TransGrid

AEMO
AUSTRALIAN ENERGY MARKET OPERATOR

# Victoria to New South Wales Interconnector West (VNI West) RIT-T

## Project Specification Consultation Report

***Industry Forum – 24 February 2020***

# Agenda

1. Background and context
2. Identified need
3. Credible options
4. RIT-T timelines and actionable ISP
5. VNI West consultation
6. Next steps

# VNI West RIT-T

- AEMO and TransGrid are the respective transmission planning bodies for Victoria and New South Wales (NSW) and are responsible for planning transmission network augmentations for these jurisdictions.
- Victoria to New South Wales Interconnector (VNI) limitations are expected to impact long term electricity prices due to increasing the cost of generation dispatch, the cost of future investment in generation capacity and reliability costs.
- AEMO and TransGrid are jointly undertaking a Regulatory Investment Test for Transmission (RIT-T) to assess the long term need to strengthen interconnection between Victoria and NSW.
- This RIT-T will assess the technical and economic feasibility of relieving VNI limitations in the long-term interest of Australian energy consumers.
- Project Specification Consultation Report (PSCR) was published on 13 December 2019
    - The PSCR is the first stage in the RIT-T consultation process and seeks feedback on the identified need for augmentation and potential options to meet this need.

# Project background

- AEMO's 2018 Integrated System Plan (ISP): both short-term and longer-term VIC-NSW interconnection increases required to enable more efficient sharing of supplies between the states.
  - Short-term: VNI Upgrade RIT-T will increase transfer capacity from Victoria to NSW. This RIT-T is in the final stages of completion.
  - Longer term: need to strengthen bi-directional transfer capacity between to improve sharing of resources and facilitate efficient generation development.
- Draft 2020 ISP reconfirmed this need and designated both projects as 'Group 1' priority projects requiring urgent investment to maximise benefits.
  - Modelling indicates optimal delivery by 2026-27, no later than 2028-29.
- 2019 ISP Insights and Draft 2020 ISP: maximise the benefits of Snowy 2.0, and mitigate risk of diminishing plant reliability and/or early plant closures.

# The NEM's supply transition

- Yallourn Power Station is expected to close its four units from 2029 to 2032 which may result in a supply shortfall unless alternative sources are found.
- Risk that a substantial plant failure, loss of significant revenue or force majeure event could cause early/unexpected plant withdrawal in Victoria.
- There is a high volume of interest in renewable generation connections in Victoria and NSW, much of which is in Renewable Energy Zones (REZs).
- However, inter- and intra-regional network limitations are expected to limit access to these low cost generation, preventing the efficient and reliable supply of power to Victoria and NSW load, and resulting in market impacts.
- The ISP has highlighted the need for diversity of supply sources, providing better access to hydro storage, and providing firm energy to support growing levels of intermittent renewable generation.

# Identified need

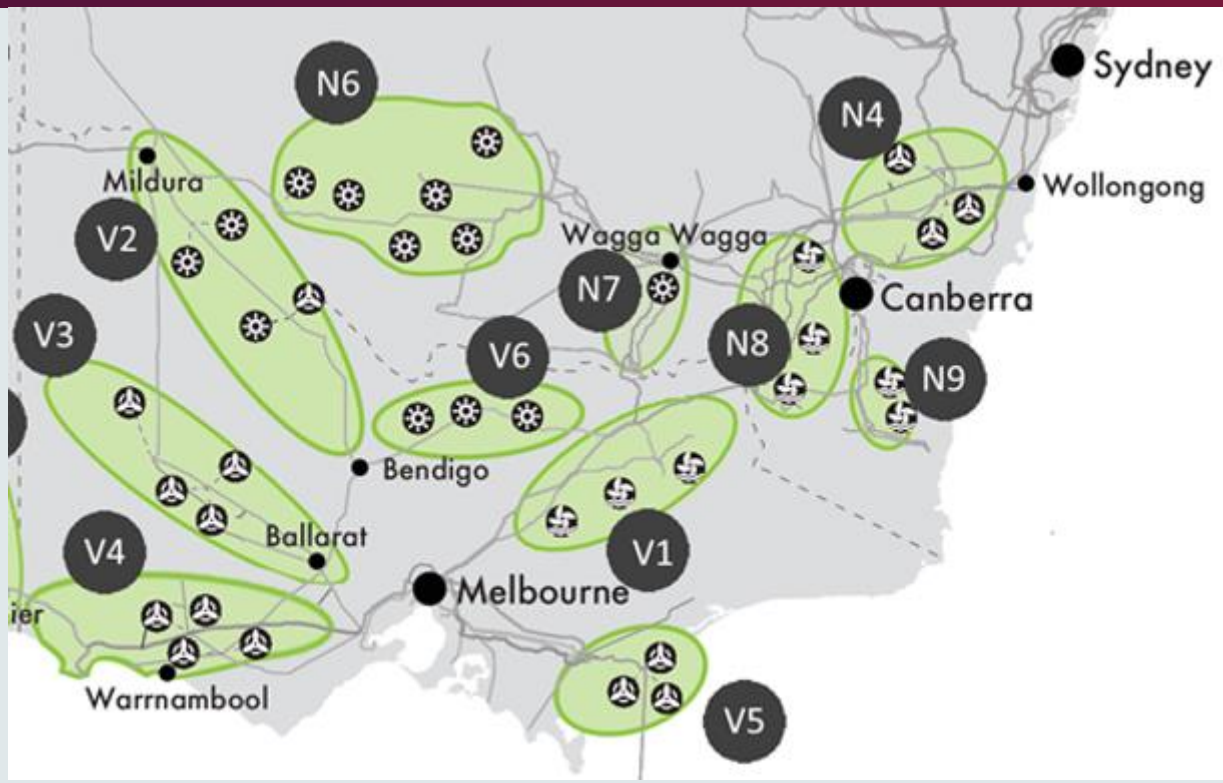
The identified need is for additional transfer capacity between NSW and Victoria, and to realise net market benefits by:

- Efficiently maintaining supply reliability in Victoria following the closure of further coal-fired generation and the decline in ageing generator reliability – including mitigation of the risk that existing plant closes earlier than expected.
- Facilitating efficient development and dispatch of generation in areas with high quality renewable resources in Victoria and southern NSW through improved network capacity and access to demand centres.
- Enabling more efficient sharing of resources between NEM regions.

# Renewable development

- The ISP identified potential REZs where high quality renewable resources exist in the vicinity of existing transmission network.

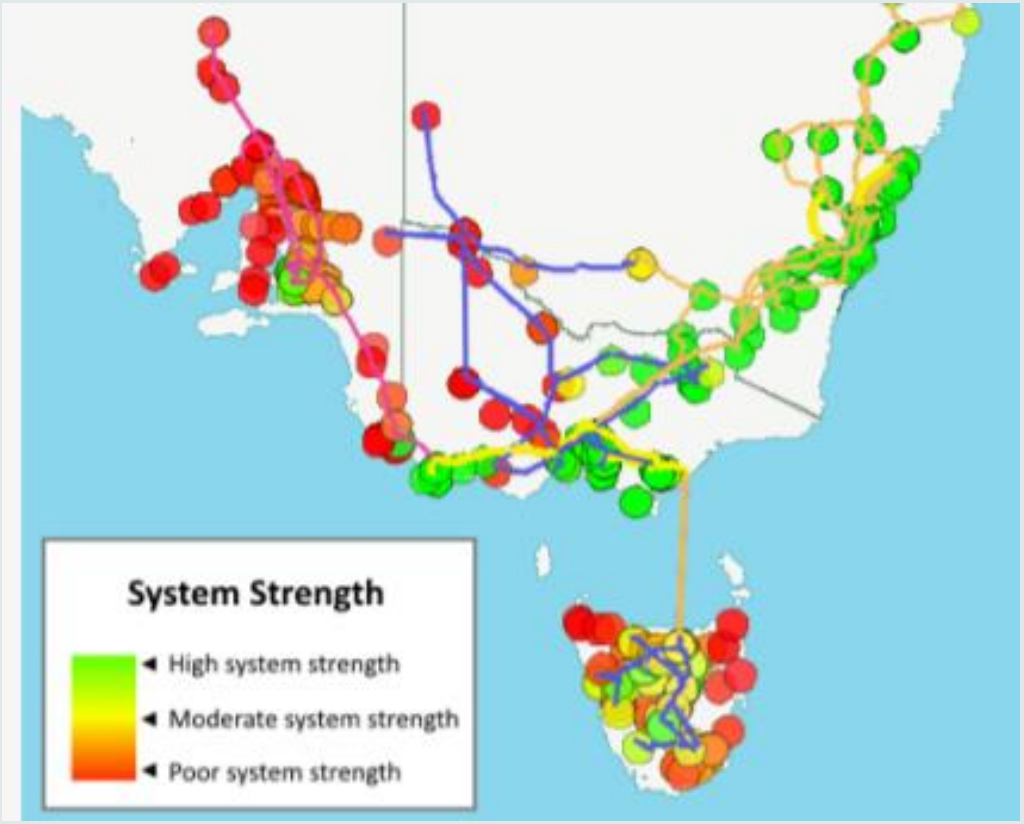
- These present the opportunity to reinforce the existing network and drive investment in optimal locations.




- Further interconnection between Victoria and NSW is expected to deliver market benefits by reducing network congestion within and between the states:
  - unlocking new low-cost renewable generation in key REZs
  - providing better access to pumped hydro storage, and
  - providing firming supplies for growing levels of intermittent generation.

# Remote network

- North west Victoria and south west NSW network has become increasingly ‘weak’ due to the high density of inverter-based renewable generators
- Rapid scale and pace of these connections has resulted in unprecedented technical issues impacting grid performance and operational stability.
- **Thermal limitations:** High volumes of generation leading to significant network congestion and constraint of generation.
- **Diminishing system strength:** As new inverter-based generation connects to weak areas of the network, they face additional constraints, considerable remediation investment costs and/or delays.

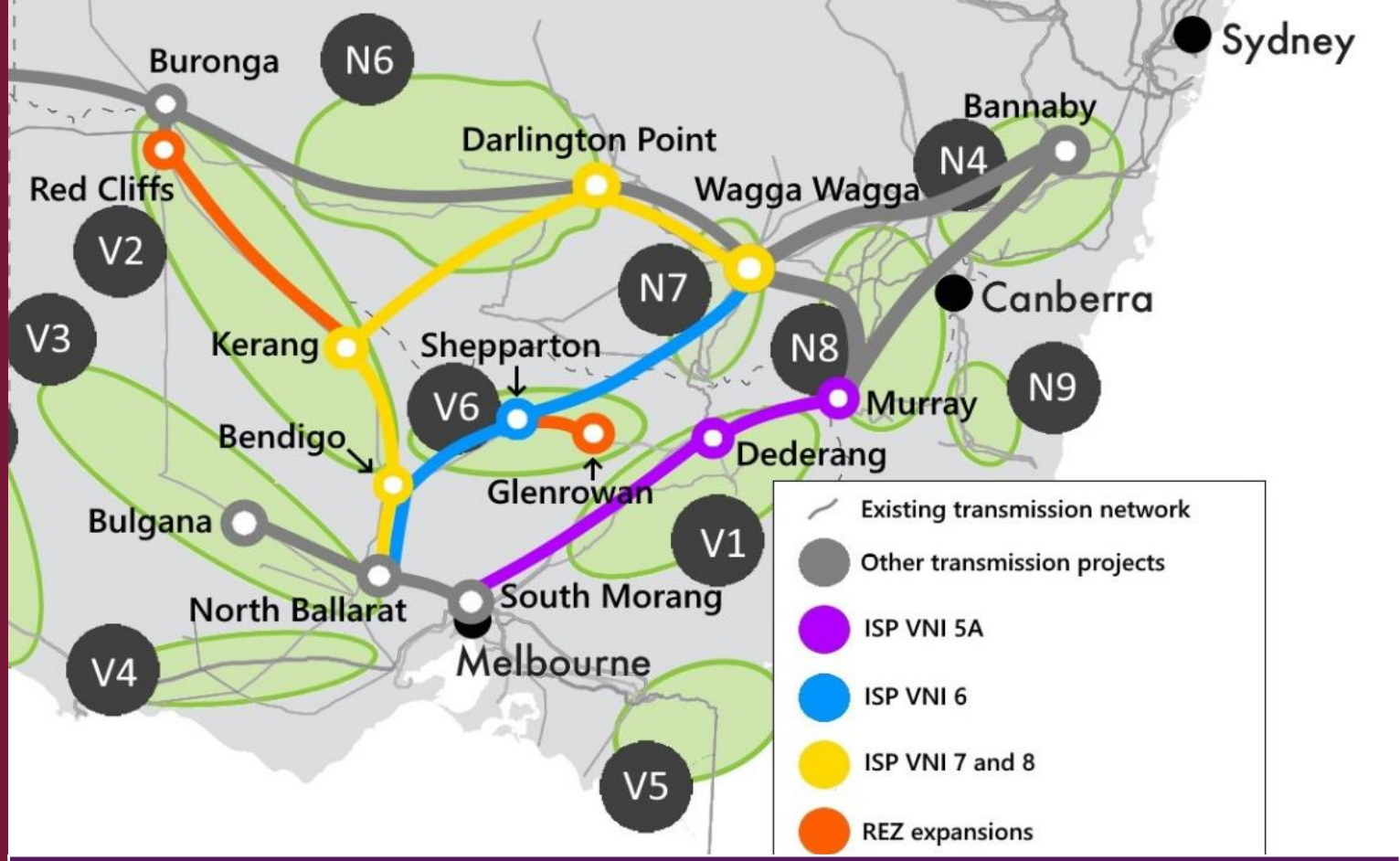



*2018 ISP: Projected system strength for 2018-19*

# Network development

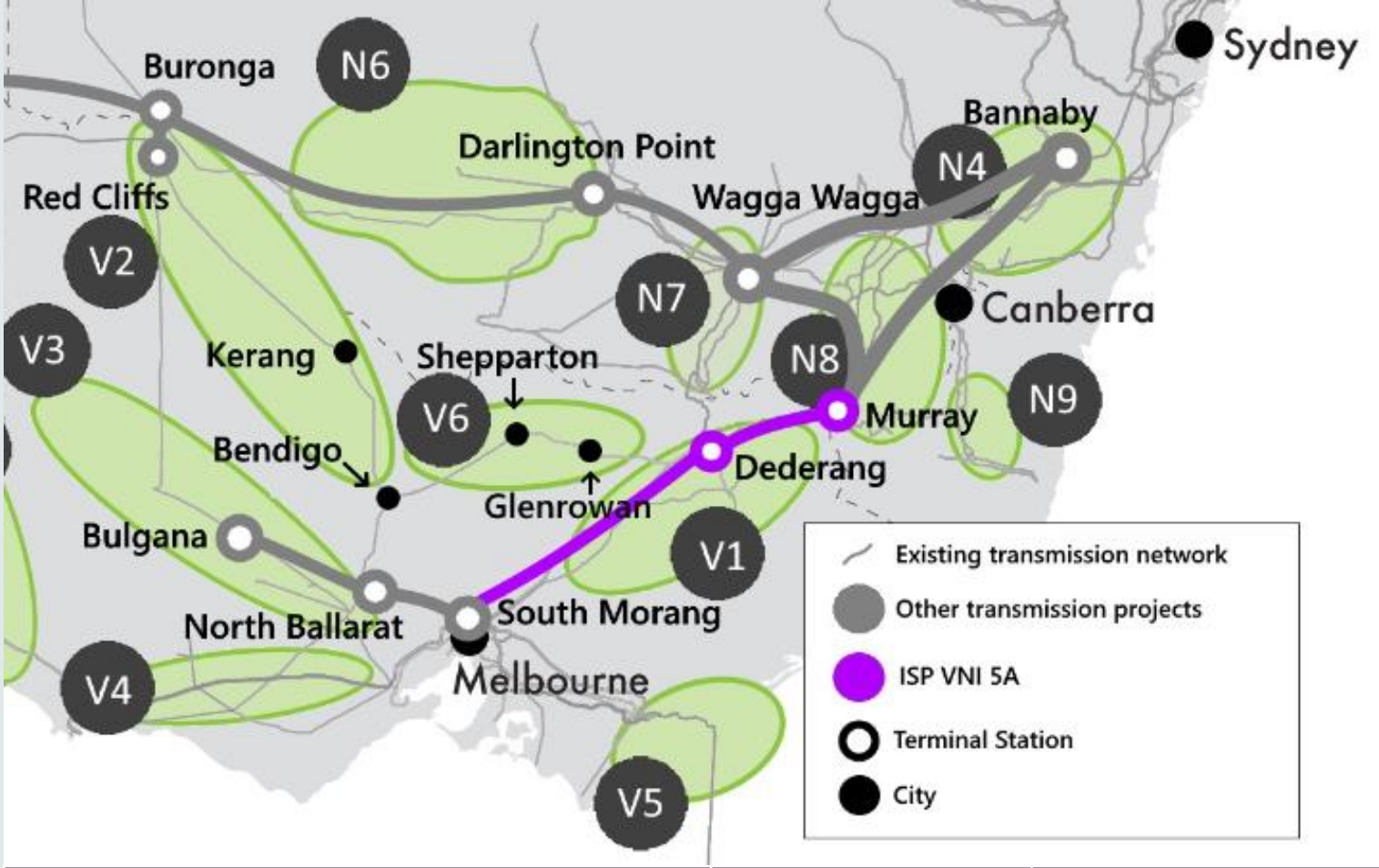
- A number of progressing and proposed transmission augmentations in Victoria, NSW, and South Australia are relevant to this RIT-T.
- **Progressing:**
  - Western Victoria Transmission Network Project includes a combination of minor and major works, which will increase transmission network capacity to address current limitations to Bulgana in Western Victoria.
  - Project EnergyConnect: proposes a new 330 kV interconnector from Robertstown in South Australia to Wagga Wagga in NSW, connecting into Victoria at Red Cliffs.
- **Under development:**
  - Victoria to New South Wales Interconnector Upgrade (VNI): proposes an incremental increase in transfer capability from Victoria to NSW in the short term.
  - Reinforcing NSW Southern Shared Network (HumeLink): proposes increasing transfer capacity between the Snowy Mountains and major load centres in NSW.
  - Marinus Link: proposes a new interconnector between Tasmania and Victoria to allow additional renewables and storage capability to be exported to the mainland.
  - System strength remediation project to address fault level shortfall at Red Cliffs – short and longer term solutions are being investigated.

# Proposed credible options



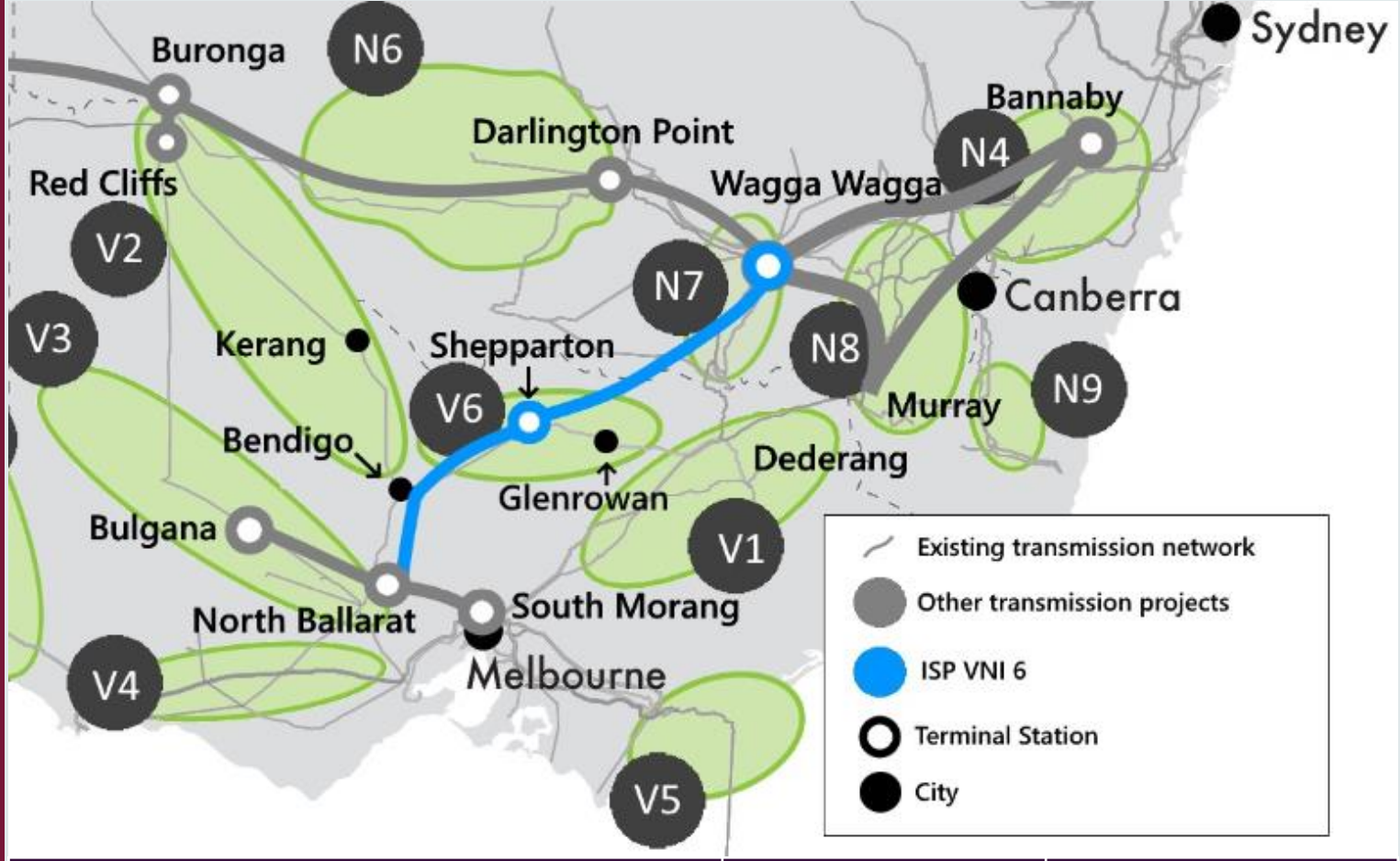

| | |
|---|---|
| **Augmentation to existing VNI corridor** | |
| **'VNI 5A** | New 330 kV lines from South Morang – Dederang – Murray |
| **Augmentation on new corridors (Via Bendigo or Shepparton)** | |
| **VNI 6** | New 500 kV lines from North Ballarat – Bendigo* – Shepparton – Wagga |
| **Augmentation on new corridors (Via Kerang)** | |
| **VNI 7** | New 500 kV lines from North Ballarat – Bendigo – Kerang – Darlington Point – Wagga |
| **VNI 8** | 330 kV equivalent of VNI 7 |
| **Potential expansions to accommodate renewable energy zones (REZs)** | |
| **Expansion A** | New lines to unlock Kerang – Red Cliffs |
| **Expansion B** | New lines to unlock from Shepparton – Glenrowan |

# VNI 5A - Augmentation to existing VNI corridor



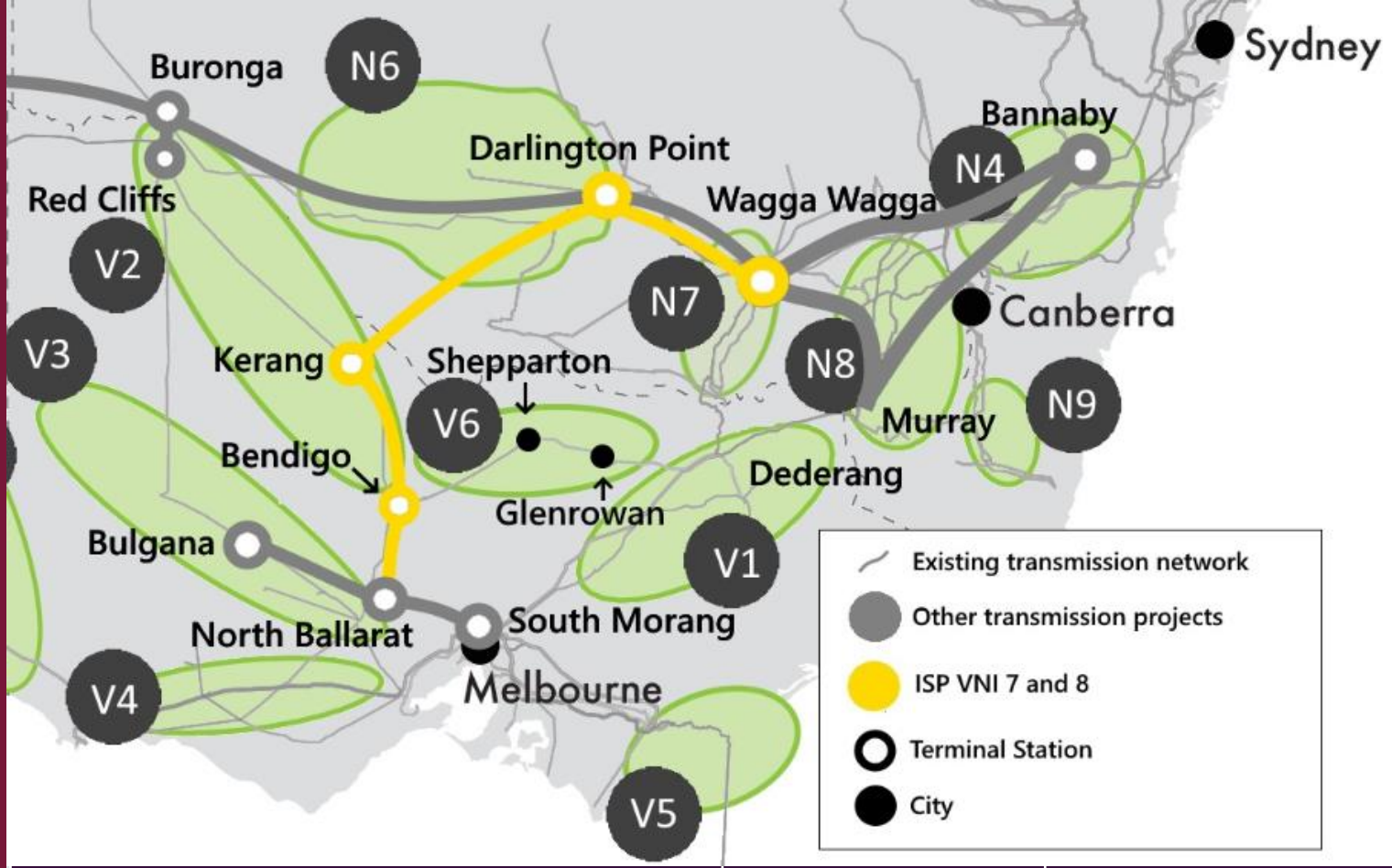

| Augmentation | Estimated cost | Indicative length |
|---|---|---|
| New 330 kV transmission lines from South Morang - Dederang - Murray with NSW upgrades | $735M | 350 km |

# VNI 6 - Augmentation on new corridor via Bendigo/ Shepparton




| Augmentation | Estimated cost | Indicative length |
|---|---|---|
| • New 500 kV transmission lines from North Ballarat – Shepparton – Wagga<br>• Variations include Bendigo connection | $1,335M | 440 km |
| Potential expansion to Glenrowan to unlock generation capacity | | |

# VNI 7 and 8 - Augmentation on new corridor via Kerang




| Augmentation | Estimated cost | Indicative length |
|---|---|---|
| **VNI 7:** New 500 kV transmission lines from North Ballarat – Bendigo – Kerang – Darlington Point – Wagga | $1,855M | 605 km |
| **VNI 8:** 330 kV equivalent of VNI 7 | $1,445M | 605 km |
| Potential expansion to Red Cliffs to unlock generation capacity | | |

# Potential benefits considered

*To satisfy the RIT-T, there must be net market benefits associated with implementing the preferred option.

The classes of market benefits considered for this project are:

- Changes in fuel consumption arising from different patterns of generation dispatch
- Changes in voluntary load curtailment and involuntary load shedding
- Changes in costs to other parties due to differences in the timing of new plant, differences in capital costs and differences in operational and maintenance costs
- Differences in the timing of transmission investment
- Changes in network losses
- Option value benefit

Additional benefits such as increased system strength, voltage support, or the ability to optimise fuel costs over time with storage devices, will also be considered.

# Indicative RIT-T timeline

1) Project Specification Consultation Report (PSCR): Published Dec 2019.
2) Project Assessment Draft Report (PADR): Q4 2020
   - Consultation on option assessment, identified market benefits and identified preferred option.
3) Project Assessment Conclusions Report (PACR): 2021
   - Presents conclusions following extensive consultation and modelling, after which the RIT-T undergoes a dispute period, and NSW components undergo AER RIT-T processes.

Followed by AER determination and contingent project application processes for NSW works.

This indicative timeline is based on the **current regulatory arrangements**.

# Actionable ISP

- On 20 November, the Energy Security Board (ESB) published draft ISP Rules for consultation to make AEMO's ISP actionable.
- The draft ISP Rules include transitional provisions to ensure a streamlined regulatory process for existing projects identified in the ISP, including VNI West.
- The design of these draft transitional arrangements is based on what stage each existing actionable ISP project has reached in the RIT-T process at the date when the new ISP Rules commence.
- Consultation on the new ISP Rules closed in January 2020, and the ESB are now considering submissions.
- AEMO and TransGrid will advise of any updates and next steps if the VNI West RIT-T is impacted by the final ISP Rules.

# VNI West PSCR consultation

- AEMO and TransGrid welcome written submissions, particularly in relation to credible network and non-network options, and other issues addressed in the PSCR.
- Consultation on the Draft 2020 ISP is occurring concurrently.
- **RIT-T will have regard for submissions to the Draft 2020 ISP**, and vice versa.
- All feedback will be considered and will help to identify and refine a proposed preferred option to be published in the PADR.
- The recommended preferred option may be a combination of network and non-network options

# Next steps

- VNI West RIT-T:
  - PSCR consultation open until 13 March 2020
  - PADR publication: targeting December 2020
  - PACR publication: targeting 2021

- All information is available at: http://aemo.com.au/

For any further queries please contact:

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