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Dear Cameron

Integrated System Plan Consultation

AusNet Services is pleased to make this 2nd submission into AEMOs consultation for development of the Integrated System Plan (ISP). Our earlier submission focused on the aspects of modelling for the ISP discussed in the Consultation Paper.

In this submission we provide our initial views on a framework to incorporate the ISP, which is important to give perspective on how the ISP would be used. We believe this is necessary to give real purpose and direction to the ISP. We also recognise that the AEMC will soon be exploring these issues via its review into the Coordination of Generation and Transmission Investment. The value of the ISP is dependent on its role being incorporated into the regulatory framework.

In addition, our submission responds to the specific questions from AEMO on the development of the ISP.

1. ISP within the Regulatory Framework

The ISP is an important component in fulfilling several recommendations of the Finkel Review broadly accepted by policy makers and other stakeholders:

- 5.1 By mid-2018, the Australian Energy Market Operator, supported by transmission network service providers and relevant stakeholders, should develop an integrated grid plan to facilitate the efficient development and connection of renewable energy zones across the National Electricity Market.
- 5.2 (a) By mid-2019, the Australian Energy Market Operator, in consultation with transmission network service providers and consistent with the integrated grid plan, should develop a list of potential priority projects in each region that governments could support if the market is unable to deliver the investment required to enable the development of renewable energy zones.
- 5.2 (b) The Australian Energy Market Commission should develop a rigorous framework to evaluate the priority projects, including guidance for governments on the combination of circumstances that would warrant a government intervention to facilitate specific transmission investments.

These recommendations work together, and the process of responding to the hiatus in efficiently getting new renewable generation to market depends on this being achieved.

Scope of initial ISP

The recommendations suggest a two shot process to identify priority projects. A rationale for approach is understandable. In year 1 (5.2(a)), the integrated plan can be published. This provides the opportunity for extensive engagement over the period of the next 9 months say, to get views from all stakeholders on the outcomes being projected, how the scenarios have led to this, and what inputs might need to be adjusted. The influence of such changes would be shared with stakeholders. This engagement would support a fully tested year 2 integrated plan (5.2(b)).

However, it important that the initial ISP (ISP1) set out priority projects, and not leave this until year 2. The ISP will not have delivered an integrated plan if it does not identify priority projects. It is acknowledged that there may be limitations in comprehensively determining priorities due to the short timeframe, however the limitations of the analysis can be included as qualifications on the analysis. It is important that the plan includes such conclusions however, even in its initial form.

With these conclusions informing the market and governments, the 2nd year iteration ISP2 would be highly informed at the outset, facilitating even fuller engagement with market participants and the states. It is also necessary to identify in ISP2 if the market is capable of responding to the plan identified in ISP1, and further confirming whether, as is expected and likely anticipated in ISP1, development will need to be transmission led.

Role of the ISP in the Regulatory Framework

There is also the need for the regulatory framework to be developed as proposed by 5.2(b). Without this, there is no means by which transmission could lead, and scale efficient access for mass generation in REZs provided. But the process for this cannot be delivered in a timeframe to initiate projects based on the year 1 ISP, and we do not expect that sufficient testing of the plan and stakeholder confidence could be achieved in ISP1.

The AEMC has a review underway on the coordination of generation and transmission. An Options Paper is scheduled to be published late March. We anticipate this review will, amongst other things, explore ways of implementing 5.2.

An approach we envisage is as follows:

- The ISP identifies REZs, and likely development based on scenario analysis, and accounting for policy commitments. This would identify network augmentation requirements for generator dispatch. This is tested with stakeholders
- The ISP modifies the standalone REZ development outcomes based on achieving an efficient overall integrated system, to meet reliability and system security needs in the most economically efficient manner. This will take into account the diversity of energy sources and locality, and interconnector augmentation needs and costs for the various options. Government commitments for renewable energy development could also be accounted for in this phase
- The outcome of this analysis is the most economically efficient, extensively integrated system plan. It would identify priority projects to enable REZs to flourish. However the projects would require further detailed assessment by TNSPs to ensure they are individually efficient
- The TNSPs would take the output from the ISP, and conduct more detailed analysis to identify development options and costs, including options that may improve option value. The TNSP would subject the proposals to a RIT, with the ability of applying the scenarios and modelling assumptions from the ISP as a given, should these be considered the most appropriate. The investment decision is taken by the TNSP.

2. Response to ISP Questions

In this section we discuss ISP considerations relevant to the questions identified in the Consultation Paper.

Question 2.1 – What key factors can enable generation and transmission development to be more coordinated in future?

This is a critical question for both the ISP and for the AEMCs review project discussed in the preceding section. Key factors to enable generation and transmission coordination are:

- **Determining the commercial capability of a region and its scale efficient transmission capacity requirements:**

  New generation displacing retiring generation will have very different characteristics. In particular, a large coal fired power station, typically 2000MW capacity, will likely be replaced by a many smaller, typically up to 150MW, renewable energy generators. To the extent that these will concentrate in locations of highest energy resource intensity, multiple firms will seek network connection and market accessibility.

  Firms competing for incentives (e.g. VRET), prime locations, first mover use of available network capacity, amongst many factors, cannot be expected to cooperate, and especially at the prospect stage, in facilitating the development of scale efficient transmission augmentation to meet the collective needs to fully exploit the regions resources.

  A facilitation mechanism is necessary to draw together the ultimate commercial capability of the region, i.e. the REZ. An objective of the ISP is to provide this. Achieving this is a key factor in planning transmission that is relevant to the development of a REZ

- **Understanding how diversity in energy sources and geographic location can facilitate a reliable and efficient cost electricity supply system.**

  From a system reliability and security perspective, meeting the necessary standards will rely on the coordination of generation with diverse availability / firmness characteristics and making best use of the geographic diversity.

  Understanding the inter-relationships, and projecting resource exploitation options, and notional infrastructure requirements that would deliver the most efficient cost outcome for consumers is critical to inform optimal energy sector development and provide confidence.

  Finally, whilst the National Energy Guarantee has yet to be fully consulted, designed and agreed, its notional concept of establishing per region system reliability criteria should be considered in the thinking for ISP, including how inter-regional capacity support may efficiently facilitate a region achieving a set reliability criteria.

- **Establishing a framework to develop REZs.**

  There are multiple proponents for renewable energy projects in a particular resource rich area. They compete in various ways, such as for available government incentives, prime land, first use of existing transmission capacity, retail contracts, and finance. As a result, proponents cannot be expected to cooperate to lead the establishment of scale efficient transmission to meet the needs of the zone. The Rules provide for such an approach, via the Scale Efficient Network Extensions (SENE) provisions. However these have never been used.

  To exploit the most valuable resource intensive areas, a more effective regulatory framework that provides for transmission to lead the development of generation is necessary

- **Optimising for a secure and reliable power system**

  AEMO has identified that scope of the plan it is developing should have a 'system' emphasis. In our earlier submission we discussed our support for this approach. Perspective, where we observed that: *"This emphasis is consistent with the intent of the Finkel Panel. The report emphasises system planning, for the plan to ensure security is preserved in each region as the generation mix evolves, and for AEMO to develop a list of potential priority projects to enable efficient development of renewable energy zones (page 12 of the Finkel Panel's Blueprint for the Future)".*

  The considerations of the ISP will necessarily be more expansive than identifying energy zones and access to the market and load centres. The implications of the differing generator

characteristics, from previous coal fired generation, and between the renewable generation technologies, and geographic influences on this, must be accounted for in establishing the plan. The ISP should then optimise for the most efficient outcomes to provide a reliable supply to customers, and optimise around a secure system, which incorporates sufficient storage, inertia, system strength and generation diversity as required to satisfy security criteria.

The ISP should describe how, in delivering the efficient overall development plan, it uses resources to ensure its implementation will foster the characteristics of a secure power system.

Question 3.1 – Does this analysis capture the full range of potential REZs in eastern Australia?

- **Developing the central Victorian wind REZ**

  The consultation paper provides both the mapping of resource quality and concentration, and preliminary identified zones where these may be most efficiently exploited for the NEM. In particular, in relation to the wind energy zones shown in Victoria, we note that these have access to high quality energy resource (evidenced by the mapping), proximity to existing transmission easements (although there is significant augmentation required), proximity to major load centres (Melbourne, Geelong, Ballarat, Bendigo), proximity to major national grid flow paths, and significant proponent activity (over 4000MW connection enquiries and significant amount progressed to subsequent phases in the connection process).

  The central Victorian wind REZ (refer Fig 14 on page 36 of Consultation Paper) would be one of the first regions to benefit from scale efficient transmission to foster the exploitation of the regions resources. As it is, the RIT-T process being conducted to assess the transmission needs for this region appears hamstrung by uncertainty on how to manage interdependencies with other RIT-T processes (SA Energy Transformation) and significant proposed developments (Snowy 2.0). Currently these development proposals are proceeding independently, led by different proponents, with different investment drivers. The Victorian RIT-T is at risk of being de-scoped to avoid further delays for immediate investment requirements, however this de-scoping puts at risk the efficient development of the region as a REZ, and will introduce a second RIT-T timeline before further development can proceed.

- **Mapping for the central Victorian wind REZ**

  We note that the Victorian wind REZ referred to in the previous point does not capture the whole of the energy resource apparent in the mapping. The zone should be expanded to capture the high wind energy resource shown in Fig 13 in the Consultation Paper that extends North East from Ballarat.

Question 3.2 – What other factors should be considered in determining how to narrow down the range of potential REZs to those which should be prioritised for development?

The paper identifies a range of factors that need to be considered in the modelling process to prioritise REZs. Broadly, we agree that these are relevant considerations.

However, we query the observation on page 35 that solar projects utilise a much smaller land area (presumably compared to wind resources). This doesn't appear to be factual in relation to the impact on land usage. It could be that the opposite is more realistic.

- **Priority factors**
  - Clearly total power system cost for integration of the REZ resources, and considering the REZs benefits to system firm capacity as well as energy provision is a priority. Reduced firmness leads to the need for greater diversity, and hence more resources overall to meet the system demand. Cost implications of the resource and its location for system security should be considered in conjunction with these.

    Some more specific factors within this area of consideration include:

    - Proximity to load centre
    - Proximity to existing transmission network
    - Cost and feasibility of network upgrades required to connect i.e. practicality of delivering the infrastructure

- Community acceptance of infrastructure (which impacts the point above)
- Diversity of generation types within the REZ and availability of storage to improve firmness of capacity from the REZ
- Co-optimisation of REZ development with enhancement to regional and inter-regional supply reliability.

- A factor that should be taken into account when considering the value of REZs to the NEM is the development activity already under way. This will reflect the commercial priority of the zone. For example, the Victorian wind energy zones will rank very highly, as there is considerable commercial activity by generation proponents in train.

- We note the consultation paper suggestions that local government ambitions on jobs development in a particular may be a factor in prioritising REZs. We query how subjective and non-industry factors such as this can be reasonably accounted for. Potentially such factors could be used as supporting a modelled decision, rather than driving it.

Question 3.3 – What are the potential barriers to developing REZs, and how should these be addressed?

We support AEMOs approach outlined in the consultation paper, which includes liaison with the AEMC on barriers identified, for consideration in its review on coordination of generation and transmission investment. As a credible integrated plan, the ISP should identify the barriers that may constrain its implementation, and those barriers that have influenced its shape, and the impact of these. This will help in addressing issues.

As discussed previously, a barrier is the inability of the current framework to effectively provide for transmission led investment to support REZ development.

It is always the case that there is a need to engage with communities to obtain their support for acceptance of infrastructure, including both the renewable generation and transmission developments to connect the generation. Whilst relative difficulty may be observed in high level planning studies, it may be inappropriate for the ISP to rule out particular options on this basis.

Question 4.1 – Have the right transmission options been identified for consideration in the ISP?

In section 4, the ISP identifies that planning coordination of transmission is critical. The development of the transmission system should be more than coordinated. It needs to be the grid that in most credible scenarios, can be developed progressively and most efficiently, to satisfy overall needs of reliability of service to customers, and access for generators. That is, integrated.

- **Victorian transmission needs integration**

  Upgrading of the Vic – NSW interconnector appears to be a priority project for consideration. We note the consultation paper proposes that a feasibility study be initiated once the preferred options for the SA Energy Transformation RIT and the Western Victoria RIT become available.

  Clearly, there is a dependency. However, it is unclear why this is not being considered as part of those RIT-Ts, so that planning is actually integrated, rather than coordinated. There is also inter-dependency between the development options being explored through these RITs.

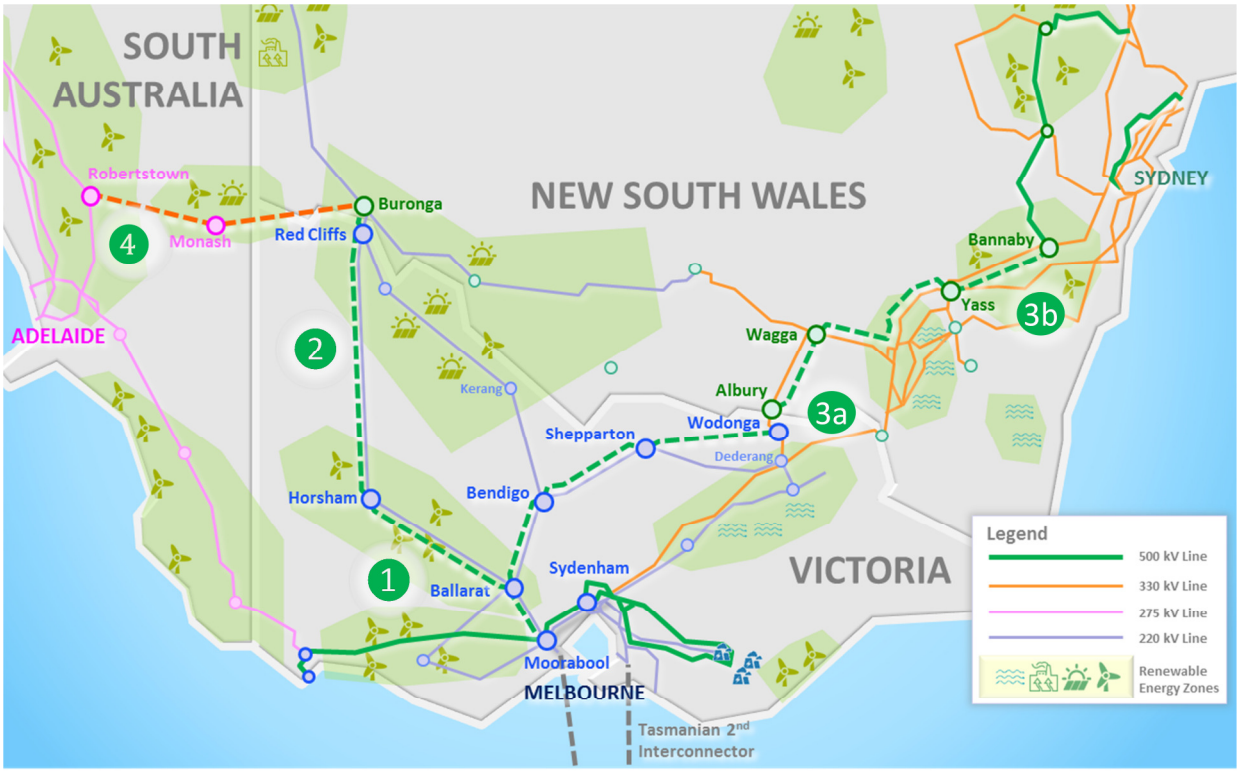
  It is not clear that the best overall integration is being considered. A much better outcome is likely if these RIT-Ts are informed by the ISP, rather than the other way round.

  AusNet Services has reviewed the broad regional needs surrounding the Victorian region. We consider that:

  - there are a number of alternative transmission options to those identified in the ISP, and
  - may better jointly facilitate renewable energy zone access requirements and interconnection benefits of energy source availability and diversity.

- **Victorian transmission capability and options**

  The following diagram maps an alternative comprehensive development option, together with staging of the development which reflects a 'no regrets' approach that AEMO would like to employ and achieves the above objectives.



The new and augmented transmission routes in this **'V' option** create a 500kV backbone through the NEM, and responds to credible or committed developments whereby:

- Existing and emerging generation (VRET and Snowy) are serviced;
- Connection between all major load centres (SA, VIC and NSW) are significantly strengthened;
- System stability services (in Snowy) are made accessible to all three states; and
- Underpinned by the use of existing easements to the maximum extent.

Identified routes in the diagram are described below:

ROUTE	DESCRIPTION
1	Represents Stage 1 of the Western Vic RIT-T from Horsham-Moorabool. Resolves the immediate VRET renewable constraints and provides a vital link to both: a) Tasmanian 2nd Interconnector; and b) Melbourne metro load centre and Victoria 500kV backbone.
2	Represents Stage 2 of the Western Vic RIT-T from Horsham-Buronga. Picks up the next wave VRET renewables, and will form a critical part of interconnection route into NSW/SA.
3A	Provides route diversity and new 500kV interconnection for: a) Generation from Snowy to Melbourne metro load centre; and b) Storage of VIC and SA renewables.
3B	Provides a strong NSW connection from Snowy 2.0 to Sydney metro load centre.
4	Represents credible outcome from SA Energy Transformation RIT-T, being SA Interconnector to Buronga and Red Cliffs:

ROUTE	DESCRIPTION
	a) Providing SA connection from Adelaide metro load centre to the Victorian 500kV network, including b) Reinforcing SA access to Tasmanian storage or Snowy 2.0.

AusNet Services would welcome the opportunity to explore, with AEMO, this and other options involving the integration of Victorian REZs and efficient utilisation of the Victorian network configuration to support an optimal national grid design. It is suggested AEMO consider this alternative 'V' option in its further work on the Integrated System Plan, including power system modelling.

Question 4.2 – How can the coordination of regional transmission planning be improved to implement a strategic long-term outcome?

We have outlined the role of a national planner earlier in this submission, to coordinate with the regional planning and investment role of the TNSPs. This national planning role should be truly independent. As has been discussed in many reviews, the different approach in Victoria may need to be addressed to ensure it is truly independent and consistently applied across the NEM.

Question 4.3 – What are the biggest challenges to justifying augmentations which align to an over-arching long-term plan? How can these challenges be met?

The plan will identify scale efficient augmentations that benefit generators and customers, i.e. fully integrated. As discussed throughout this submission, the current augmentation justifications process requires some advancement to deal with support the optimal plan identified by the ISP

The RIT-T process does not cater for the uncertainty of specific generation developments of proponents, and the alternative recognition of the generic generation requirement, that is required to meet energy reliability, cost, and emissions objectives, i.e. the ability for transmission development to lead and enable generation development.

Question 4.4 – Is the existing regulatory framework suitable for implementing the ISP?

This has been a specific point of discussion, in part 1 of this submission. Our conclusion is that the regulatory framework requires enhancement to accommodate the ISP, and to respond to existing need for renewable generation proponents to be connected to the grid.

We look forward to participating further in AEMO's development of the ISP. We would also be pleased to assist with any queries you may have in relation to our submission, and, per our earlier submission, request that you contact Jacqui Bridge, our Networks Planning Manager.

Yours Sincerely,

Kelvin Gebert
Manager Regulatory Frameworks