Submission No 61

INQUIRY INTO FEASIBILITY OF UNDERGROUNDING THE TRANSMISSION INFRASTRUCTURE FOR RENEWABLE ENERGY PROJECTS

Name: Shana Nerenberg

Date Received: 10 November 2023

The Director
Select Committee on the Feasibility of Undergrounding
Infrastructure for Renewable Energy Projects
Parliament House
Macquarie Street,
SYDNEY NSW 2000

via: Online submission form

10 November 2023

Dear Director,

Re: Feasibility of undergrounding the transmission infrastructure for renewable energy projects

Supplementary submission

I write to provide further technical information about the environmental impacts of Humelink, which does not appear in my original submission.

This submission addresses Terms of Reference 1 (a):

> *the costs, benefits and risks of underground versus overhead transmission lines, particularly with regard to* […] *ongoing environmental impacts,* […]

Executive Summary

The Select Committee must demand transparency for the up to $1.34 billion capital expenditure budgeted for biodiversity offsets, an unprecedented spend. The Environmental Impact Statement (EIS) has zero transparency. The biodiversity offsets strategy in the EIS is supposed to detail where the biodiversity offsets are located, how much it will cost to purchase them, and how much it will cost to manage them in perpetuity. However, the biodiversity offsets strategy is half (½) a page of text (out of 957 pages) and contains none of this information (p. 8-91, Humelink EIS). The Select Committee must insist that half a page is not adequate detail for deciding on the spending of $1,340,000,000.

Given the lack of detail of where the offsets are located or how they will be identified and purchased, the Select Committee must demand transparency about whether it is even possible to provide adequate compensation for Humelink environmental impacts. The lack of detail is suspicious given the unprecedented quantum of offsets required and suggests it is simply not possible to attain this quantum of environmental compensation.

The Select Committee must also demand that a transparent avoid and minimise assessment be undertaken, which compares the total impacts on native vegetation and threatened species for overhead transmission versus underground transmission, currently absent from the EIS. This assessment must include collision risk modelling for wildlife as is routinely done for wind farm developments. It must also address the differences in the amount of clearing and fragmentation that would result from overhead versus underground transmission.

Background

Submission to EIS

As a former Consultant Botanist who worked in Environmental Impact Assessment, I reviewed Section 8 'Biodiversity' of the Humelink Environmental Impact Statement (EIS) main report as well as 'Technical Report 1 - Biodiversity Development Assessment Report' (BDAR). My submission to the EIS identified major flaws in the BDAR that mean the environmental impacts of Humelink have been underestimated. The EIS process is *supposed* to identify potential environmental impacts and mitigate these impacts as far as possible. However, the flaws in the BDAR mean that Humelink's environmental impacts have not been minimised and the compensatory measures (e.g. biodiversity offsets) are likely to fail to meet the objectives of compensating for the impacts of Humelink on threatened species and native vegetation. My submission to the EIS covered the following critical flaws (see Attachment 1):

- The biodiversity offsets for Humelink are costed at one third of the total capital expenditure for the project, or between $935 million and $1.34 billion. There is zero transparency about how this huge amount of public funding will be spent. We have exactly half (1/2) a page of text in the 957 page EIS to explain how $1.34 billion will be spent!! (See p. 8-91 of the EIS.) This is completely unacceptable both from a probity perspective and from the perspective of demonstrating that the environmental impacts of Humelink are physically possible to manage.
- The EIS should have included an additional report attachment called a biodiversity offsets strategy to provide details of the identified offset sites, their location, who owns them, the cost to purchase and manage the offsets and timeframes to securing the offsets. This works has not been done. Instead, the biodiversity offsets strategy referred to in the EIS main document is just a 7 (seven) page section in the 731 page BDAR and provides no further details (BDAR, Section 16). Why has this work not been done?
- The biodiversity offsets strategy section is it currently stands, fails to secure <u>any</u> biodiversity offsets and does not provide any evidence that the biodiversity offsets will compensate for the impact of Humelink (BDAR, Section 16).
- The EIS and BDAR fails to acknowledge the unprecedented quantum of offsets required and fails to acknowledge that a realistic timeframe to identify and secure these offsets is at least 10 years.

Previous submission to the Standing Committee of State Development

My previous submission to the Select Committee details how Humelink fails to satisfy the requirement to 'avoid and minimise' impacts on threatened species and native vegetation. My previous submission showed that by undergrounding Humelink, direct impacts on threatened species and native vegetation from land clearing could be reduced by up to 80%. This is a direct result of the underground transmission corridor being 80% narrower than the overhead transmission corridor. The EIS provides no comparison of the two corridor widths so again, there is a lack of transparency in the EIS.

My previous submission also explained additional benefits from undergrounding including the ability to drill directly under waterways and wetlands, completely avoiding impacts to these sensitive areas.

Understanding biodiversity offsets and why the Select Committee must demand transparency

Unfortunately, the area of biodiversity offsets is highly complex and it will be a difficult undertaking for the Select Committee to fully appreciate the complexity of the compensation measures that apply to Humelink.

In general terms, when a development is going to have significant impacts on matters protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) as Humelink will, the developer must design the project to avoid and minimise impacts on those protected matters. Steps for avoiding and minimising impacts usually include: using less destructive construction methods, relocating the development away from sensitive areas, or innovating new ways to engineer the development so it takes up less space and so requires less native vegetation to be destroyed (all of which could be done with undergrounding). Only once this extensive process of avoiding and minimising impacts takes place, can the developer then provide compensation for remaining impacts (called 'residual impacts').

Compensation usually requires the purchase of similar native vegetation or threatened species habitat and permanently protecting it for conservation (called a biodiversity offset). Establish new offset sites is a lengthy process as the site must be assessed and mapped, and the permanent protection registered on title. The landholder must be fully aware of the agreement they are entering into as it is a permanent encumbrance on their land that will devalue part of their property. Not all landholders are willing to make this sacrifice so there is no guarantee that properties with suitable habitat will become biodiversity offsets (not acknowledged anywhere in the EIS).

The methods used to calculate how much land needs to be provided to compensate for development impacts are again, too complex to explain in a short letter. In general though, a biodiversity offset is approximately four times the size of the area developed. For example, if a 10 hectare area is cleared for a shopping centre precinct, 40 hectares needs to be provided as compensation (the size of Bicentennial Park). For Humelink, which the EIS says will clear 670 hectares, a whopping 2,680 hectares of new conservation land will need to be provided. With land values increasing all the time and the costs of managing these new conservation areas, biodiversity offsets are very expensive and their cost is increasing.

It is completely unknown how the final number of biodiversity offsets required will be calculated. Under the bilateral agreement between the NSW and Commonwealth governments, the NSW system can be used to calculate the offsets, including just paying money instead of actually securing compensation. Whether it is physical offsets or financial compensation are being provided, the compensation package should be known at the time of EIS so that the environmental impacts can be assessed in the proper context. If this information is not known before the project is approved, the risk is that the development goes ahead, destroys the environment but without compensation being provided, meaning the development contributes to hastening the extinction of threatened species and native vegetation. There is a real risk that Humelink, being developed on the pretext of renewable energy, will in fact, contribute to species decline and extinction.

- The Select Committee must demand complete transparency about how the offsets will be provided and how much they will cost.
- The Select Committee must also demand that a transparent avoid and minimise assessment be undertaken, which compares the total impacts on native vegetation and threatened species and the subsequent compensation required for overhead transmission versus underground transmission. This assessment would provide the Select Committee with the information they need to properly compare the environmental impacts of overhead versus underground transmission.

Understanding Collision Risk for Overhead Transmission lines

It is established in the scientific literature that overhead transmission lines contribute to the deaths of native animals (Bernardino et al. 2018). Additional impact assessment needs to be done to model the collision risk for wildlife posed by overhead transmission, as is routinely done for wind farm developments. The impacts assessed by the EIS so far, only calculated the direct impacts associated with clearing native vegetation and threatened species habitat. There is no quantitative assessment of other ecological impacts from overhead transmission including modelling of impacts from fragmentation or collision risk.

Modelling of wildlife collision risk is standard practice for wind farm project EIS's (E.g. see section on Bird and Bat Strike on p. 41 of the Uungula Wind Farm EIS). This modelling gives an idea of how many birds and bats might be killed by the turbines, especially iconic species like Wedge-tailed Eagle and Brolga.

The Humelink project is meant to be about renewable energy so we should apply the same standards to transmission projects as we do to generation projects. It is introducing a double-standard to say that wind turbine impacts on birds and bats must be understood but we can ignore overhead transmission impacts. A Wedge-tailed Eagle killed by renewable energy transmission is no less dead than one killed by renewable energy generation so we must apply the same standards to both.

The Humelink project covers hundreds of kilometres and so exposes much more wildlife to collision risk than a wind farm, which is in a relatively confined area by comparison.

- The Select Committee must demand that a scientifically modelled comparison between wildlife fatalities caused by overhead and underground transmission. This will enable the Select Committee to further understand the impact posed by Humelink.

Conclusion

I urge the Select Committee to insist of complete transparency by undertaking an EIS on both overhead and underground transmission to compare the results. The Select Committee must then demand complete transparency about how compensation for environmental impacts will be provided, in particular, how the $1.34 billion budgeted for biodiversity offsets will be spent.

Yours sincerely,

Shana Nerenberg.
Botanist and Native vegetation assessor

Attachment:

Submission in Response to Environmental Impact Statement: Humelink – Application No. SSI-36656827 & EPBC referral 2021/9121 under the EIS bilateral assessment process

References

Aurecon 2023. *HumeLink Environmental Impact Statement*. Prepared for Transgrid. Aurecon Australasia Pty Ltd, North Sydney.

Niche 2023. *HumeLink EIS Technical Report 1 - Biodiversity Development Assessment Report*. 18 August 2023. Prepared for Transgrid. Niche Environment and Heritage Pty Ltd, Parramatta.

Transgrid 2021. *Reinforcing the NSW Southern Shared Network to increase transfer capacity to demand centres (HumeLink). Project Assessment Conclusions Report*. 29 July 2021. Transgrid, NSW.

Bernardino, J., Bevanger, K., Barrientos, R., J.F. Dwyer, J.F., A.T. Marques, A.T., Martins, R.C., Shaw, J.M., Silva, J.P. & Moreira, F. (2018). 'Bird collisions with power lines: State of the art and priority areas for research', *Biological Conservation*, 222: 1-13. doi: 10.1016/j.biocon.2018.02.029.

DPIE 2021. *Uungula Wind Farm. State Significant Development Assessment*. Published by the NSW Department of Planning, Industry and Environment, Sydney. Available at: https://majorprojects.planningportal.nsw.gov.au/prweb/PRRestService/mp/01/getContent?AttachRef=SSD-6687%2120210511T000059.593%20GMT

10 October 2023

Director – Energy Assessments,
Development Assessment,
Department of Planning and Environment,
4 Parramatta Square,
12 Darcy Street,
Parramatta NSW 2150

To whom it may concern,

SUBMISSION IN RESPONSE TO ENVIRONMENTAL IMPACT STATEMENT
HUMELINK – APPLICATION No. SSI-36656827
&
EPBC referral 2021/9121 under the EIS bilateral assessment process

I hereby submit my response to the HumeLink Environmental Impact Statement (EIS) as published on the NSW Major Projects portal.

As a former Consultant Botanist working in Environmental Impact Assessment, I have reviewed Section 8 'Biodiversity' of the EIS and 'Technical Report 1 - Biodiversity Development Assessment Report' (BDAR). My response pays special attention to Matters of National Environmental Significance (MNES) protected under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As an approved bilateral assessment process under the EPBC Act, the EIS must address Commonwealth protected matters (MNES), not just state protected matters. The BDAR must satisfy the approval requirements under EPBC Act for controlled actions (actions that result in a 'significant impact' on MNES). Approval of controlled actions must take into account EPBC Act policies and policy statements.

I object to the HumeLink EIS on the grounds that the EIS and associated BDAR fail to meet the requirements of the EPBC Act *Environmental Offsets Policy.* As a result of this failure, the impacts of Humelink on *threatened species and endangered communities* are *clearly unacceptable* and cannot be approved by the Minister.

I have reached this conclusion because the EIS and BDAR have these fundamental failings:

- The EIS fails to satisfy the requirement to 'avoid and minimise' impacts on MNES;
- The biodiversity offsets strategy (BDAR Chapter 16) fails to secure any biodiversity offsets;
- The EIS and BDAR fail to acknowledge that biodiversity offsets are costed at one third of the total capital expenditure for the project, or up to $1.34 billion.
- The EIS and BDAR provide entirely inadequate levels of detail for how this unprecedented quantum of offsets will be identified and secured, and fails to acknowledge that a realistic timeframe to achieve this is at least 10 years.

- The EIS fails to undertake any risk assessment of securing this unprecedented number of biodiversity offsets for grassy woodland, which means the project is unlikely to secure the required offsets; resulting in
- Humelink contributing to biodiversity loss and/or extinction.

Scale of impacts on threatened species and threatened ecological communities:

The EIS lists the following impacts on threatened species and threatened ecological communities. The impacts are larger than any average voter can imagine or get their head around. It is up to the NSW government to understand these impacts and protect the environment on behalf of the NSW people who expect their government to stop species and whole ecosystems from going extinct.

Remember that a Critically Endangered ecological community or species has already lost more than 90% of its original size. What's left is the last fragments and any amount of it is precious.

Table 1. Summary of native vegetation and threatened ecological communities impacted by Humelink. Source: Humelink EIS.

Threatened ecological community	Listing status	Area (hectares)
EPBC – listed as threatened		
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	111.47
Alpine Sphagnum Bogs and Associated Fens	Endangered	0.56
	Sub-total:	112.03
state - listed as threatened		
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	311.78
Coolac-Tumut Serpentinite Shrubby Woodland	Endangered	1.42
Tableland Basalt Forest	Endangered	37.42
Montane Peatlands and Swamps	Endangered	0.75
Monaro Tableland Cool Temperate Grassy Woodland	Endangered	0.56
	Sub-total:	351.93
Total native vegetation (Critically Endangered, Endangered & unlisted combined):		**670.21 (1656.13 acres)**

For reference: 1 hectare = 2.47 acres; the MCG = 2 hectares; Bicentennial Park = 40 hectares.

Table 2. List of threatened species addressed in Humelink EIS. Note that not all species are listed in all tables in Section 8 so that all tables need to be consulted to understand the full impact of the project.
Source: Humelink EIS

Flora species - EIS main document	Fauna species – EIS main document
Page 8-40 (text): • *Ammobium craspedioides* • *Leucochrysum albicans var. tricolor* • *Xerochrysum palustre* Table 8-10: • *Bossiaea fragrans* • *Euphrasia arguta* • *Glycine latrobeana)* • *Grevillea iaspicula* • *Grevillea wilkinsonii* • *Pomaderris delicata* • *Prasophyllum bagoense* • *Prasophyllum innubum* • *Prasophyllum keltonii* • *Prasophyllum sp. Wybong* • *Pterostylis oreophila* Table 8-18: • *Acacia bynoeana* • *Kunzea cambagei* • *Pomaderris cotoneaster* • *Pterostylis oreophila* • *Thesium australe* • *Xerochrysum palustre* Table 8-19 • *Prasophyllum bagoense* • *Leucochrysum* • *albicans var. tricolor* • *Prasophyllum keltonii* • *Ammobium* • *craspedioides*	Table 8-11: • Alpine She-oak Skink • Booroolong Frog • Brush-tailed Rock Wallaby • Bush Stone-curlew • Gang-gang Cockatoo • Greater Glider • Key's Matchstick Grasshopper • Koala • Sloane's Froglet • Smoky Mouse • Southern Corroboree Frog • Squirrel Glider in the Wagga Wagga City Local Government Area • Stuttering Frog • Yellow-bellied Glider population on the Bago Plateau • Yellow-spotted Tree Frog Table 8-18: • Fork-tailed Swift • Pilotbird • Regent Honeyeater Table 8-19: • Gang-gang Cockatoo • Glossy Black-Cockatoo • Golden Sun Moth • Greater Glider • Grey-headed Flying-fox • Key's Matchstick Grasshopper • Koala • Painted Honeyeater • Pink-tailed Legless Lizard • Spotted-tailed Quoll • Striped Legless Lizard • Superb Parrot • Swift Parrot • Yellow-bellied Glider

Requirement to 'avoid and minimise' impacts on MNES

Table 8-2 on Page 8-4 of the Humelink EIS states that "*Any significant residual impacts on MNES not addressed under the BAM would be addressed in accordance with the EPBC Act Environmental Offsets Policy*".

The EPBC Act *Environmental Offsets Policy* states that: "*Offsets will not be considered until all reasonable avoidance and mitigation measures are considered*…". The flowchart in Figure 1 of the *Environmental Offsets Policy* shows that the assessment process must ask "*Have all reasonable measures been taken to avoid and mitigate impacts on protected matters?*".

The EIS has failed to identify the single most effective avoidance measure, and does not assess or consider taking this measure. In particular, the EIS fails to assess the avoid and minimise measures that could be achieved with underground rather than overhead transmission.

Most of the impacts on MNES associated with Humelink are a direct result of land clearing for the transmission corridor. The transmission corridor of Humelink is estimated to be 70 metres wide. A narrower corridor is the quickest and most direct way to reduce impacts associated with the transmission corridor.

The transmission corridor for an underground HVDC cable is 80% narrower than overhead transmission and would reduce the impacts on Critically Endangered grassy woodland and threatened species habitat by up to 80%.[1]

The failure of the EIS to identify this avoidance measure, or assess how much critically endangered woodland could be saved by undergrounding, demonstrates the failure of the EIS to meet the requirements of the EPBC Act *Environmental Offsets Policy.*

See Attachment 1 for further details of how undergrounding can be used to avoid and minimise impacts on the environment, which have also not been addressed by the EIS.

Biodiversity offsets strategy fails to secure <u>any</u> biodiversity offsets

The biodiversity offsets strategies for large government projects that I, myself, wrote as a consultant consisted of assessments of actual offset sites located on actual farms owned by landholders who actually wanted to sell offsets. The amount of offsets required was also known for certain. The Humelink biodiversity strategy has none of these features.

No actual offset sites are identified and it is only suggested that maybe some of the farmers impacted by Humelink may want to become offsets credit providers. It is also suggested that the actual amount of offsets required should be calculated at a later date creating uncertainty for landholders, the environment and those paying for the project, the NSW public. The uncertainty about the offsets is at an unacceptable level, far more than would be expected from a government-driven project.

The BDAR states (page 632):

"*it is proposed that the offset liability for the project would be revised once detailed design is*

[1] E.g. The easement for the underground sections of Basslink (Victoria) is 11.5 metres wide, compared with 55 metres for the sections that are overhead, which is an 80% reduction in width (APA 2023).

finalised and additional surveys carried out, particularly within currently inaccessible lands and for species credits which often have restricted seasonal survey requirements"

While the BDAR concludes this means that offset requirements may reduce, they could also increase, meaning the total amount of offsets required is not certain.

The BDAR states that the exact method for discharging their offset obligation has not been decided and they will be the ones who decide (not the regulator or someone who knowns about biodiversity conservation. Page 633 of the BDAR states:

"Transgrid are investigating the following options to formally satisfy the offset obligation for both State and Commonwealth, which include the following:

- *establishment of a Biodiversity Stewardship Site(s)* […]
- *retire credits from existing Transgrid BioBanking/Biodiversity Stewardship Sites*
- *purchase biodiversity credits from the credit market* […]
- *payment of the biodiversity offset obligation into the BCF* [Biodiversity Conservation Fund].

Transgrid would reserve the right to discharge their offset obligation through any of these options upon project approval."

It is unacceptable that the biodiversity offsets strategy is not further progressed than this. At a minimum, I would have expected costings for purchasing the required credits and setting up the Biodiversity Stewardship Sites. The Humelink Project Assessment Conclusions Report (PACR) calculates biodiversity offsets costing up to $1.34 billion (that's billion with a 'b'), which is one third of total capital expenditure for the project (page 29, Transgrid 2021). I would have expected that that a component of the project comprising 1/3 of the total project cost warrants much great attention in the EIS than a few vague paragraphs. An essential part of the EIS should be determining if this quantum of offsets is feasible and if this funding is sufficient. A minimum 10-year timeframe should be budgeted for to secure the required offsets and again, there is no mention of this.

It is unacceptable that the developer, and not the regulator, gets to decide what is best for the environment. The NSW government should have more pride in its environment and demand that they have the final decision on what is an acceptable offset.

To further highlight how undercooked the biodiversity offset strategy is, the following statement is made on page 639 of the BDAR –

"*Transgrid* […] *are investigating possible Biodiversity Stewardship sites* [BSAs] *within the locality. The potential for co-location of BSAs on properties that would be affected by the project, would also be reviewed in light of the potential benefits to local landowners*."

Unlike the biodiversity offset strategies I wrote, there is no mention of which sites are being investigated, or whether any of the impacted farmers are interested in having biodiversity offsets on their properties. Biodiversity offsets are permanently protected by conservation covenants attached to the land title. It is somewhat unlikely that a farmer whose land is newly encumbered with a transmission line easement is going to be putting their hand up to add yet another encumbrance in the form of conservation covenant.

Unprecedented number of biodiversity offsets for *White Box - Yellow Box - Blakely's Red Gum grassy woodlands and derived native grasslands*

Under the EPBC Act *Environmental Offsets Policy*, the quantum of offsets required for a given impact is calculated using an Excel-based tool called the "Offset Assessment Guide". The Offset Assessment Guide was developed by scientists at the University of Queensland based on the conservation science available at the time. It is our best guess at what compensation is required to stop a species going extinct as a result of development.

Using the Offset Assessment Guide for the 111.47 of EPBC Act-listed *White Box - Yellow Box - Blakely's Red Gum grassy woodlands and derived native grasslands*, and making some basic assumptions, results in an offset area of 475 hectares, a typical result of about 4 times the impact area. (And that's just for the first 16% of impacts on native vegetation). By contrast, the offset calculations in the BDAR only provides the number of credits required, giving no indication of the vast tracts of land that need to be found with credits on them to provide the offsets.

Humelink will require an unprecedented offset, which will take more than 10 years to acquire. The only comparable offset strategy is the Grassy Eucalypt Woodland Protected Area that the Victorian government needs to provide for impacts associated with the urban growth corridors of outer Melbourne (known as the Melbourne Strategic Assessment). Like Humelink, it is a large, multi-tenure project needing a large quantum of grassy woodland offsets to be progressively purchased from private landholders. From 2013 to 2019, the Victorian government succeeded in purchasing exactly zero (0) hectares of the Grassy Eucalypt Woodland Protected Area (DELWP 2019), after which they stopped producing progress reports, presumably because they got sick of writing 'nothing to report'. Humelink has copied this offset strategy of purchasing offsets progressively from private landholders, presumably because the eventual outcome is favourable to their outgoings.

Humelink will contribute to extinctions

If Humelink has the same success rate of purchasing grassy woodland offsets as they've had in Victoria, then the current offset strategy will fail to provide any offsets. If no offsets are provided or the amount is far less than what science tells us is required, Humelink will contribute to the loss of biodiversity and extinction. The EIS in its current form is set to be up there with the black & white footage of the last Tasmanian Tiger for documenting the failure of governments to protect our threatened species.

- I acknowledge and accept the Department of Planning and Environment's disclaimer and declaration.
- Declaration of political donations: None.
- I have provided this advice *pro bono* in my own time.

Yours sincerely,

Shana Nerenberg.
Botanist and accredited native vegetation assessor

References:

APA 2023. *Basslink easements.* Available at: https://www.apa.com.au/our-services/other-energy-services/electricity-interconnectors/basslink/easements/.

Aurecon 2023. *HumeLink Environmental Impact Statement*. Prepared for Transgrid. Aurecon Australasia Pty Ltd, North Sydney.

DELWP 2019. *Melbourne Strategic Assessment Progress Report: 2018-19.* Department of Environment, Land, Water and Planning, State of Victoria, Melbourne.

DSEWPaC 2012. *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. October 2012. Commonwealth of Australia, Canberra.

Niche 2023. *HumeLink EIS Technical Report 1 - Biodiversity Development Assessment Report*. 18 August 2023. Prepared for Transgrid. Niche Environment and Heritage Pty Ltd, Parramatta.

EPBC Referral 2021/9121, New transmission infrastructure, HumeLink, downloaded from EPBC referrals list: http://epbcnotices.environment.gov.au/_entity/annotation/eed6dfe9-a9a4-ec11-80d5-00505684c563/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1688880950611

Threatened Species Scientific Committee (2006). *Commonwealth Listing Advice on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/box-gum.html.

Transgrid 2021. *Reinforcing the NSW Southern Shared Network to increase transfer capacity to demand centres (HumeLink). Project Assessment Conclusions Report*. 29 July 2021. Transgrid, NSW.

Attachment:

Submission to Inquiry into the feasibility of undergrounding the transmission infrastructure for renewable energy projects

Standing Committee on State Development
Legislative Council
Parliament of NSW

via online submission form

12 July 2023

Dear Committee members,

RE: Inquiry into the feasibility of undergrounding the transmission infrastructure for renewable energy projects

Please accept my technical submission addressing the following terms of reference:

(a) the costs and benefits of undergrounding,
(d) any environment impacts of undergrounding.

Introduction

My former occupation was Consultant Botanist at Biosis Pty Ltd undertaking Environmental Impact Assessment for large government projects. I am no longer in the industry and have no conflicts of interest in transmission projects. My only interest is compliance with and protection of the environment under existing environmental legislation.

I have expert knowledge in assessing impacts on threatened species and threatened ecological communities, including those impacted by the Humelink project. Prior to my professional experience, I undertook ecological research in the South West Slopes of NSW including on some of the properties affected by Humelink. I became aware of the Humelink project when farmers affected by the proposed development approached me for help with scientific research data I collected on their properties.

From my knowledge of construction impacts on threatened species, one of the key benefits of undergrounding is the potential to reduce the impacts by up to 80% compared with overhead transmission. Undergrounding will, in some instances, completely avoid impacts to sensitive areas like waterways – an outcome not achievable with overhead transmission lines. The impacts of undergrounding on threatened species and native vegetation are therefore likely to be far less than overhead transmission.

The following sections will provide details of how impacts on threatened species and native vegetation can be reduced using underground transmission lines. It is assumed that only HVDC cables would be considered for undergrounding (not HVAC).

Obligations under the EPBC Act

Transgrid submitted a referral (2021/9121) to the federal Minister for the Environment under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) for approval of significant impacts on protected matters, termed Matters of National Environmental Significance (MNES).

NOTE: the current Humelink EIS is an approved bilateral process under the EPBC Act. Impacts on MNES will be assessed during the EIS process so that Commonwealth-protected as well as state-protected matters must be considered during the state-based planning process. I will focus on MNES as there is overlap between the two and typically Commonwealth-listed matters are the more seriously threatened.

Under the EPBC Act, the proponent is required to avoid and mitigate impacts on protected matters (DSEWPaC 2012). Only after impacts have been minimised, and a residual of impacts cannot be avoided, then biodiversity offsets can be considered (DSEWPaC 2012).

Transgrid's EPBC referral and the EIS scoping document (Aurecon 2022) have made zero assessment of whether overhead or underground transmission is better able to avoid or minimise impacts on protected matters. This is a serious flaw in the assessment process. The remainder of this submission will provide an overview of how underground transmission lines have far more potential to avoid and minimise impacts on threatened species and threatened ecological communities than overhead transmission lines.

Benefits of undergrounding to threatened species and ecological communities

1. Reduced width of transmission corridor/easement

Habitat loss and fragmentation are key threats to native species. Construction of Humelink will require the clearing of large amounts of native vegetation and threatened species habitat, and the cleared corridor will contribute to fragmentation (Table 1). Overhead transmission lines for Humelink require a corridor 70 to 80 meters wide (Aurecon 2022). Where transmission lines are being duplicated, the corridor could be as wide as 130 m.

The initial impact assessment for Humelink has estimated that 1861.72 hectares of critically endangered woodland will be cleared to form this corridor (Table 1). For comparison, Bicentennial Park is 40 hectares so that 1861.72 hectares is a huge impact that will further threaten an ecosystem that is already on the brink of extinction.

Underground transmission lines could save as much as 80% of the impacts of overhead transmission lines. For example, the width of the easement for Basslink's underground cable is 11.5 metres, which is 80% narrower than Basslink's overhead transmission lines, which are 55 metres (APA 2023).

The benefits of a narrower transmission corridor for threatened species include:

- Reduced overall amount of clearing and habitat loss – an 80% reduction in corridor width has potential to save up to 1488.94 hectares of critically endangered grassy woodland and threatened species habitat (Table 1).
- Reduced risk to wildlife when crossing the corridors – Koalas, for example, are most vulnerable to predators when they have to descend from the trees and cross open ground. The risk of crossing an 80 m corridor is far greater than 11.5 m.
- Reduced barriers to wildlife movements – many species will not cross large open gaps at all and so become isolated when vegetation is cleared. Isolation is especially detrimental for threatened species with small numbers remaining. Species particularly affected barriers to movement include Squirrel Gliders (vulnerable in NSW) and Greater Gliders (Table 1). For example, Squirrel Gliders typically glide between gaps 20 – 35 m wide (van der Ree *et al*. 2010) so a corridor 70 to 80 metres wide may isolate populations. If gliders crossed on the ground, they would be very vulnerable to foxes, feral cats and other predators, so that the transmission easement would still contribute to their mortality.

While the construction corridor would be wider than the permanent easement, careful construction management can keep impacts to a minimum. Figure 1 shows a carefully managed construction corridor for a 525 kV underground transmission line. The construction corridor is not more than 20 m wide, still a 75% reduction compared with an 80 m corridor (Figure 1). The Committee must be sure to use Australian standards of construction management when assessing construction impacts. Unfortunately, I have come across some misinformation regarding the width of the construction corridor based on overseas examples with poor environmental regulation or confusion between HVDC and HVAC cables.

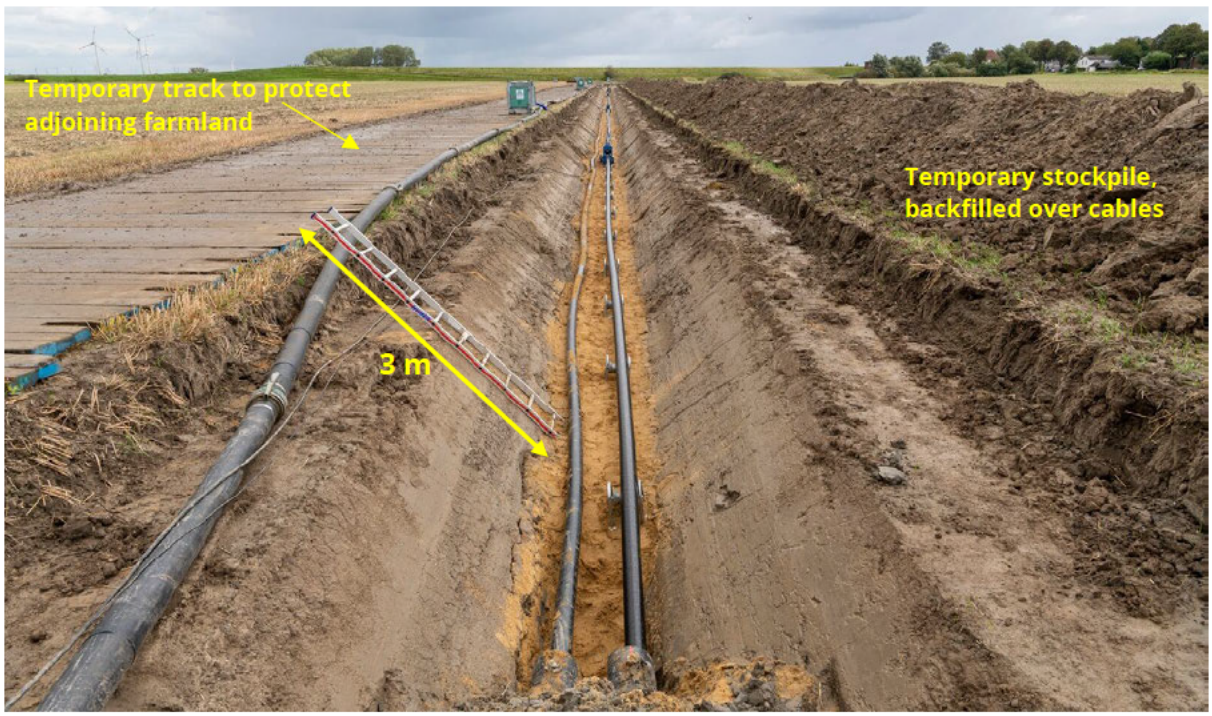


Figure 1. Construction of the 500 km long 525 kV SuedOstLink in Germany using construction corridor of minimum width necessary, as would be required in Australia. The construction corridor appears to be close to the 11.5 m width quoted above with another 3 m on each side for access and stockpiling excavated material, totalling 17.5 m. Source: TenneT

Table 1 lists the proposed impacts on MNES as provided in the Humelink EPBC referral 2021/9121. Data in *italics* is copied and pasted from the referral. The last column estimates the potential reduction that could be achieved through a carefully designed underground transmission line.

Table 1. Proposed impacts on matters protected under the EPBC Act (MNES) by Humelink overhead transmission project

Protected matter (MNES)	Listing status	Size of impact	Potential savings by undergrounding
Threatened ecological communities			
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	*1861.72 ha* [4598.6 acres]	Reduce by up to 80% down to 372.34 ha [920 acres]
Alpine Sphagnum Bogs and Associated Fens	Endangered	*5.27 ha*	Reduce by up to 80% down to 1.05 ha
Grey Box Grassy Woodlands and Derived Native Grasslands.	Endangered	*0.14 ha*	Avoid completely with reduced corridor width
Threatened flora species			
Yass Daisy (Ammobium craspedioides)	Vulnerable	*The proposed action would potentially clear large areas of habitat of these species* NOTE: Initial assessment appears inadequate – Swamp Everlasting has been assessed as having the same habitat as the first three flora species. This is incorrect. Swamp Everlasting relies on wetlands, the previous three species occur in grasslands and grassy woodlands (DAWE 2021).	Reduce by up to 80%
Hoary Sunray (Leucochrysum albicans var. tricolor)	Endangered		
Button Wrinklewort (Rutidosis leptorrhynchoides)	Endangered		
Swamp Everlasting (Xerochrysum palustre)	Vulnerable		
Bago Leek Orchid (Prasophyllum bagoense)	Critically Endangered	*The proposed action has the potential to remove small areas of potential habitat for these species, introduce weeds and potentially alter hydrological processes that may support species' microhabitats.*	Avoid completely with reduced corridor width
Terrestrial Leek Orchid (Prasophyllum keltonii)	Critically Endangered		
Threatened fauna species			
Swift Parrot (Lathamus discolor)	Critically Endangered	*The proposed action may result in clearing of potential foraging habitat in suitable woodland areas near Wagga Wagga* NOTE: Initial assessment appears inadequate – Swift Parrot and Superb Parrot assessed as having the same habitat requirements when their life histories and foraging behaviour are completely different. Swift Parrot forages in trees on flowers and psyllid lerps in Eucalyptus species (TSSC 2016). Superb Parrot feed mostly on the ground, where they take a variety of native and introduced seeds (TSSC 2016a).	Reduce by up to 80%
Superb Parrot (Polytelis swainsonii)	Vulnerable		
Pink-tailed Worm Lizard (Aprasia parapulchella)	Vulnerable	*The proposed action may result in clearing of potential habitat for these two species.* NOTE: Initial assessment appears inadequate – Pink-tailed Worm Lizard assessed with Striped Legless Lizard but the two have different habitat requirements (TSSC 2015, TSSC 2016b).	Reduce by up to 80%
Striped Legless Lizard (Delma impar)	Vulnerable		
Koala (Phascolarctos cinereus)	Endangered (QLD, NSW, ACT)	*The proposed action would result in the clearing of known and potential habitat, including koala use trees (used for sheltering, dispersal, foraging and potentially breeding).*	Reduce by up to 80%
Greater Glider (Petauroides volans)	Endangered	*This species has been observed during survey and field verification of the extent of habitat is subject to further field surveys in 2022. [...] While efforts would be made to minimise or avoid hollow bearing trees, it is likely that hollows and other features would be removed from potential Glider habitat.*	Reduce by up to 80%
Golden Sun Moth (Synemon plana)	Vulnerable	*The proposed action may result in clearing of large areas of potential habitat for the Golden Sun Moth.*	Reduce by up to 80%

2. Use of Horizontal directional drilling

Horizontal directional drilling (HDD) is a construction method commonly used to avoid impacts on sensitive areas such as waterways, wetlands, sensitive vegetation and cultural heritage (Figure 2). HDD involves drilling a tunnel under an obstacle rather than digging a trench from the surface (as seen in Figure 1). HDD is also used to install cables under roads and other built environment. By avoiding open trenching, HDD further reduces the impacts of habitat loss and fragmentation.

HDD can only be used for underground infrastructure. This method of avoiding and minimising impacts is not available for overhead transmission lines. HDD still needs to be carefully managed to minimise impacts at the start, end and during the drilling and there are likely to engineering constraints in very steep terrain.

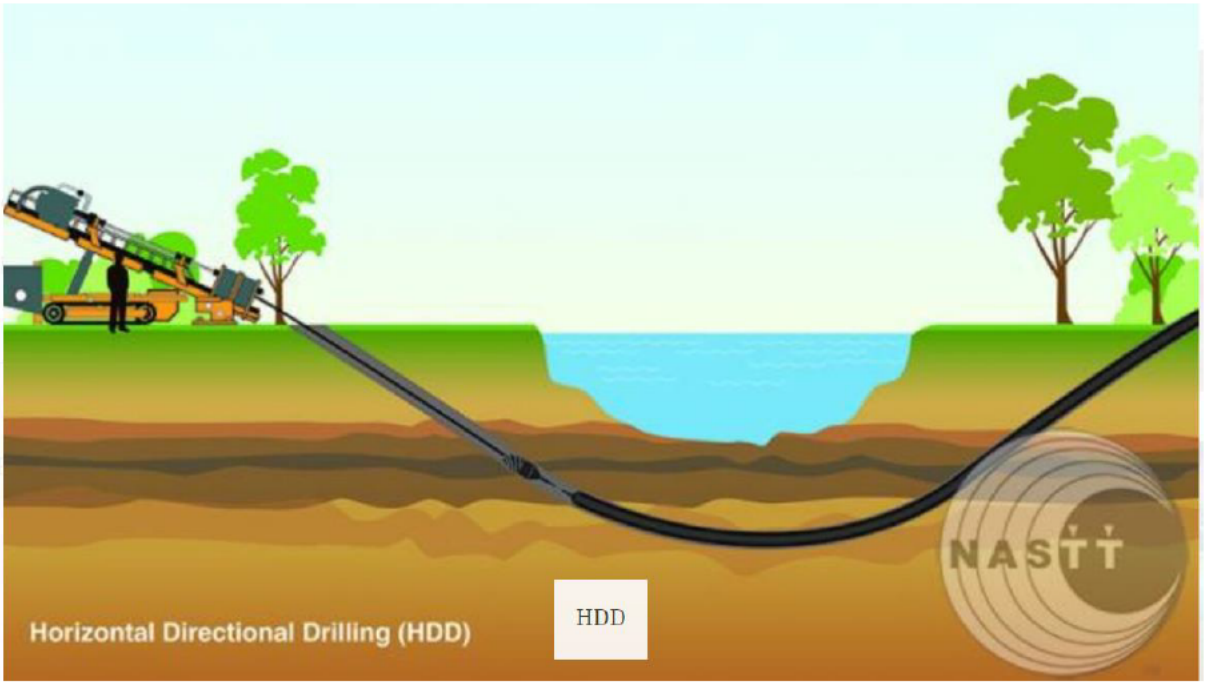


Figure 2. Horizontal directional drilling used to minimise impacts on rivers and sensitive vegetation. Source: NASTT

3. Co-location within existing easements

Underground transmission lines can be located within exiting transmission corridors, utilities easements, transport corridors and under roads. Co-location minimises the need for new land clearing and so minimises impacts on threatened species habitat and native vegetation.

Figure 3. Underground transmission line being installed within existing transmission easement. Source: Renewables Grid Initiative

4. Reduced need to clear vegetation on an on-going basis

Overhead transmission lines require a 70 – 80 m easement to be managed for vegetation for the entire life of the infrastructure (Figure 4). Underground transmission lines would reduce the amount of vegetation management and associated disturbance to trees and wildlife by 80% due to the reduced width of underground easements.

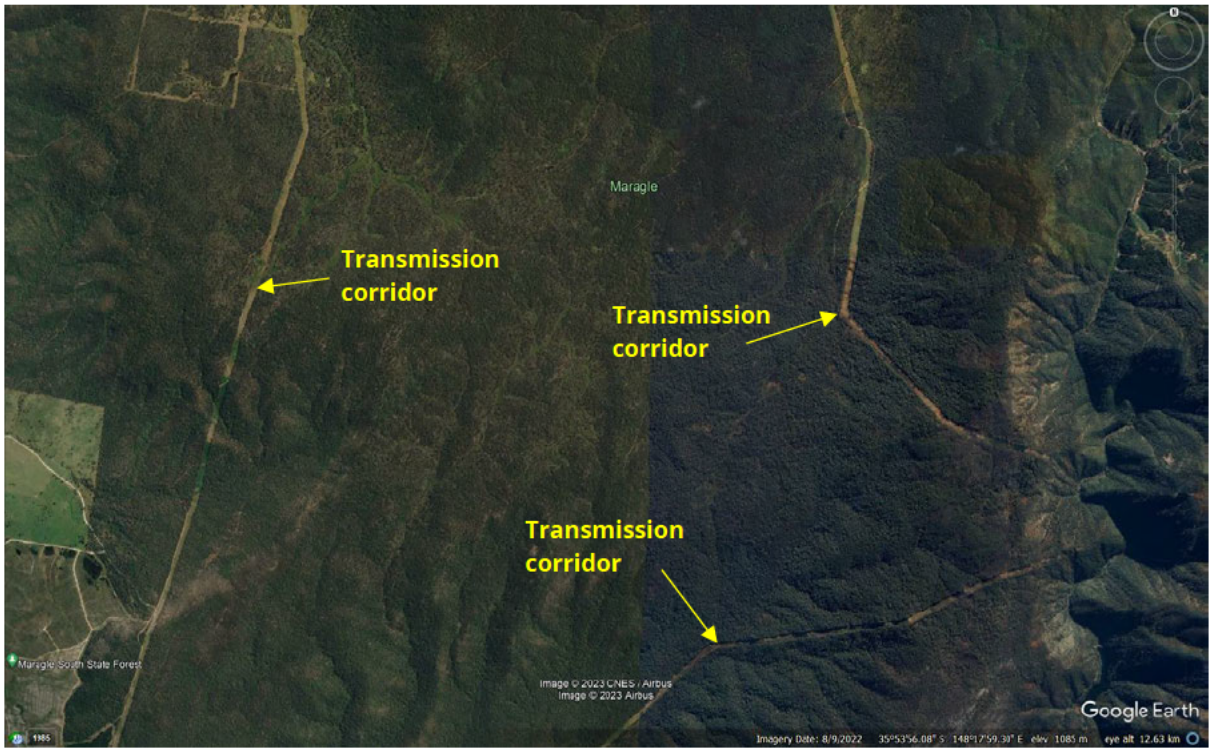
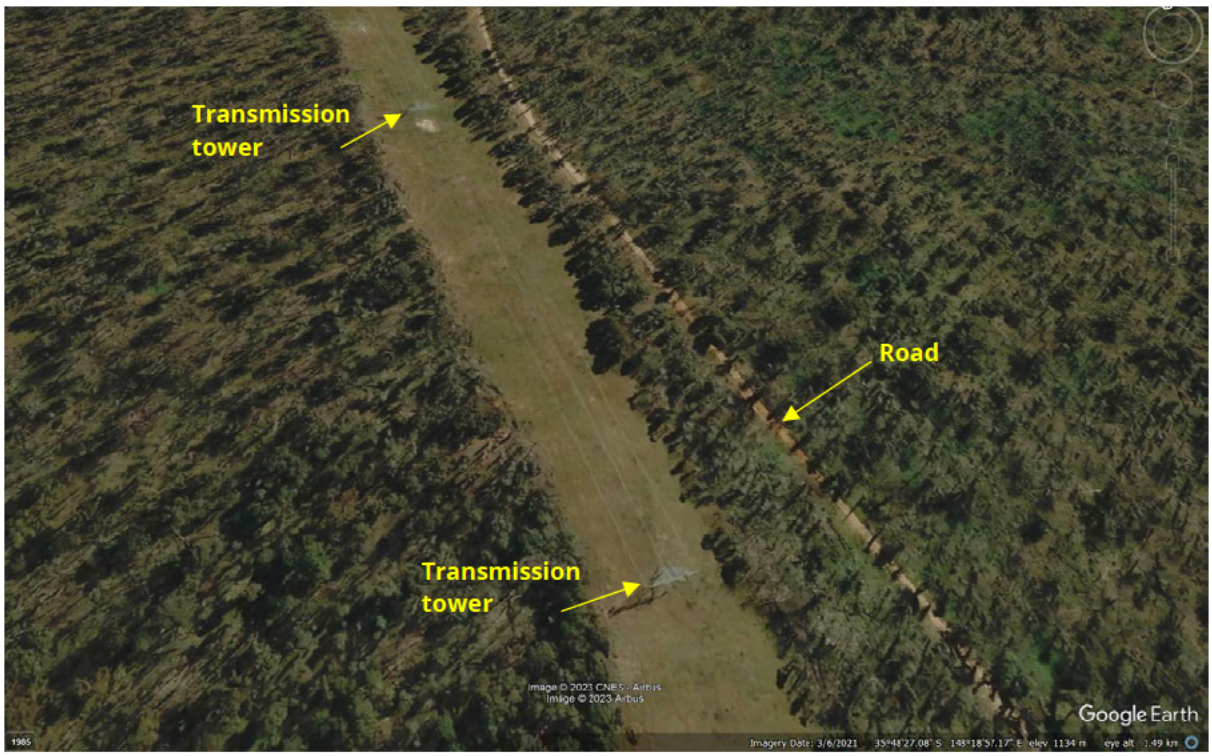


Figure 4 (above and below). Google Earth images of overhead transmission corridors constantly cleared of vegetation at Maragle in the Kozciuszko National Park. Notice how much wider the transmission corridors are compared with the road.



Conclusion

My professional opinion is that the environmental impact assessment for Humelink to date has been inadequate for the scale of the impacts proposed. The impact assessment does not comply with requirements under the EPBC Act to avoid and mitigate impacts on protected matters. The EPBC referral and associated impact assessment contain errors in assessing habitat requirements for some threatened species suggesting external expertise is required to review the assessment.

When combined, the upgrades to the transmission network across south eastern Australia are going to amount to one of the biggest environmental impacts in recent history. Regulators and parliamentarians need to hold the developer to account rather than accept the excuses and laziness currently dressed up as economics.

Yours sincerely,

Shana Nerenberg.
Botanist and registered native vegetation assessor

References

APA 2023. *Basslink easements.* Available at: https://www.apa.com.au/our-services/other-energy-services/electricity-interconnectors/basslink/easements/.

Aurecon 2022, HumeLink Scoping Report Reference: 507179-160522-REP-NN-001. Prepared by Aurecon Australasia Pty Ltd on behalf of Transgrid, Neutral Bay NSW. Downloaded from https://pp.planningportal.nsw.gov.au/major-projects/projects/humelink

Department of Agriculture, Water and the Environment (2021). *Conservation Advice for* Synemon plana *(Golden Sun Moth)*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/25234-conservation-advice-07122021.pdf.

Department of Agriculture, Water and the Environment (2021). *Conservation Advice for* Leucochrysum albicans *subsp.* tricolor *(Hoary Sunray)*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/89104-conservation-advice-20122021.pdf.

Department of Agriculture, Water and the Environment (2021). *Conservation Advice for* Xerochrysum palustre *(Swamp Everlasting)*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/76215-conservation-advice-23112021.pdf.

Department of Agriculture, Water and the Environment (2022). National Recovery Plan for the Koala Phascolarctos cinereus (combined populations of Queensland, New South Wales and the Australian Capital Territory). Department of Agriculture, Water and the Environment, Canberra. Available from: http://www.dcceew.gov.au/environment/biodiversity/threatened/publications/recovery/koala-2022.

Department of Agriculture, Water and the Environment (2022). *Conservation Advice for* Phascolarctos cinereus *(Koala) combined populations of Queensland, New South Wales and the Australian Capital Territory*. Canberra: Department of Agriculture, Water and the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/85104-conservation-advice-12022022.pdf.

Department of Climate Change, Energy, the Environment and Water (2022). *Conservation Advice for* Petauroides volans *(greater glider (southern and central))*. Canberra: Department of Climate Change, Energy, the Environment and Water. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/254-conservation-advice-05072022.pdf.

Department of Sustainability, Environment, Water, Population and Communities (2012). *Approved Conservation Advice for* Prasophyllum bagoense *(Bago leek-orchid)*. Canberra, ACT: Department of Sustainability, Environment, Water, Population and Communities. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/84276-conservation-advice.pdf.

Department of the Environment (2014). *Approved Conservation Advice for* Prasophyllum keltonii *(Kelton's leek-orchid)*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/83604-conservation-advice.pdf.

Department of the Environment, Water, Heritage and the Arts (2008). *Approved Conservation Advice for* Ammobium craspedioides *(Yass Daisy)*. Canberra: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/20758-conservation-advice.pdf.

DSEWPaC 2012. *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. October 2012. Commonwealth of Australia, Canberra.

Energy Grid Alliance (2022). Engineering Victoria's Future Energy Grid. Downloaded from: https://www.energygridalliance.com.au/wp-content/uploads/2022/06/Engineering-Victorias-Future-Electricity-Grid.pdf

EPBC referral 2021/9121, Attachment 4 – Detailed MNES impact assessment, downloaded from EPBC referrals list: http://epbcnotices.environment.gov.au/_entity/annotation/9c8171c0-aaa4-ec11-80d5-00505684c563/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1688880950611

EPBC Referral 2021/9121, New transmission infrastructure, HumeLink, downloaded from EPBC referrals list: http://epbcnotices.environment.gov.au/_entity/annotation/eed6dfe9-a9a4-ec11-80d5-00505684c563/a71d58ad-4cba-48b6-8dab-f3091fc31cd5?t=1688880950611

NSW Office of Environment and Heritage (2012). *National Recovery Plan for Button Wrinklewort* (Rutidosis leptorrhynchoides). NSW Office of Environment and Heritage, Hurstville. Available from: http://www.environment.gov.au/resource/national-recovery-plan-button-wrinklewort-rutidosis%C2%A0leptorrhynchoides.

Threatened Species Scientific Committee (2006). *Commonwealth Listing Advice on White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/box-gum.html.

Threatened Species Scientific Committee (2009). *Commonwealth Listing Advice on Alpine Sphagnum Bogs and Associated Fens*. Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/29-listing-advice.pdf.

Threatened Species Scientific Committee (2010). *Commonwealth Listing Advice on Grey Box* (Eucalyptus microcarpa) *Grassy Woodlands and Derived Native Grasslands of South-eastern Australia*. Department of the Environment, Water, Heritage and the Arts. Canberra, ACT: Department of the Environment, Water, Heritage and the Arts. Available from: http://www.environment.gov.au/biodiversity/threatened/communities/pubs/86-listing-advice.pdf.

Threatened Species Scientific Committee (2015). *Conservation Advice* Aprasia parapulchella *Pink-tailed worm-lizard*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/1665-conservation-advice-01102015.pdf.

Threatened Species Scientific Committee (2016). *Conservation Advice* Lathamus discolor *swift parrot*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/744-conservation-advice-05052016.pdf.

Threatened Species Scientific Committee (2016a). *Conservation Advice* Polytelis swainsonii *superb parrot*. Canberra: Department of the Environment. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/738-conservation-advice-05052016.pdf.

Threatened Species Scientific Committee (2016b). *Conservation Advice* Delma impar *striped legless lizard*. Canberra: Department of the Environment and Energy. Available from: http://www.environment.gov.au/biodiversity/threatened/species/pubs/1649-conservation-advice-16122016.pdf.

van der Ree, R., Cesarini, S., Sunnucks, P., Moore, J. L., & Taylor, A. (2010). *Large Gaps in Canopy Reduce Road Crossing by a Gliding Mammal*. Ecology and Society, 15(4). http://www.jstor.org/stable/26268221

Photo sources:

Figure 1. Tennet 535 kV underground cable construction: https://netztransparenz.tennet.eu/tinyurl-storage/detail/suedostlink-first-award-of-contract-for-plastic-insulated-underground-cable-for-525-kilovolts/

Figure 2. Horizontal Directional Drilling diagram: https://nastt.org/resources/photos/hdd/

Figure 3. Underground cable construction: https://renewables-grid.eu/fileadmin/user_upload/Files_RGI/Event_material/Prospects_of_undergrounding_power_lines/2017_RGI_workshop_underground_cables_Volker_Wendt_Europacable.pdf

Figure 4. Google Earth © 2023