therefore, the CPU was eventually overloaded at 7.37pm (i.e. 11 hours after the polling commenced). In addition, owing to another design issue, sequential requests queued up in the database and unnecessarily tied up a substantial amount of resources in the servers. Since these resources were shared with other programmes, the above issues caused the system to experience difficulty in executing the ballot paper issuing process. These were the main causes of the incident. He added that the two programme design issues that led to the incident involved design changes made by the ITMD of the REO to meet the operational needs of the 2023 DCOE.

The EPR system was a "closed" system. Only electoral staff may log in through tablet computers provided by the REO. Any other external persons or devices that attempt to access the EPR system would be rejected by the firewall and would not be able to connect. Hence, it is a safety setting. The IG did not discover any record of any external device attempting to access

the EPR system, hence the possibility of an external attack can basically be ruled out. In addition, the Police also carefully investigated the operation of polling stations on the polling day and the system's design issues. There was no evidence to suggest any malicious attempt to sabotage or affect the operation of the system.

"The main cause of the failure of the EPR system was that when altering the system design, the REO technical team did not fully consider the loading that might be induced to the system during actual operation, and therefore did not conduct sufficient and comprehensive load testing. When submitting alterations to the other two tiers, the technical team did not adequately explain the details of the alterations and the possible impacts. As a result, the two latter tiers were unable to fully grasp the possible consequences of the alterations in programme design," Mr Man concluded.

Apart from the above, the EAC Chairman, Mr Justice David Lok, said that there was an error in the total voter turnout and voter turnout rate announced after the election (i.e. voter turnout: 1 193 193 and voter turnout rate: 27.54 per cent). According to the post-election review conducted by the REO over election-related figures, the actual voter turnout should be 1 195 331 (an increase of 2 138) and the voter turnout rate should be 27.59 per cent (an increase of 0.05 percentage point).

The error was mainly due to the failure of the EPR system on the polling day, which activated the fallback mode for issuing ballot papers until the close of poll at midnight on the polling day. As the number of ballot papers issued during that period could not be counted by the EPR system, each polling station needed to conduct its own manual counting after the close of poll and fax the relevant statistics to the Statistical Information Centre of the Central Command Centre of the DCOE for consolidation. However, given the large number of polling stations and due to the tight timeframe for publishing the voter turnout, there was an error in the calculation by the electoral staff concerned, and the number of electors voted at dedicated polling stations (DPSs) (DPSs refer to polling stations set up in panel institutions and police stations for electors in custody to cast their votes) were omitted from the calculation. Notwithstanding, these ballot papers had been transported to the main counting stations for counting after the close of poll. Therefore, these votes had been counted in the actual counting of votes obtained by each candidate, and hence the election result was entirely not affected.

"The IG submitted the mid-term report to the CE today. Thereafter, the IG will continue to follow up on the investigation findings and analyses, and formulate recommendations with a view to preventing the recurrence of similar incidents as well as enhancing the electoral system and arrangements, to ensure the safe and effective conduct of future elections. In accordance with the statutory requirement, the EAC will submit a comprehensive election report to the CE within three months after the election. The detailed findings on the incident and the recommended improvement measures will be incorporated therein," Mr Justice Lok concluded.

