

**Supplementary  
Submission  
No 12b**

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

**Organisation:** HumeLink Alliance Incorporated

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# HumeLink Alliance Inc.

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The Select Committee on the Feasibility of Undergrounding  
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25 March 2024

Dear Select Committee,

## **Second supplementary submission to the Select Committee inquiry into the feasibility of undergrounding the transmission infrastructure for renewable energy projects**

Following the final hearing of the Select Committee inquiry, February 16, 2024, into *Feasibility of undergrounding the transmission infrastructure for renewable energy projects* (the Inquiry), we have further comments as follows.

### **1. Cost of living pressures**

#### **1.1. Excerpt from the transcript of the inquiry**

**The Hon. EMILY SUVAAL:** It's fair to say that we have to build a lot of new infrastructure to enable the energy transition and electricity consumers will bear these costs over time. Can you outline the role of the AER in seeking to protect consumers from inappropriate cost increases?

**JIM COX:** Yes, you're right to say that a lot of transmission is required to be built for the energy transition to occur. That's certainly true. Our concern is that consumers should pay no more than they need to. Our roles, as we were explaining, are to supervise the ISP and RIT processes to ensure that they are open, transparent and based on good information. We have a responsibility in passing costs on to consumers to ensure they don't pay any more than is necessary. **We obviously do take a lot of effort and trouble to ensure that no more than is necessary is passed on to consumers.** I agree: That is our responsibility and we take it seriously.

**The Hon. EMILY SUVAAL:** Yes. Well, within a cost-of-living crisis like we're in—

**JIM COX:** We are very much aware of cost-of-living pressures.

## 1.2. Comments on the excerpt

As the capital cost of undergrounding transmission is more, it is implied that undergrounding transmission will add to electricity bills, and so cost-of-living pressures.<sup>1</sup>

NSW and Australia are currently facing two crises:

- a. The cost-of-living crisis; and
- b. An environment crisis.

Yes, we have a cost-of-living crisis, but we also have an environmental crisis. The 2021 Australia State of the Environment report said 'Overall, the state and trend of the environment of Australia are poor and deteriorating.'

It is therefore critical for our governments to be advocating for projects with less impact on the environment. This is consistent with legislative requirements of the NSW Environmental Planning and Assessment Regulation and the Environment Protection and Biodiversity Act that mean proponents are required to construct the option with less impact on the environment.

If the overriding objective of government was to 'ease' cost-of-living pressures, would they go as far as recommending that manufacturing goes back to pumping waste into our rivers, as that would be cheaper, and so lower the cost of manufacturing goods to consumers? I think not.

The State of the Environment report found that Australia is failing the environment on almost every measure. An important measure is loss of habitat. Humelink as an overhead line will have a significant and enduring impact on this measure, with a required easement of 70 m to 100 m, for the 365 km length of the project.

The referral to the Environment Protection and Biodiversity Conservation Act (EPBC Act) states Humelink has an action area of 48,332 ha and will significantly impact Matters of National Environmental Significance including 82 threatened species and six threatened ecological communities. Initial assessments identified that 1862 ha of critically endangered woodland would be directly impacted.

An obvious means of avoiding and mitigating environmental impacts of the HumeLink project is to underground the transmission. By undergrounding transmission, a much smaller easement (around 15 m) is needed with commensurate reductions in loss of habitat and biodiversity. Also, with

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<sup>1</sup> Although we argue that: lower losses; lower operation and maintenance costs; less risk with severe weather; less risk with bushfires; etc, over the life of the project, will offset the higher capital cost of the undergrounding option.

undergrounding some sections can be horizontal directional drilled, up to 1 km, eliminating impacts on habitat altogether.

Murraylink, a 180km HVDC underground transmission line from Victoria to South Australia, won an environmental award, and is renowned for only removing two trees along its route during construction.

There is also significant visual and noise pollution of the environment with overhead transmission.

The HumeLink EIS says that:

- a. the noise from HumeLink, under certain weather conditions, will exceed the EPA noise limit up to 470m either side of the line. That is 34,310 ha impacted by noise ( $365\text{km} \times 2 \times 0.470\text{km} \times 100 = 34,310 \text{ ha}$ ); and
- b. the visual impacts have been assessed up to 2km either side of the line. That is around 146,000 ha potentially impacted visually ( $365\text{km} \times 2 \times 2\text{km} \times 100 = 146,000 \text{ ha}$ );

These massive impacts can be eliminated, completely, with undergrounding the transmission.

## 2. Expertise in undergrounding

### 2.1. Excerpt from the transcript of the inquiry

**The Hon. WES FANG:** Because part of what we heard last time Transgrid appeared before the Committee is that there isn't a great amount of expertise in HVDC within your organisation. Would that be a fair assessment?

**MARIE JORDAN:** That is correct.....

**The Hon. WES FANG:** I often criticise the Hon. Emily Suvaal for asking these sorts of questions but I will ask it of you just so that I'm aware. How many HVDC lines have you been involved in the construction of?

**MARIE JORDAN: In the construction? None.** But understanding and the engineering process in the UK, yes—National Grid; the UK grid. I was the senior executive there. I spent a lot of time in the UK looking at their projects and they do have HVDC. Physically in the construction, no. Going out and watching the construction, yes.

**The Hon. WES FANG: And doing technical assessments?**

**MARIE JORDAN: No. I was an executive,** I have a senior vice-president on the executive leadership team for National Grid and I did not do any physical engineering for National Grid.

### 2.2. Comments on the excerpt

Much of the evidence given by Transgrid about the cost and feasibility of undergrounding transmission in the two inquiries, is inconsistent with HVDC undergrounding experts. In questioning, in the latest inquiry, Transgrid indicates that Transgrid has little, if any, in-house HVDC expertise.

This is in stark contrast to Amplitude Consultants, whose experience includes:

- All HVDC projects in Australia and New Zealand.
- HVDC projects in the USA, Canada, China and South Africa.
- All European HVDC suppliers (ABB/Hitachi, Siemens and GE).
- Many HVDC cable suppliers (Prysmian, ABB/NKT, Nexans, ZTT).
- Both key HVDC technologies – LCC and VSC.
- All HVDC cable technologies currently used – mass impregnated cable and polymer cables.

From these experiences, Amplitude Consultants staff have held key roles, in:

- The world's first VSC interconnector.
- The world's longest HVDC underground cable project (up until recently at least).
- The world's first use of light-triggered thyristors for LCC technology.
- The world's first MMC VSC HVDC technology project (which is now the standard technology used).

In addition, Les Brand, the lead author of the Amplitude Review of the GHD/Transgrid HumeLink undergrounding study, is heavily involved in HVDC International Council on Large Electric Systems (CIGRE) activities.

In 2020 and 2021, Les Brand was the CIGRE "Special Reporter" for HVDC and flexible alternating current transmission system (FACTS). Only two engineers are selected globally for this role. In this role, Les Brand reviewed all papers on recent technological developments, new projects, projects under development and worked with the authors, questioning their conclusions. He also co-hosted the 2020 and 2021 HVDC and FACTS e-sessions for CIGRE.

As a result of the above work, he was awarded the CIGRE "2020 e-Session Pioneer Award". Only three were awarded globally for HVDC and FACTS – one other in Canada and another in China.

Further Les Brand was a recipient of the National Professional Electrical Engineer of the Year award with Engineers Australia for 2020.

Amplitude Consultants therefore are nationally and internationally respected HVDC undergrounding engineers, with extensive up-to-date knowledge of the trends and developments in undergrounding transmission around the world. As such the Amplitude Review of the GHD/Transgrid HumeLink undergrounding study can be relied upon to provide a fair and balanced assessment of the option to underground HumeLink.

We urge the Select Committee to:

- a. Rely on evidence given by independent HVDC undergrounding experts on the cost and feasibility of undergrounding transmission, in particular the HumeLink project, and not Transgrid; and
- b. Recommend undergrounding HumeLink to address the worsening environment crisis in NSW and Australia.

Yours sincerely,

**Andrea Strong**  
HumeLink Alliance Incorporated