



# VNI West Community Consultative Group

Meeting 1 - 1 November 2023

# Welcome and introduction



# Agenda

Time	Agenda item	Time allocated	Presenter
12:50 – 13:00	Light lunch	10 mins	
13:00-13:05	Acknowledgement of Country	5 mins	TBC
13:05 – 13:10	Welcome, introductions and housekeeping	5 mins	Brendan Blakeley
13:10 – 13:25	CCG Terms of Reference and Code of Conduct	15 mins	Brendan Blakeley
13:25 – 13:35	Project overview and update	10 mins	Colin Mayer
13:35 -13:55	Preferred corridor report: Key themes	15 mins	Michael Johnson
	Preferred corridor report: changes		Paul McFadyen
13:55 – 14:35	Route Selection: <ul style="list-style-type: none"> <li>• Process and considerations</li> <li>• Input being sought from CCG</li> <li>• Constraint mapping</li> <li>• Hierarchy of constraints</li> </ul>	40 mins	Jarryd Barton (WSP)
14:35 – 14:55	Agenda setting <ul style="list-style-type: none"> <li>• What would the CCG like to learn more about?</li> </ul>	10 mins	Brendan Blakeley
14:55- 15:00	Meeting schedule/close	5 mins	Brendan Blakeley

# CCG Terms of Reference and Code of Conduct



# Project overview and update

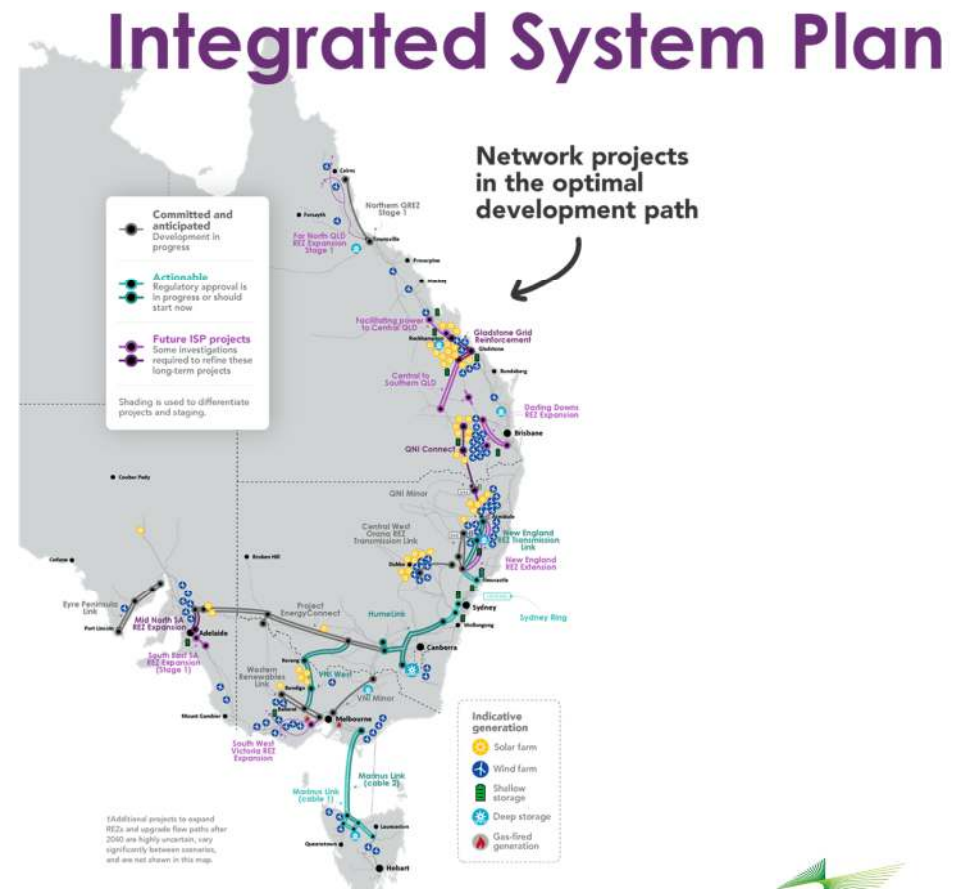
Colin Mayer, Project Director

# VNI West project

## Why do we need VNI West?

Network congestion is increasing in some areas of NSW and Victoria – so is the energy system’s reliance on the benefits of interconnection between regions. Well-targeted and timely investment in the transmission network is needed to keep pace with these changes and provide consumers with the most cost-effective energy outcomes - while maintaining reliability and security.

VNI West is a core component and priority project in the Australian Energy Market Operator's (AEMO) 2022 Integrated System Plan, which confirms the need for both short- and longer-term investment, to increase the transfer capacity between states in the National Electricity Market.



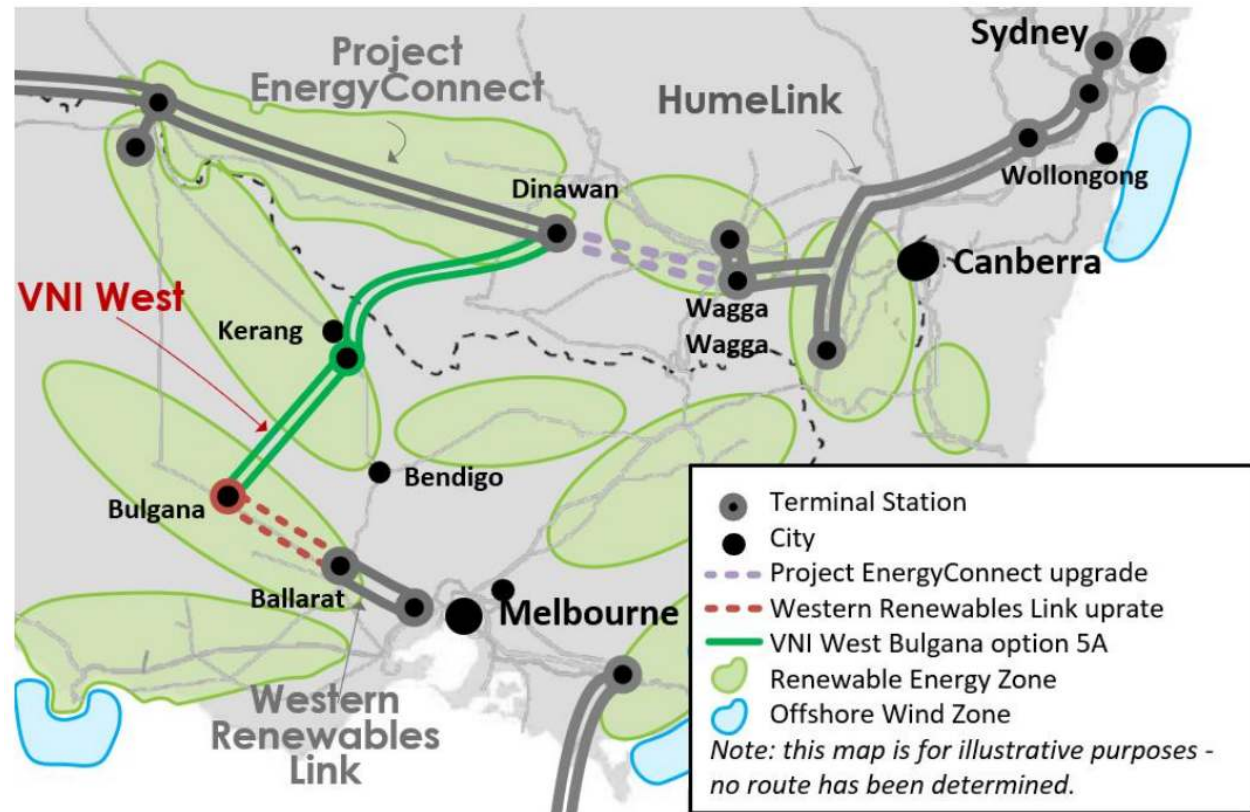
# VNI West project overview

## Overview

The Victoria to NSW Interconnector West – known as VNI West – is a proposed new 500 kV double circuit transmission line connecting the high voltage electricity grids in New South Wales and Victoria.

VNI West is being jointly developed with Transmission Company Victoria (TCV) and will connect major projects EnergyConnect in NSW and Western Renewables Link in Victoria.

The preferred option runs from Transgrid's Dinawan substation north of Jerilderie in NSW to new substations proposed near Kerang and Bulgana in Victoria.



# VNI West project overview

## Benefits

Projects such as VNI West represent once-in-a-generation opportunities to re-shape the NSW and Victorian transmission networks in a way that delivers the best possible value to electricity customers over the long term.

The project will:

- increase in the capacity to share electricity between NSW and Victoria
- improve the reliability and security of electricity supply in both states
- increase access to renewable energy sources
- create an economic boost for regional communities through the provision of jobs, training and local supply opportunities
- help achieve renewable energy targets and the overall decarbonisation of the National Electricity Market (NEM), while continuing to deliver safe, reliable and affordable electricity to consumers.



# VNI West project overview

## Status

Transgrid released its *Preferred Corridor Report* on 6 October 2023.

We have amended the draft corridor in multiple ways, taking into account community feedback and local knowledge. The big change is to expand the corridor north.

You will see the Preferred Corridor in the upcoming map slide.

With the corridor determined, the next stage will be to develop a route.

Transgrid will identify a series of potential route options, including a recommended preferred route within the corridor, based on detailed consideration of technical, environmental and social constraints.

The recommended preferred route option will be placed on public display in the first half of 2024 to give the community and stakeholders an opportunity to review the recommended route and provide further feedback.

As members of the VNI West Community Consultative Group, you will be given the opportunity to provide feedback to inform the corridor refinement and the subsequent Environment Assessment process.

## VNI West project overview

### Key project dates



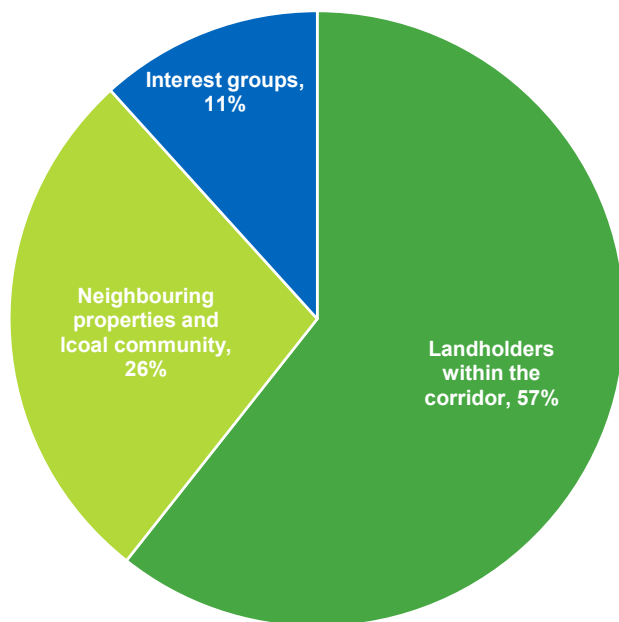
\*The above dates are indicative only and subject to change. Transgrid is working to achieve the objectives of the Federal Government's Rewiring the Nation plan and deliver the benefits of this project to the National Electricity Market (NEM) by 2028.

## Preferred Corridor Report

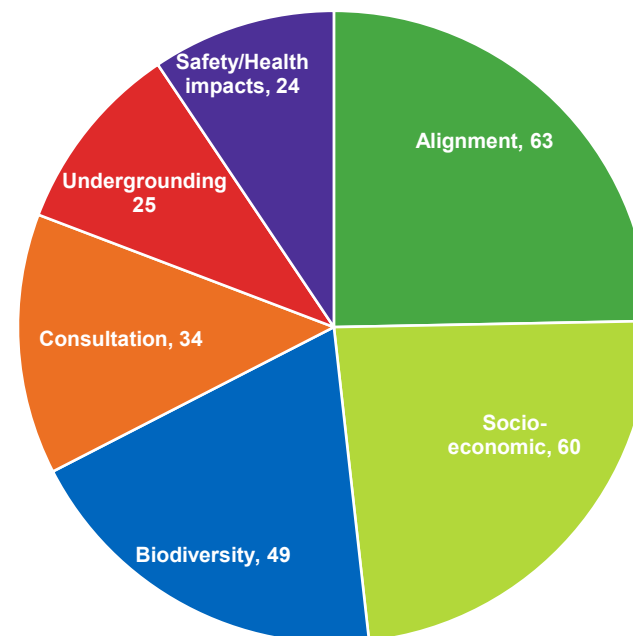


## Preferred Corridor Report: themes and changes

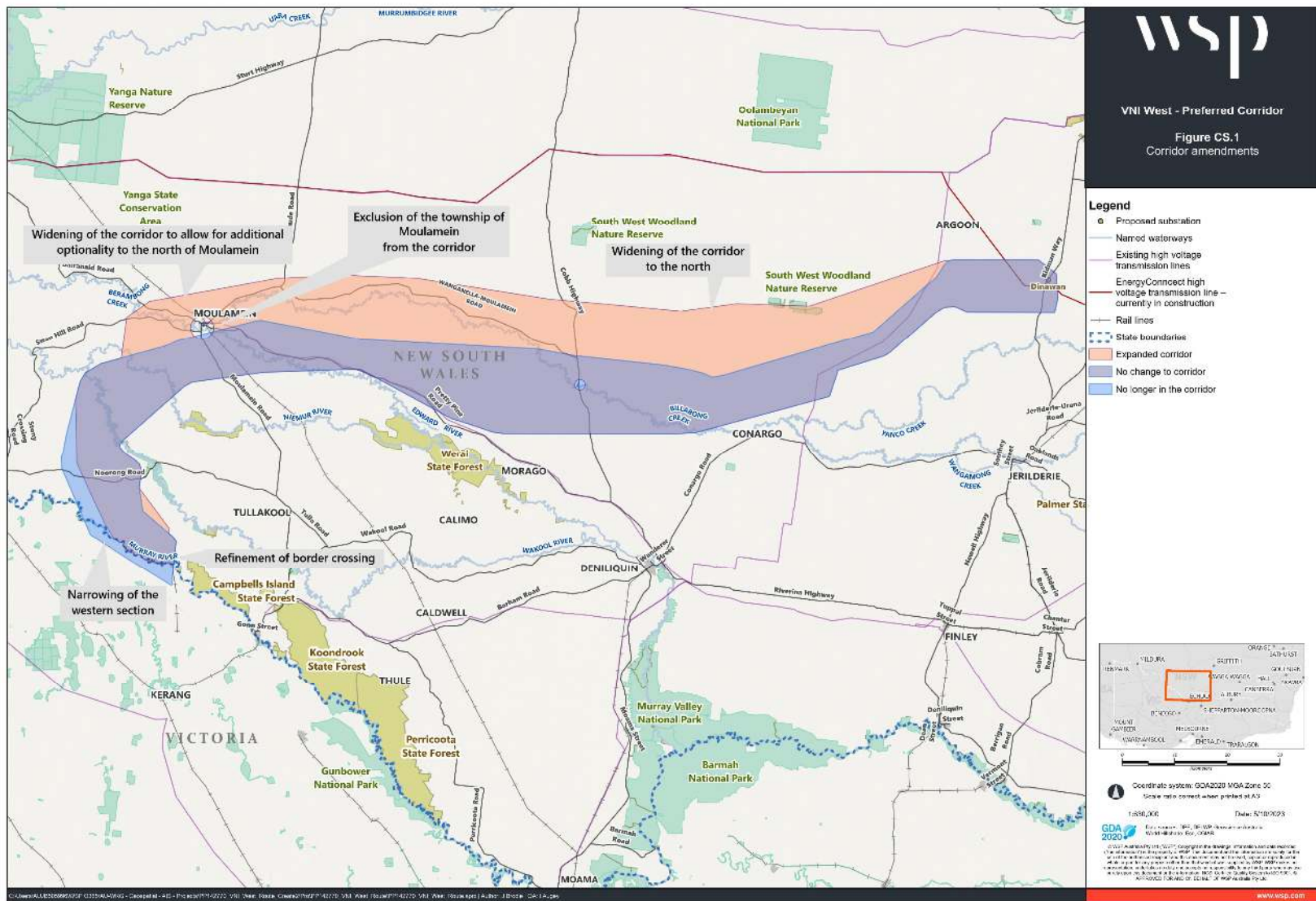
Who gave us feedback



Key themes – by count

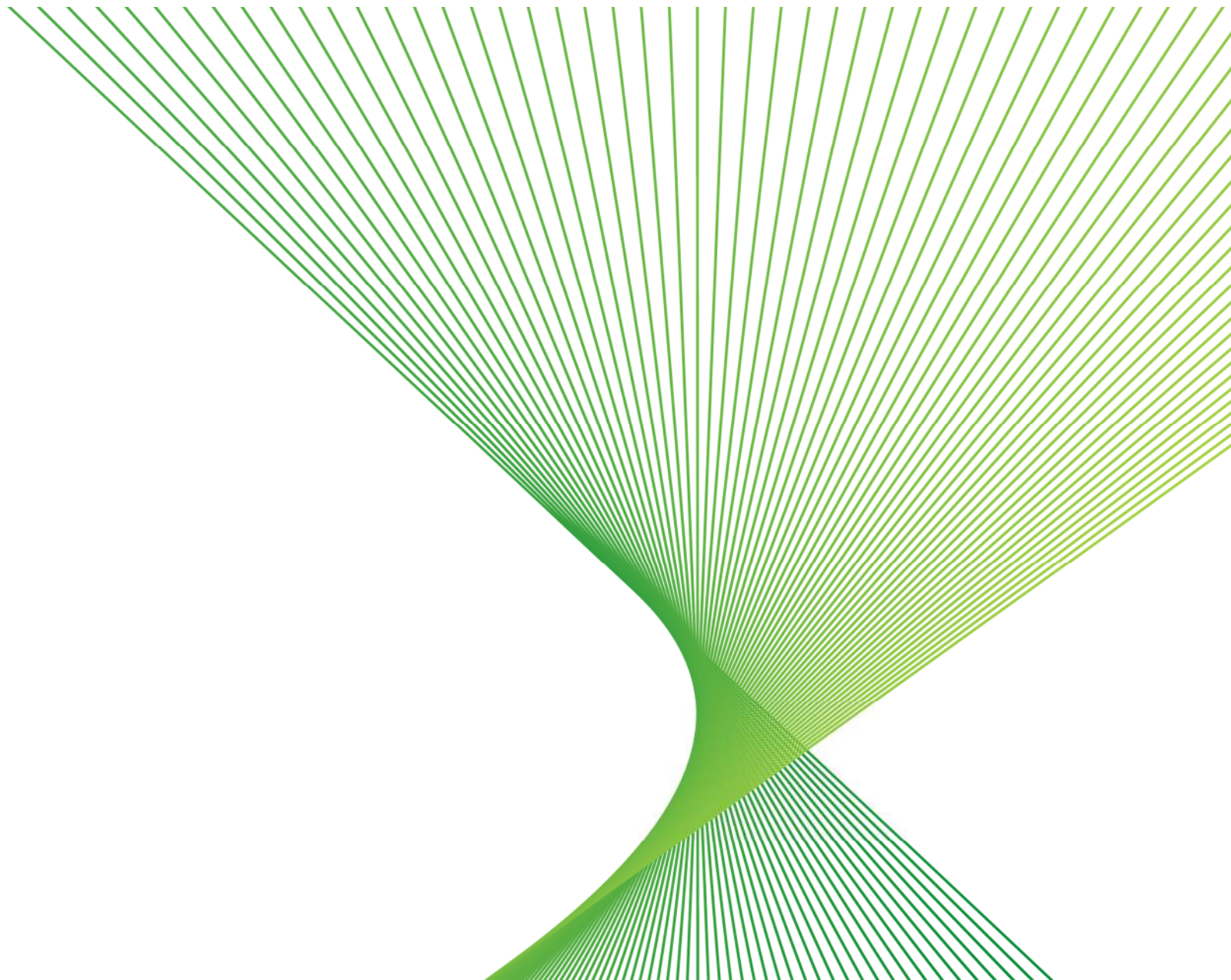




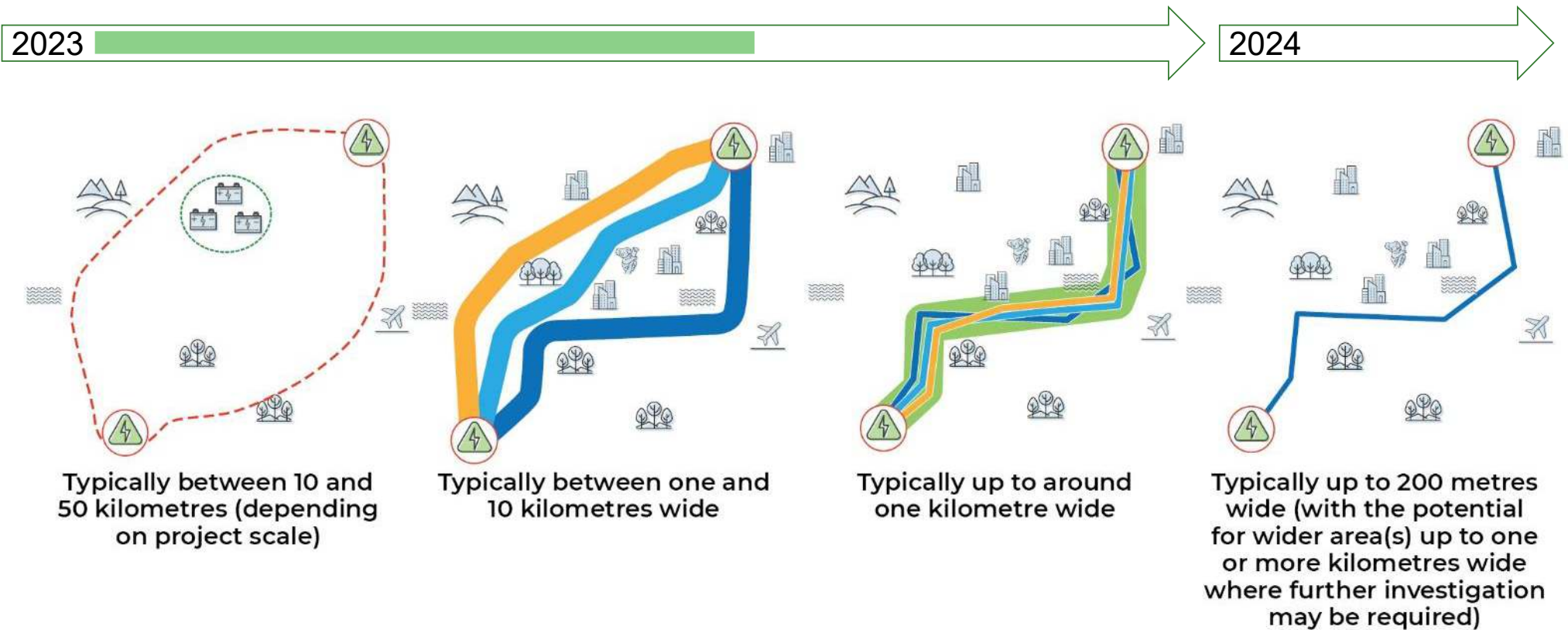


# Route Selection

Jarryd Barton, WSP



# Route selection process





# Process and considerations

## Technical

- Land use
- Engineering
- Land tenure
- Bushfire

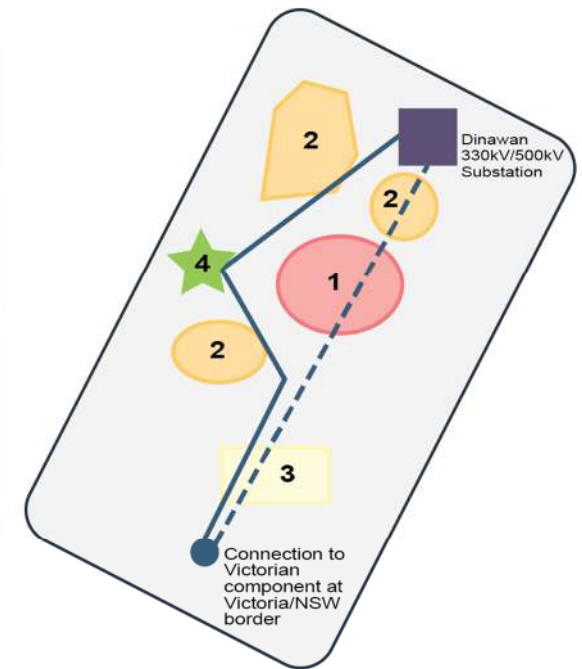
## Environmental

- Ecology
- Heritage
- Land use
- Hydrology and groundwater
- Soil and contamination

## Social / community

- Land use
- Visual and landscape

<b>High constraint EXCLUDE</b>	<ul style="list-style-type: none"> <li>• Areas considered unfeasible for the siting of a transmission line</li> <li>• Excluded from the assessment</li> </ul>
<b>Moderate constraint AVOID</b>	<ul style="list-style-type: none"> <li>• Areas significantly constrained</li> <li>• Should be avoided where possible</li> </ul>
<b>Low constraint MINIMISE</b>	<ul style="list-style-type: none"> <li>• Areas that are constrained, however, avoidance may be considered a lower priority</li> <li>• Minimisation of impact to these areas should be considered</li> </ul>
<b>OPPORTUNITIES</b>	<ul style="list-style-type: none"> <li>• Areas that present potential opportunities for siting of the transmission line</li> <li>• Should be considered as a preference for selecting and refining the transmission line corridor</li> </ul>



- Feasible corridor, avoiding constraints and utilising opportunities
- - - Unfeasible corridor



# Assessment criteria

## What have we added?

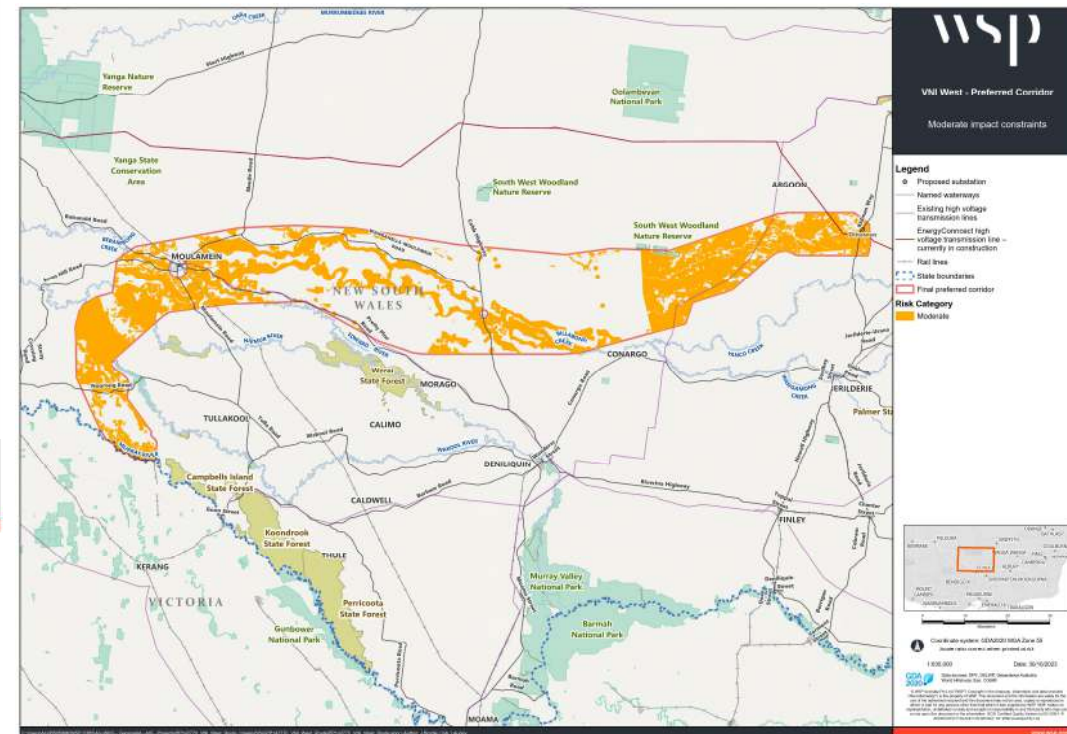
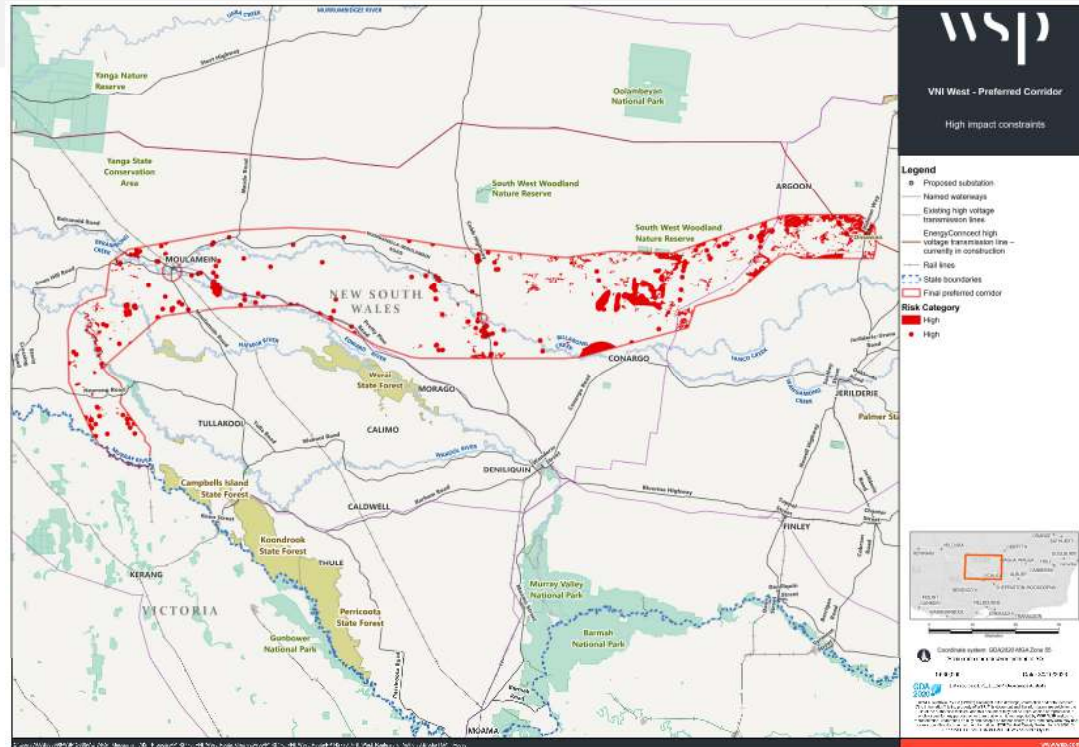
- Interaction with renewable development and agricultural infrastructure
- Constructability (access) and design constraints
- Aboriginal heritage predictive modelling
- Proximity to residential dwellings / homesteads
- Groundwater bores

## What have we removed?

- Constraint categories that were identified as not being present within the final preferred corridor. For example
  - Mine subsidence zones
  - Steep slopes / topography
  - Valleys/rivers requiring large spans
  - Commonwealth and Defence land
  - World and Commonwealth heritage

Issue	Constraint			Opportunities
	High impact	Moderate impact	Low impact	
TECHNICAL				
Land use	<ul style="list-style-type: none"><li>• Licensed airstrips/ aerodromes (including Obstacle limitation surface or a consultation buffer)</li></ul>	<ul style="list-style-type: none"><li>• Unlicensed airstrips</li></ul>		<ul style="list-style-type: none"><li>• Large existing infrastructure assets (such as existing transmission lines, existing canal networks, rail corridors (excluding crossings, main roads))</li><li>• Areas of compatible development (proximity to REZ)</li></ul>
Engineering		<ul style="list-style-type: none"><li>• Length of transmission</li><li>• Crossings with existing transmission lines (66kV and above)</li><li>• Interactions with renewable development infrastructure</li><li>• Interactions with agricultural infrastructure</li><li>• Geotechnical and soil conditions – high risk</li><li>• Flood-prone land</li></ul>	<ul style="list-style-type: none"><li>• Geotechnical and soil conditions – other</li><li>• Rail line crossings</li><li>• Main road crossings (State and regional roads)</li><li>• Construction accessibility</li><li>• Number of transmission line turning points</li></ul>	
Land use / land tenure	<ul style="list-style-type: none"><li>• Large open-cut and/or active mining sites</li></ul>			
Bushfire		<ul style="list-style-type: none"><li>• Bushfire prone land</li></ul>		
ENVIRONMENT				
Ecology	<ul style="list-style-type: none"><li>• Ramsar Wetlands, JAMBA, ROKAMBA sites, including Directory of Important Wetlands (DIWA)</li><li>• EPBC Threatened ecological communities SAIL ecological communities and species</li><li>• National Parks, Biodiversity Stewardship Sites, Biobanks</li></ul>	<ul style="list-style-type: none"><li>• Ecological conservation areas, State Conservation Areas, State Forests, wilderness protection areas</li><li>• Other Important Wetlands and water sources for protected migratory birds</li><li>• Habitata and communities<ul style="list-style-type: none"><li>– Threatened species (flora/fauna) (non-SAIL)</li><li>– Large, contiguous/intact areas of woodland vegetation</li><li>– IECs listed under the BC Act (non-SAIL)</li><li>– Key fish habitat and riparian corridors</li></ul></li></ul>		<ul style="list-style-type: none"><li>• Areas of existing disturbance/ opportunity for co-location with:<ul style="list-style-type: none"><li>– Roads and tracks</li><li>– Utility easements</li><li>– Fence lines</li><li>– Cadastral boundaries</li></ul></li><li>• Crown Land including water reserves and travelling stock routes</li></ul>
Heritage	<ul style="list-style-type: none"><li>• Aboriginal Places and areas subject to Native Title and land granted under NSW Aboriginal Land Rights Act</li><li>• Aboriginal sites/artefacts</li><li>• State Heritage items</li></ul>	<ul style="list-style-type: none"><li>• Local Non-Aboriginal heritage items and conservation areas</li><li>• Aboriginal heritage predictive modelling</li></ul>		
Land use / land tenure		<ul style="list-style-type: none"><li>• Native Title Determination sites</li></ul>	<ul style="list-style-type: none"><li>• Land and soil capability and/ or soil fertility</li></ul>	
Hydrology and groundwater			<ul style="list-style-type: none"><li>• Main channels of rivers</li><li>• Watercourses and drainage line crossings</li><li>• Groundwater bores</li></ul>	
Soil and contamination		<ul style="list-style-type: none"><li>• UXO sites (unexploded ordnance sites) – slight</li></ul>	<ul style="list-style-type: none"><li>• EPA notified sites</li><li>• UXO sites (unexploded ordnance sites) – other</li></ul>	
SOCIAL AND COMMUNITY				
Land use	<ul style="list-style-type: none"><li>• Built up areas (major towns and residential zoning)</li><li>• Known large local development applications</li><li>• Proximity to individual homesteads/ dwellings (300m radius)</li></ul>	<ul style="list-style-type: none"><li>• Broader proximity to individual homesteads/ dwellings (1km radius)</li><li>• Known future development projects (including existing or approved large solar or wind farms listed under the NSW Major Projects website)</li><li>• Intensive agricultural activities, horticultural use and irrigated cropping land</li><li>• Places of community significance</li><li>• Notable social and economic impacts</li></ul>		<ul style="list-style-type: none"><li>• Large areas of contiguous property/ property owner</li></ul>
Visual and landscape			<ul style="list-style-type: none"><li>• Known tourist locations and/ or significant views towards local features (such as landscape elements)</li></ul>	

# Opportunities and constraints mapping





# Agenda Setting



**Meeting close**

**Thank you for your time**

1800 222 537

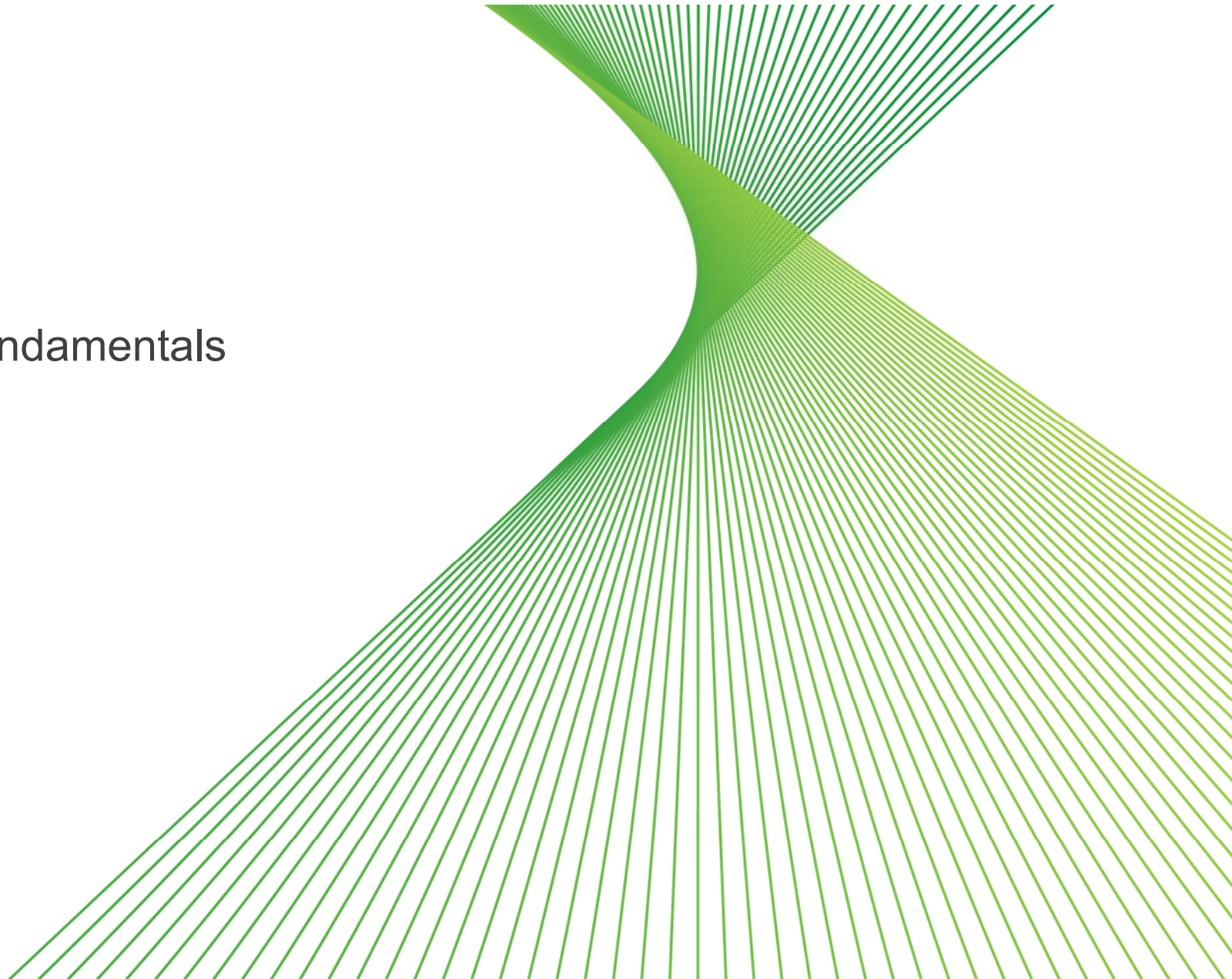
[vniw@transgrid.com.au](mailto:vniw@transgrid.com.au)

[www.transgrid.com.au/vniw](http://www.transgrid.com.au/vniw)





# Transmission line fundamentals

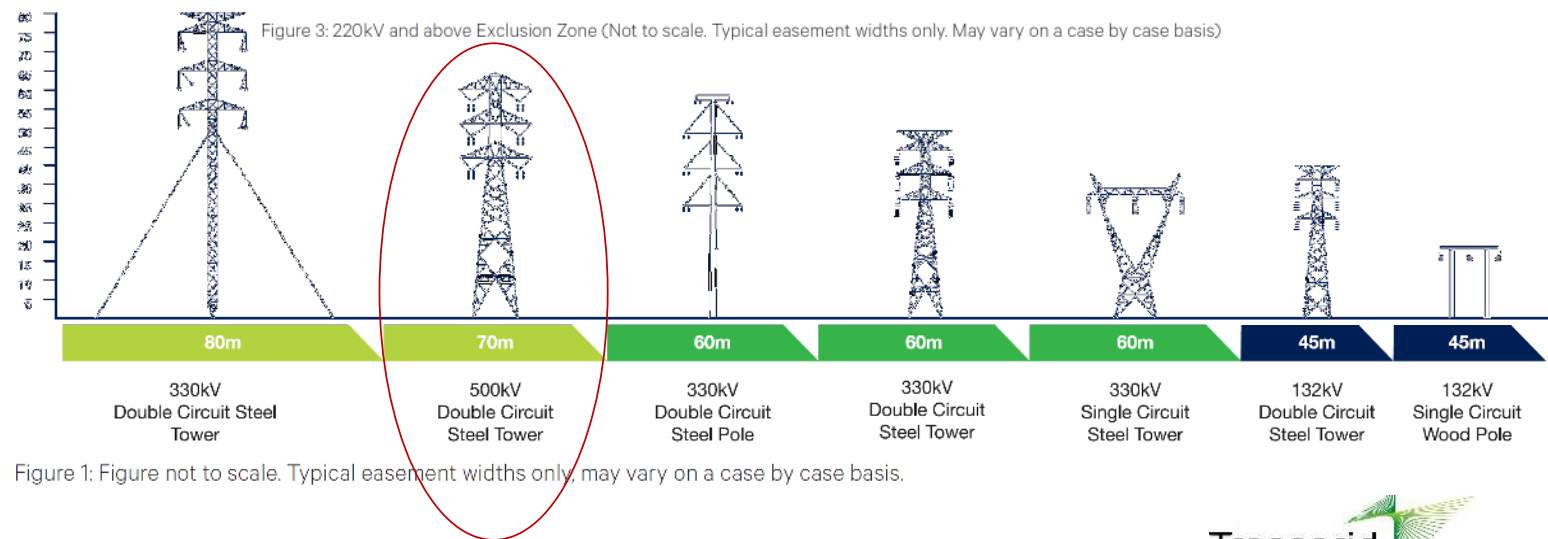
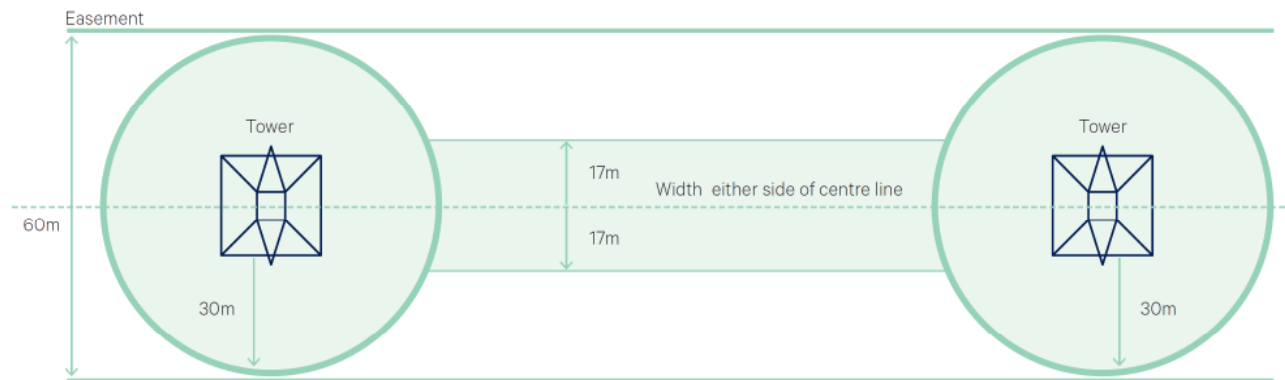


## Management approach



# Easements and clearance heights

- **70 metres:** standard easement width for 500kV towers
- **450 metres:** approximate distance between towers
- **4.3 metres clearance:** operating within easement above this height requires a permit - contact Transgrid.
- Cropping and grazing are **permitted** within the easement





## Activities permitted on easement



### **Cropping and grazing, provided:**

1. Machinery cannot extend more than 4.3 metres above ground level

*Note: Exclusion zone requirements to be at least 10/17 metres from the centre of transmission lines do not apply to cropping and grazing, however all other exclusion zone requirements apply. Transgrid's Fencing guidelines must be complied with.*



### **All other agricultural activities including irrigation, provided:**

1. Machinery cannot extend more than 4.3 metres above ground level
2. All fixed metallic objects are earthed
3. Machinery, including irrigation, must remain outside the exclusion zone
4. No solid jet of water is to be within 4 metres of overhead conductors
5. Must use non-metallic piping
6. No fuel storage
7. No transmission line outages are required to undertake agricultural activities

*Note: Transgrid's Fencing guidelines must be complied with.*



### **Planting or cultivation of trees and shrubs, provided:**

1. Mature plant / tree height is less than 4 metres

### **Not permitted:**

- Movement of any vehicle or equipment between tower legs or guy wires, and within 5 meters of a structure
- Use of drones or aircraft within 60 metres of structures or lines



# Irrigation activities



## Irrigation

- ✓ Irrigation is **permitted** within Transgrid's easements provided:
  - ✓ Machinery cannot extend **more than 4.3m** above ground level.
  - ✓ All fixed metallic objects are **earthed** and non-metallic piping is used.
  - ✓ No fuel storage.
  - ✓ No transmission line outages are required and
  - ✓ machinery remains outside the **exclusion zones** (but this does not apply to cropping and grazing).
- Solid jet of water is **not permitted** to come in contact within 4m of overhead conductor. Water streams should never be directed at transmission lines.

# Fencing

## Fencing guidelines

- Transgrid has Fencing Guidelines to ensure that fencing in and around our easements is safe to install, operate and maintain
- Transgrid **may grant permission** with conditions provided it is located outside the exclusion zone and proposal is as described:
  - ✓ Electric fencing- Height is **no greater than 2.5m** & must be located **at least 30m** from transmission structures or supporting guy wires.
  - ✓ Metal fences that run across an easement, **within 25m** of the base of a transmission line structure must install isolation panels where the fence enters or exits the easement and provide earthing either side of the isolation panels.
  - ✓ Parallel metal fences **within 20m** of the easement also have specific earthing requirements

Fences within or near a transmission line easement must be '**earthed**' for safety reasons, which means they are connected to the ground and therefore kept at the same voltage potential as the earth.

- ✓ Non electric fencing- **No greater than 2.5m** in height.
- ✓ Fencing does not restrict access to Transgrid assets.
- ✓ Metallic components are **earthed**.
- ✓ Transgrid's Fencing Guidelines are **complied** with.
- ✓ *Note: Parallel metallic fencing has specific safety risks and requirements under the Fencing Guidelines.*

We encourage landowners to contact us before installing any new fencing near a transmission easement so we can provide guidance on your specific fencing requirements.

# GPS interference

- Interference can occur in areas where GPS signal is weak
- Transgrid will assess potential signal interference issues during route planning
- Signal amplification can be used to address the issue

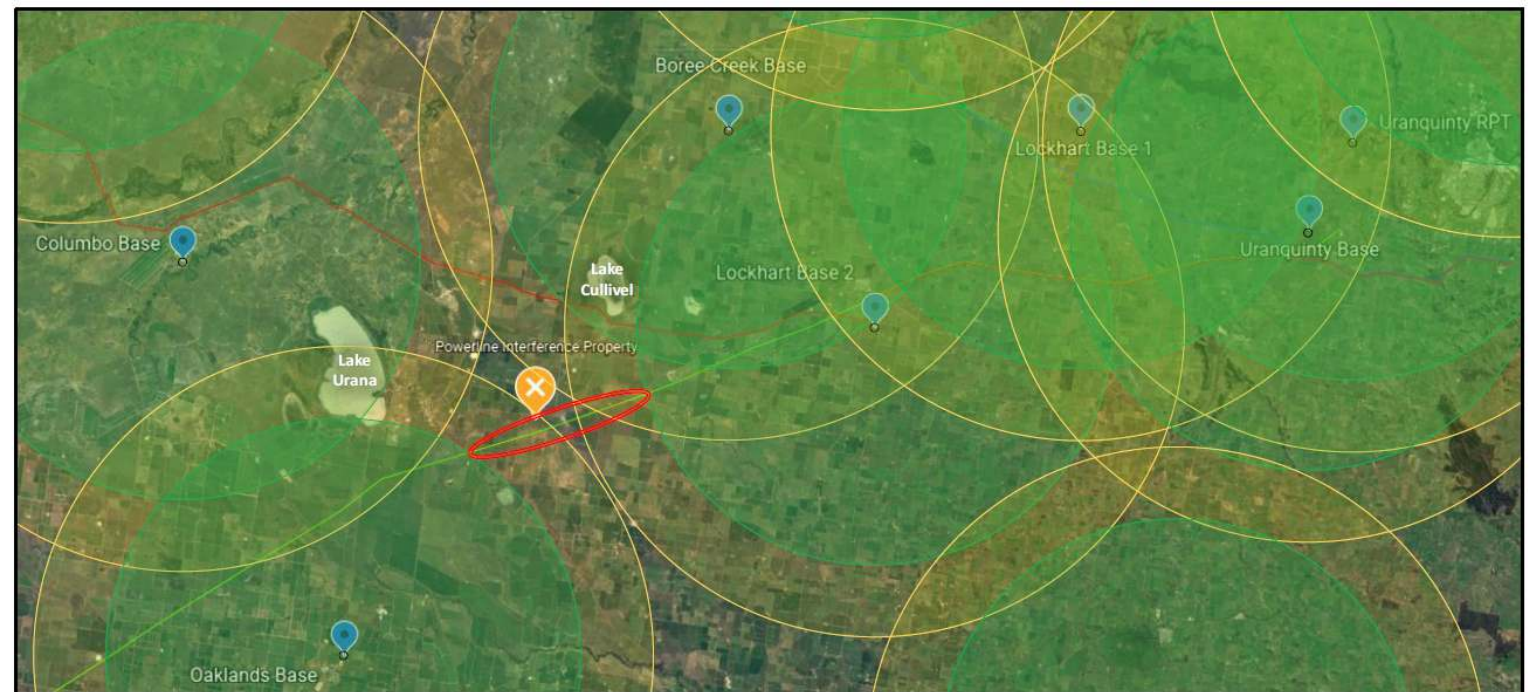


Figure 11 - SST cell map around the 132kV line (lime green) with areas of cells immune to interference highlighted green



# Aerial activities



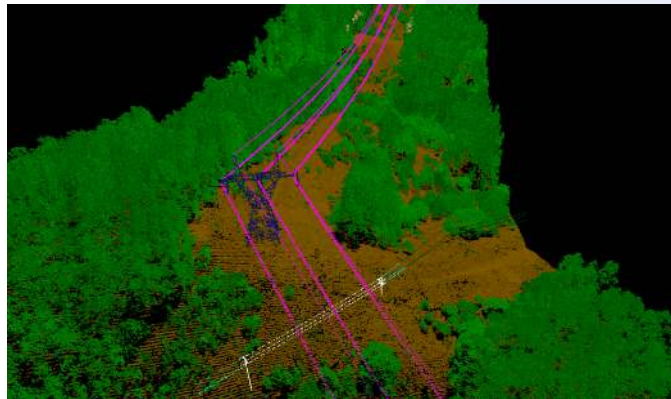
## Aerial activities

- Flying of remote controlled or unmanned aerial vehicles (ie. drones), or any manned aircraft or balloon **within 60m** of any transmission line structure, guy wire or conductor is **prohibited**.
- The Civil Aviation Safety Authority (CASA) has requirements for all pilots and drone operators. We encourage you to contact CASA for specific information relating to your aerial operations
- Minimising impact to aerial activities will require detailed on-ground work with landholders and aerial operators in the region



# Vegetation management

- Routine inspection and condition-based management of vegetation
- Bushfire preparedness program completed at the start of bushfire season (February and April), includes helicopter patrols, LIDAR flights and ground inspections, and vegetation management



# Undergrounding

- No precedent for 500 kV undergrounding at this scale in Australia
- Orders of magnitude more expensive
- Cost prohibitive for consumers
- Extensive environmental and property impact





# Environmental assessment and surveys

Geoff Hudson, Environment Manager

# Biodiversity – Ecology surveys

Ecology surveys are carried out to confirm existing vegetation types, animal and plant species and their habitats within the local area. The surveys are completed each season and coincide with when certain species are more active or more easily identified, for example when flowering occurs or during breeding season.

## What gets done?

Pre-clearing/ground disturbance assessment by ecologists are generally done before any vegetation clearing and/or ground disturbing activities can be started.

## Pre-clearing actions/checks may also occur for:

- ✓ Trees with hollows for Nest Box off-sets,
- ✓ Delineation of sensitive flora/fauna or vegetation that needs to be protected – No Go Zones.



## Flora

- usually conducted during daylight hours by teams of 2–4 ecologists walking through identified areas, cataloguing, photographing and in some instances samples may be required.

## Fauna

- usually conducted by teams of 2–4 ecologists during the day and occasionally at night. In some instances the humane use of nets and traps may be necessary. To prevent harm to any fauna, traps are checked and any captured animals are photographed and released.

## Aquatic

- usually conducted by teams of 2–4 ecologists within and along streams, creeks and rivers to identify aquatic life. The field team will use a variety of methods to better understand the existing species.



# Cultural heritage studies

We undertake cultural heritage field surveys to help us understand the local environment and identify issues to be taken into account during the planning and design of the project.

We are committed to preserving and respecting cultural heritage sites and these surveys help identify or confirm these sites or items of heritage significance. This may include built structures, gravesites or sacred sites relevant to Aboriginal people or those who have since settled in the area.



*As part of the field surveys, Registered Aboriginal Party representatives, Traditional Owners and local cultural knowledge holders will be invited to communicate knowledge regarding the cultural heritage values of the area, archaeological and cultural sites, and the overall landscape. The project team will act in a culturally sensitive manner and treat the information provided with respect (and in confidence, where requested and required).*



These surveys are typically carried out on foot. A combination of public and private land will be investigated as part of the surveys. If access to private land is required, we will seek landowner consent.

# Heritage Salvage & Protection

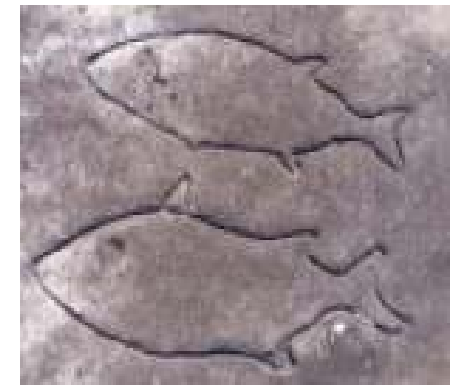
Archaeologists and local Aboriginal representatives inspect areas identified with Aboriginal heritage constraints.

## Aboriginal heritage items include:

- Scarred trees
- Stone artefacts and axes
- Hearth and middens
- Potential Arch Deposits (PADs)
- Earth mounds

## Prior to clearing or ground disturbance aboriginal heritage items or objects will be:

- Delineated
- Flagged off & salvaged (collected) by Archaeologists & RAPs.



A historic survey marker tree (previously unrecorded and seen as an arrow), near Sturts Billabong, Wentworth.

If anything of significance is discovered, the team records the artefact by taking a photo and making notes. There is no disturbance to the ground or removal of any artefacts. The recording is then sent to the Aboriginal Heritage Information Management System, which is managed by Heritage NSW. The recording is also included in Transgrid's Environmental Impact Statement that is submitted to the Department of Planning, Industry and Environment.

All personal property or landowner information is redacted.

# Land access and acquisition

Ben Doran, Land & Property Manager





## Land access



### What can you expect?

- If we require access to your property, **we will contact you directly to seek your permission**
- We will document your entry conditions in a **consent to enter** form
- Consent to enter forms will record the **location, timing and nature** of activities on your property
- Landholders will have a dedicated landholder liaison team

### Why do we need access?

- Environmental and ecological surveys
- Cultural heritage surveys
- Geotechnical investigations



# Biosecurity

Going in and out of properties has the potential to spread weeds, pests and diseases.

Transgrid is committed to taking the necessary steps to reduce potential biosecurity risks through implementation of controls.

**Transgrid has a “COME CLEAN - GO CLEAN” policy regardless of whether there are specific biosecurity issues flagged.**



Transgrid employee performing vehicle washdown.

## Safeguarding by:

- ✓ Following established on-farm biosecurity plans.
- ✓ Complying with Consent to Enter requirements.
- ✓ Thoroughly wash and/or decontaminate before entering or leaving a property away from production, sensitive areas, and not drain into waterways or cropping areas.
- ✓ Staying on designated roads, access routes and clear of high-risk areas such as thick vegetation, animal manure or muddy areas.
- ✓ Undertaking hygiene procedures at worksite or a suitable location agreed to by property owner.
- ✓ Ensuring items of Plant and Heavy Vehicles have a *Plant Delivery/Onboarding Inspection* done, which will include a *Weed Hygiene Inspection Certificate*.

# Easement acquisition

## Just Terms Compensation

- One-off upfront payment
- Designed to leave landholders financially whole
- Market value of the easement interest
- Land value and disruption to operations considered
- Transgrid will pay for the reasonable legal and valuation fees you incur

## Strategic Benefit Payment

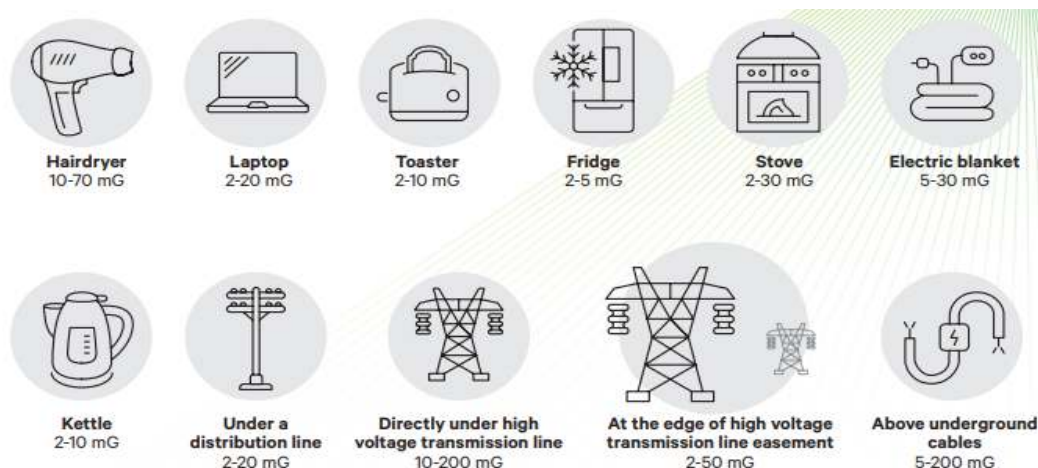
- Announced by NSW Government in 2022
- In addition to Just Terms Compensation
- Ongoing payment linked to property title for 20 years
- \$200,000 pre kilometer overall
- \$10,000 per year indexed to CPI



# Electric and Magnetic Fields

Leading global health bodies such as the World Health Organisation, the US National Institute of Environmental and Health Sciences and the UK National Radiological Protection Board continually evaluate the research to assess the likelihood of health effects associated with exposure to EMFs.

They continue to advise that there is no scientific evidence that exposure to EMF around homes and transmission networks affects human and animal health.



Most people will encounter a wide variety of EMF sources throughout their daily lives, whether at home, at work or in the general environment.

Transgrid is guided by health authorities and takes a precautionary approach to EMFs.

## In Australia-

ARPANSA (Australian Radiation Protection and Nuclear Safety Agency) has advised that *“the scientific evidence does not establish that exposure to the electric and magnetic fields found around the home, the office or near powerlines causes health effects.”* *“There is no established evidence that the exposure to magnetic fields from powerlines, substations, transformers or other electrical sources, regardless of the proximity, causes any health effects.”*

## Globally-

The World Health Organisation (WHO) has advised that *“current evidence does not confirm the existence of any health consequence from exposure to low level electromagnetic fields.”*