

Our ref: 13004583

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AER consultation: Transgrid's Application to reopen the 2023-28 determination - PEC

Dear [REDACTED]

GHD is aware that the AER has published its consultation paper on Transgrid's application to reopen the 2023-28 determination addressing the capex for Project EnergyConnect (PEC). One area of focus in the AER's consultation paper is consideration of NER clause 6A.7.1(a)(6), referred to as criterion 6. Criterion 6 requires consideration of the impact on reliability and security that would have resulted if Transgrid had decided not to proceed with PEC stage 2.

GHD's Statement of Facts identified reliability and security impacts of PEC stage 2

In December 2025 GHD produced a Statement of Facts¹ examining the reliability and security impacts of PEC stage 2, referred to in this letter as the GHD Statement of Facts. The key finding presented in our 2025 report was that completing PEC stage 2 delivered reliability and security benefits. This means that, if PEC stage 2 were not to proceed, it would result in material adverse reliability and security impacts compared with a world in which PEC stage 2 is completed. Those adverse impacts would be felt across South Australia, New South Wales and Victoria.

While GHD did not undertake its own modelling to reach the conclusions set out in our earlier report, we relied on published reports prepared by AEMO in its role as the National Transmission Planner. Naturally, AEMO undertakes extensive market modelling in preparing its reports, with thorough testing of its inputs, assumptions and scenarios through industry-wide consultation. As such, by drawing on statements made by AEMO, GHD's commentary and conclusions are underpinned by independent market modelling. Against that background, we summarise our earlier findings below.

South Australia - Reliability

- Various versions of the Electricity Statement of Opportunities (ESOO) produced by AEMO between 2018 and 2025 showed that scenarios without PEC stage 2 experienced higher forecast levels of unserved energy, meaning additional intervention would be required if PEC stage 2 were not to proceed, to avoid materially adverse reliability outcomes.

South Australia - Security

- If PEC stage 2 were not to proceed South Australia would be deprived of a new high-capacity AC interconnection with New South Wales. This would make maintaining power system security in South Australia more difficult and costly because:
 - There would be a heightened potential for contingency events to separate South Australia from the rest of the NEM requiring AEMO to maintain at least two large synchronous generators online within South Australia

¹ Included in Transgrid's supporting material for the reopener application published by the AER

- This would prevent any relaxation of the constraints currently in place that control dispatch to ensure RoCoF remains below 2 Hz/s following the loss of the Heywood interconnector.
- The power system would be less resilient to extreme weather events.
- Greater levels of intervention by AEMO would be required to control voltage and system strength during periods of low system demand.

New South Wales – Reliability

- If PEC stage 2 were not to proceed, the network infrastructure required for the development of the SW REZ would not exist. This would prevent the development of the SW REZ and that would reduce the diversity of renewable generation in NSW, thereby reducing reliability.
- The 2020 ESOO also shows that, if PEC stage 2 were not to proceed, it would result in an adverse reliability impact.

New South Wales – Security

- If PEC stage 2 were not to proceed, it would result in adverse impacts on power system security:
 - Providing reduced levels of system strength in south-west New South Wales.
 - Reducing the ability to maintain voltage stability and system strength at times of during minimum demand.

Victoria – Reliability

- If PEC stage 2 were not to proceed, a fundamental piece of the New South Wales transmission system (i.e. the new transmission line between Dinawan and Wagga Wagga) would not exist, impeding the completion of VNI West and resulting in a material adverse impact on the reliability of Victoria as demonstrated in the 2024 ESOO.

Victoria – Security

- If PEC stage 2 were not to proceed, it would result in adverse impacts on power system security, including reducing system strength across north-west Victoria.

AEMO's advice to the AER is consistent with GHD's Statement of Facts

As requested by Transgrid GHD has reviewed the information provided in two letters from AEMO to the AER that considered the reliability and security impact of PEC stage 2. The first attachment to this letter presents the findings from that review. Specifically, it presents:

- a comparison of the points raised in the AEMO letters against the material presented in the GHD Statement of Facts;
- identification of areas of alignment between the points raised in the AEMO letters and the GHD Statement of Facts;
- identification of differences between the points raised in the AEMO letters and the GHD Statement of Facts, and
- conclusions regarding the level of alignment between the AEMO letters and the GHD Statement of Facts.

The attachment shows that AEMO's advice to the AER is entirely consistent with the earlier GHD Statement of Facts, both concluding that not completing PEC stage 2 would have resulted in significant adverse impacts on the reliability and security of electricity supply, particularly in South Australia. Both assessments highlight that PEC stage 2 is critical for reducing unserved energy, mitigating reliability risks from generator retirements, and enhancing system security by lowering the risk of South Australia becoming electrically islanded and enabling the relaxation of operational constraints. These impacts are well-documented in multiple AEMO publications and ESOO reports. In summary, GHD considers that AEMO's advice does not conflict with the findings in GHD's Statement of Facts.

GHD considers that the AER has not appropriately considered AEMO's advice

As requested by Transgrid, GHD has reviewed the AER's consideration of the information provided by AEMO and the definitions of reliability and security adopted by the AER. Our assessment is presented in the second attachment to this letter.

GHD believes that the AER has underestimated the reliability and security impacts that would arise if PEC stage 2 were not to proceed or was materially delayed. This underestimation arises as:

- The AER appears to have misinterpreted AEMO's second letter as diminishing the information provided in the first letter which clearly identifies that if PEC stage 2 were not to proceed, it would result in material adverse reliability and security impacts.
- The AER has inappropriately concluded that there is no material adverse reliability impact if PEC stage 2 were not to proceed
- With respect to security impacts, the AER's proposed definition of security in its consultation paper is too narrow and does not capture the full range of issues that AEMO and Network Service Providers need to manage to deliver a power system that can be maintained in a secure operating state. The AER's proposed definition applies a narrow view of power system security that does not adequately account for the obligations on AEMO and TNSPs to consider non-credible contingencies, minimum system load conditions, resilience to extreme events, and the need for operational interventions when maintaining the power system in a secure operating state. As a result, the AER's assessment has understated the consequences that would arise if PEC stage 2 were materially delayed or were not to proceed.

Regards

[Redacted signature]

[Redacted name]

[Redacted contact information]

Attachment 1: Review of AEMO letters to the AER

First AEMO letter – dated 1 June 2026

The AER wrote to AEMO on 19 May 2026 seeking advice on the reliability and security impacts in New South Wales and South Australia if PEC were materially delayed or not built. AEMO replied to that request in its letter dated 1 June 2026. In that letter, AEMO identified material adverse reliability and security issues that would arise if PEC stage 2 were not to proceed.

The key points raised in the AEMO letter are summarised below and compared to the matters raised in the GHD Statement of Facts. These have been grouped by region and further classified into those that relate to reliability and security.

South Australia – Reliability

1. On page 1 of the letter, AEMO states “PEC supports reliability by allowing the sharing of resources across regions of the NEM. The influence on system reliability is shown in AEMO’s Electricity Statement of Opportunities (ESOO) and ESOO Updates.” This statement is consistent with the GHD Statement of Facts, which identified several instances where the ESOO had reported reductions in USE associated with the completion of PEC. If PEC were not to proceed, the reliability support identified in the AEMO letter would not arise, which means that if PEC were not to proceed it would have a material adverse impact on reliability.
2. Also on page 1, AEMO cites a specific example drawn from the 2025 ESOO and ESOO Update. AEMO states that those documents, “show a material improvement in forecast South Australian reliability as capacity is released for PEC stage 2, and that PEC can mitigate reliability risks arising from retirement of Torrens Island B and Osborne Power Station.” The GHD Statement of Facts included similar findings, noting that the 2025 ESOO reported that in the committed and anticipated developments scenario, the delivery of PEC stage 2 helps reduce USE by 0.0023%. That improvement in USE is slightly more than the reliability standard. This edition of the ESOO provides clear evidence that if PEC stage 2 were not to proceed, it would result in a forecast material increase in USE in South Australia (sufficient to breach the reliability standard), which is a material adverse reliability impact.
3. In its letter AEMO provided a specific example of the reliability impact of PEC, citing the 2025 ESOO. The GHD Statement of Facts reviewed all publications of the ESOO between 2018 and 2025 and noted the observed change in USE in each region of the NEM attributable to PEC in each version of the ESOO. That review is summarised in Table 1 in the GHD Statement of Facts, which reveals that the largest change in USE attributable to PEC was 0.0023%, reported in the 2025 ESOO. Material reductions were also reported in the ESOO published in 2018, 2020, 2022, and 2024. This provides a consistent assessment demonstrating that if PEC stage 2 were not to proceed, it would result in a material adverse reliability impact.

South Australia – Security

4. On page 1 of the letter, AEMO notes, “A key benefit PEC provides is to reduce the likelihood of SA becoming electrically islanded from the rest of the NEM following non-credible loss of an interconnector.” AEMO explains that loss of the interconnection can trigger loss of generation and load in South Australia resulting in “major disruptions to SA customers”. AEMO also notes that while the emergency control schemes that trigger the loss of generation and load are expected to prevent system collapse, the dynamics of large-scale system incidents such as the those that would separate SA mean that a system collapse remains a possibility. Major disruptions to SA customers and a system collapse are clear examples of materially adverse system security impacts, which can be avoided by PEC stage 2.
5. On page 2 of the letter AEMO explains that PEC reduces the likelihood of islanding SA via:
 - a. “The additional network connection, and associated protection schemes, so that the loss of either PEC or Heywood does not cause the remaining interconnector to trip.”
 - b. “The additional network capacity also means that a non-credible event in SA, such as the loss of multiple generators, is also much less likely to lead to an islanding event.”

The GHD Statement of Facts also identified that completing PEC stage 2 and associated protection schemes significantly reduces the likelihood of South Australia being islanded from the rest of the NEM. This demonstrates that if PEC stage 2 were not to proceed, it would result in a material adverse system security impact.

6. On page 2 of the letter AEMO cites the 2025 General Power System Risk Review as documenting the following system security impacts arising from the completion of PEC stage 2:
 - a. Reducing the risk of stability issues caused by aggressive battery energy storage system (BESS) response to remote frequency events.
 - b. Removing the requirement for constraints currently imposed to limit the rate of change of frequency (RoCoF) in South Australia to 2 Hz/s following the non-credible loss of the Heywood interconnector. Prior to the completion of PEC those constraints are required to prevent flow on the Heywood interconnector rising above a limit where a non-credible trip will exceed over-frequency generation shedding (OFGS) or under-frequency load shedding (UFLS) capability.

The GHD Statement of Facts also identified that one of the security impacts of PEC was enabling the removal of the constraints currently used to control RoCoF in SA to below 2 Hz/s. This demonstrates that if PEC stage 2 were not to proceed, it would result in a material adverse system security impact, as there would be a need to maintain those constraints affecting the operation of the NEM.

7. On page 2 of the letter, AEMO identifies that the ability to maintain system security during periods of minimum system load in South Australia will be improved when PEC stage 2 is complete. The improvement in the ability to maintain system security during minimum load conditions was discussed in detail in section 4.2 of the GHD Statement of Facts. GHD cited reports published in 2022 and 2024 by AEMO, which documented challenges in maintaining system security under minimum demand conditions in South Australia. The cited reports also state that completion of PEC stage 2 will help address the identified issues. This demonstrates that if PEC stage 2 were not to proceed, it would result in a material adverse system security impact, as it would be more difficult to maintain security under minimum demand conditions.
8. On page 2 of the letter, AEMO identifies that system security risks can occur when there is a rapid reduction in distributed solar photovoltaic output. To manage this risk, AEMO currently requires two large synchronous generators to be dispatched in South Australia when there is a risk of islanding. As explained in the GHD Statement of Facts and in the AEMO letter the requirement to dispatch two large synchronous generators in South Australia is expected to be relaxed once PEC stage 2 is delivered. If PEC were not to proceed, the system security risks requiring the dispatch of two large synchronous generators persist, which is a material adverse security impact.
9. On page 2 of the letter, AEMO discusses reports examining the opportunity to reduce the requirement for a minimum number of synchronous generators in South Australia. AEMO notes a minimum number of synchronous generators is required in SA under various operating conditions until PEC stage 2 is complete and operating experience has been gained through trials or other evidence. AEMO notes that, "If PEC stage 2 is delayed or not completed, reductions to synchronous generation limits in SA may also be delayed." It should be noted that the large synchronous generators in South Australia that are currently used to satisfy this security requirement are approaching the end of their technical life. Both Torrens Island Power Station (TIPS) B and Osborne are of an age where the generator operators have announced their intention to retire those power stations², with both intended to be retired by 2028. If PEC stage 2 were not to proceed, the security of the South Australian power system would rely on the availability of a fleet of aged generators. This demonstrates that if PEC stage 2 were not to proceed, it would result in a material adverse system security impact.
10. In addition to the GHD Statement of Facts, GHD also produced a technical memorandum³ which reviewed a draft version of the report on *Reduction of Minimum Synchronous Generators in South*

² The AEMO generator information page lists Osborne Power Station's expected closure date is 2027 and TIPS B's expected closure date is 2028.

³ Included in Transgrid's supporting material for the reopener application published by the AER: Supplementary Information 3dii – Technical Memo – Reduction of Minimum Synchronous Generators in SA – GHF - 20250208

Australia cited in the AEMO letter. The technical memo and the GHD Statement of Facts both support the conclusion that if PEC stage 2 were not to proceed, it would result in a material adverse system security impact, as the security of the South Australian power system would require the continued dispatch of an aged fleet of generators.

New South Wales – Reliability

11. The AEMO letter makes no specific mention of reliability impacts in New South Wales attributable to PEC. As noted in the GHD Statement of Facts, while the most significant direct reliability impact of PEC is observed in South Australia, the 2020 ESOO reported a reliability impact visible in New South Wales. This demonstrates that if PEC were not to proceed, it would have an adverse reliability impact in New South Wales.

New South Wales – Security

12. On page 1 of the letter, AEMO notes that PEC stage 2 includes synchronous condensers, which AEMO states “are expected to improve system strength in New South Wales”. This statement is consistent with the corresponding finding in the GHD Statement of Facts. The GHD Statement of Facts cites several publications demonstrating that PEC stage 2 is necessary to maintain system strength in the south-west of New South Wales and north-west Victoria. The Statement of Facts identifies that the 2024 System Strength report produced by AEMO noted PEC is expected to improve system strength in south-west New South Wales and north-west Victoria. That AEMO report projected system strength would decline below required levels at Red Cliffs and Buronga with that situation addressed by PEC stage 2. If PEC stage 2 were not to proceed, it would result in a material adverse system security impact, as a system strength shortfall would appear.

Alignment with GHD Statement of Facts

The AER only requested AEMO to consider reliability and security impacts of PEC in South Australia and New South Wales, whereas the GHD Statement of Facts also considered impacts of PEC in Victoria. The GHD Statement of Facts identified reliability and security impacts that would be felt in Victoria if PEC stage 2 were not to proceed, and this information was not included in the AEMO report.

In preparing the GHD Statement of Facts, GHD provided the report to AEMO to allow AEMO the opportunity to review the accuracy of statements in the report, as most of the information in the Statement of Facts was sourced from AEMO publications. AEMO feedback was addressed in the final version of the GHD Statement of Facts. It is therefore not surprising to see the high level of correlation between the findings in the GHD Statement of Facts and the AEMO letter.

Second AEMO letter dated 26 June 2026

On 11 June 2026 the AER wrote to AEMO asking AEMO to provide any additional information it had available on the security and reliability impact if PEC is materially delayed or not built. AEMO responded to that request on 26 June 2026 stating that as AEMO has not undertaken reliability or security analysis on a scenario where PEC is materially delayed or not built it does not have further views beyond those provided in its first letter.

Attachment 2: AER's assessment of the AEMO advice

It appears that the AER has interpreted AEMO's second letter as evidence that if PEC were not to proceed there would not be an adverse reliability or security impact. GHD believes this is not an appropriate interpretation of that letter. In the letter AEMO states that "As AEMO has not undertaken reliability or security analysis on a scenario where PEC is materially delayed or not built, it does not have further views beyond those provided in its first letter". This statement should not be interpreted as diminishing any of the information provided in the first letter which clearly identifies that if PEC stage 2 were not to proceed, it would result in material adverse reliability and security impacts.

GHD believes that the AER has failed to consider the extent of material provided in AEMO's first letter and the GHD Statement of Facts in assessing whether there would be a material adverse impact on reliability and security if PEC stage 2 were not to proceed.

With respect to reliability, it appears that the AER has misconstrued the information on the reliability impact of PEC available from the 2025 ESOO and ESOO Update:

- As noted in the AEMO letter dated 1 June 2026 and the GHD Statement of Facts, the 2025 ESOO assumed PEC's full capacity was available by November 2027. This completion date was later than the retirement date of TIPS B, resulting in the forecast USE in South Australia for 2026-27 exceeding the reliability standard. Completion of PEC was shown to improve USE by 0.0023%. If PEC stage 2 were not to proceed, it would therefore result in a forecast material increase in USE compared to a scenario where PEC proceeds, and hence a material adverse reliability impact. This is visible in the USE outlook presented in the 2025 ESOO.
- As noted in the 2025 ESOO Update, in response to the breach of the reliability standard forecast in the 2025 ESOO, AGL Energy decided to change its retirement plans for TIPS B at the request of the South Australian Government. While this intervention addressed the adverse USE forecast impact, it is not correct to interpret this as evidence that failing to deliver PEC would not have an adverse reliability impact.
- Various editions of the ESOO and the submission from AGL Energy have identified that the timing of the completion of PEC and the retirement of generation in South Australia must be aligned to avoid material adverse reliability impacts. Construction on TIPS B was completed in 1976, making it one of South Australia's oldest operating power stations. It is scheduled to close on 30 June 2028⁴. Given the age of the TIPS B, it is unreasonable to presume that its operation could be extended indefinitely if PEC stage 2 were not to proceed.
- If PEC stage 2 were not to proceed, this would clearly have a material adverse impact on the reliability of the South Australian Power System, with that impact visible from the year in which large synchronous generators such as TIPS B are retired.

With respect to security impacts GHD believes that the AER's proposed definition of security in its consultation paper is too narrow and does not capture the full range of issues that AEMO and Network Service Providers need to manage to deliver a power system that can be maintained in a secure operating state. The AER's proposed definition applies a narrow view of power system security that does not adequately account for the obligations on AEMO and TNSPs to consider non-credible contingencies, minimum system load conditions, resilience to extreme events, and the need for operational interventions when maintaining the power system in a secure operating state. For instance, S5.1.8 of the NER requires that in planning a network, a NSP must consider non-credible contingency events. This clause requires that where the consequence is likely to be severe disruptions to customers the NSP must, in consultation with AEMO, deliver emergency controls to minimise disruptions and reduce the probability of cascading failures. This clause works in conjunction with clause 5.20A describing the requirements on AEMO in consultation with NSPs to undertake an annual general power system risk review which specifically considers non-credible events.

⁴ AGL on Torrens Island

As a result, the AER's assessment has understated the consequences that would arise if PEC stage 2 were materially delayed or were not to proceed.

The AER's position that GHD's Statement of Facts identifies system security and reliability *benefits* of completing PEC, as opposed to showing *material adverse impacts* if PEC were not completed, is a simple misunderstanding of the GHD report. GHD's Statement of Facts demonstrates that if PEC stage 2 were not to proceed, it would result in material adverse impacts on system reliability and security of supply of the relevant transmission systems in accordance with Criterion 6. The adverse impact can be identified by comparing a world in which PEC stage 2 is delivered with a world in which it is not delivered. In this second view of the world, none of the benefits delivered by completing PEC stage 2 would arise, resulting in materially adverse outcomes in terms of reliability and security.