

Supplementary
Submission
No 198a

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

Organisation: Stop Rethink HumeLink Campaign

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STOP, RETHINK HUMELINK

Michael Katz,
Stop, Rethink HumeLink Campaign

The Hon Emily Suvaal,
Committee Chair,
Standing Committee on State Development
Parliament House
6 Macquarie Street
SYDNEY NSW 2000

26 July 2023

Dear Committee Members,

Thank you again for the time you gave us to present at the hearing into the feasibility of undergrounding the transmission infrastructure for renewable energy projects at NSW Parliament House in Sydney on Tuesday, 18 July 2023.

Unfortunately, given the delays in submissions being made publicly available and the schedule seeing Transgrid present evidence after us, we were not able to counter some of the claims which we consider were particularly disingenuous or inaccurate.

Transgrid's appearance before the Inquiry on 18 July 2023 confirmed the company's total disregard for community views and its blinkered determination to drive home its flawed overhead proposal at any cost. A determination that appears to be driven by commercial imperatives given the company has already invested in purchasing equipment for an above ground solution and has already reportedly decided the [preferred proponent to build the above ground solution](#), Acciona Construction Australia Pty Ltd, Kalpataru Power Transmission Limited and Genus Plus Group Ltd (JV).

The community is now fearful that the overhead proposal is a done deal, and that Transgrid considers this Inquiry is simply going through the motions in an effort to help it prove a case for overhead transmission.

We ask that the committee call for the NSW Government to **Stop, Rethink HumeLink**.

The moral hazard of building this overhead transmission line is so large that the Government needs to stop the current plan of a 360km x 70m scar littered with wires and hundreds of 80m high towers from progressing.

The fact is HumeLink is not needed now and, if built, will burden the taxpayers of NSW with unknown costs for generations to come. The government needs to rethink the regulatory system before allowing this project to go ahead.

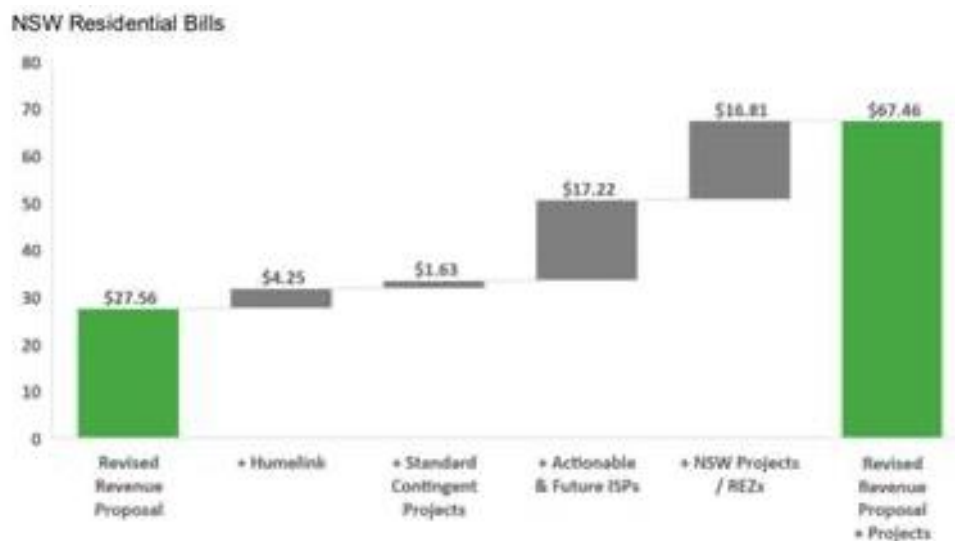
In the meantime, and with the limited time and resources, we have compiled a list of Transgrid claims at the hearing and in its submission that were made during its appearance on 18 July that we consider erroneous.

Claim: Transgrid doesn't know how much undergrounding would increase energy bills

After spending the past two years making headlines about the cost of undergrounding to household bills, how can Transgrid now tell the Inquiry that it has no idea what the impact will be?

Transgrid knows exactly how much its operations cost consumers and, in turn, how it pays its investors. That's how its business model works – it's a monopoly provider that passes on its costs to consumers, as demonstrated in its Revised Revenue Proposal.

According to this document the proposed overground HumeLink proposal would add \$4.35 to NSW Residential Bills a year between 2022/23 and 2027/28. However, with Transgrid admitting to the Inquiry that its overhead costings had now blown out by 30% to around \$5 billion, this is likely to be nearer to \$5.95 per year.



Source: Transgrid's [2023-28 Revised Revenue Proposal](#), December 2022

In comparison, based on Transgrid's own report costings from 2022, and extrapolating the information in the Revenue Proposal, undergrounding would come in at around \$12 per household.

It is also worth noting that Transgrid used the Inquiry to disseminate misinformation about the cost of undergrounding, questioning even its own independent expert's 2022 findings (which corrected previous overestimates) and choosing instead to restate numbers – spanning from 3x, 5x, 7x or 10x - that had been proven wrong by experts.

Claim: Underground trenches would be 50m wide, full of slurry and stop any agriculture!

This wild claim flies in the face of all up-to-date independent expert advice globally and demonstrates Transgrid's contempt for the community consultation process and all the hard work done by community representatives.

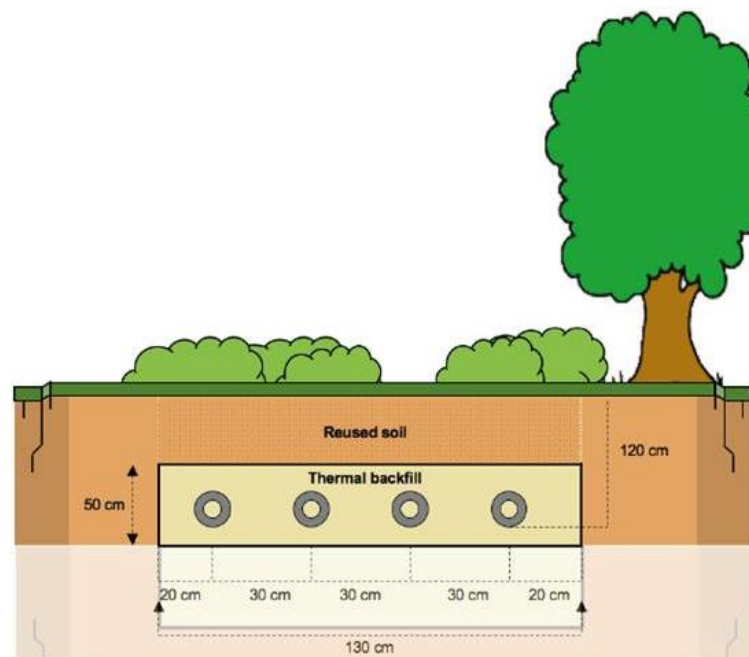
In a submission by independent expert Les Brand of Amplitude Consultants he states that HVDC underground cables trenches are less than 2m wide and have some 70cm of reused soil above the cables and thermal backfill used.

They do not sterilise the land above them as stated by Transgrid., with the only restriction being that no deep-rooted trees can be planted within the corridor width plus 2 metres. Apart from that **there are no limitations for cultivation, including agricultural farming.**

The actual trench size and topsoil profile is shown in the diagrams below, compared to the huge tree-less corridors that will be cleared to make way for the proposed towers.

Independent experts also refute Transgrid's claims about maintenance and soil temperatures.

Studies have shown that underground cabling has almost no impact on crop yields. The idea that heat from cables impacts agricultural production is inconsistent with scientific studies. So too is the idea that land disturbance from construction of underground cables has lasting impacts on agricultural productivity.



Source: Europacable report, "[An Introduction to High Voltage Direct Current \(HVDC\) Underground Cables](#)", October 2011

Similarly, Transgrid's claims about risks to biosecurity from underground trenching are highly questionable given the diagram above, particularly when compared to the largescale clear-felling proposed for the HumeLink overhead project.

The proposed overhead lines will involve clear-felling 70m wide corridor for 360km, which needs to be maintained for the life of the project with regular chemical spraying and trimming. Overhead

also requires significant earthworks to install towers every 300-450m that have solid concrete, and copper earth electrodes drilled into them.

Transgrid's own Undergrounding Report states that overhead will have greater impact on "ongoing, routine operational and maintenance impacts will occur within overhead sections to ensure safe access for infrastructure maintenance and to avoid encroachment of vegetation. **Greater likelihood of direct and indirect impacts to fauna with overhead transmission** due to collision with lines, habitat fragmentation or degradation due to ongoing maintenance of the easement."

Claim: Aboveground Transmission lines don't cause bushfires or hamper efforts to fight them

In its own document: "[Your Questions Answered, Underground Feasibility Study](#)", Transgrid says: "**underground lines have less visual impact on the community, they also require less continual vegetation removal, no effective noise, lower Electro Magnetic Fields, low to negligible risk of and to bushfires and no impact on aerial operations.**"

It also says **overhead transmission lines**: "produce some noise subject to the environmental conditions, **present risk both from and to bushfires and impact on aerial operations.**"

The Transgrid [GHD undergrounding report](#) lists amongst the negatives of overhead lines:

- Increasing the risk for bushfire ignition.
- Overhead lines can restrict access for bushfire fighting as opposed to underground lines, which would have no or negligible impact.
- Bushfires spreading through forest (native and plantation) in severe weather conditions can cause major damage to overhead transmission lines, particularly where uphill fire spread exacerbates fire intensity. Line route sections to the west of Talbingo and Blowering reservoirs have the greatest exposure to high intensity fire potential. Much of this area was impacted by the 2019/20 Black Summer bushfires.
- Bushfires spreading through forest (native and plantation) in severe weather conditions can **cause major damage to property and seriously endanger the lives of those living in the area and firefighters.**

The Transgrid's underground report notes that whilst it is rare for overhead 500kV lines to experience faults causing bushfire ignition, **330kV overhead transmission lines are known to have caused bushfire ignition.** The rarity of 500kV lines causing ignition may be as a result of the very small number of short 500kv lines in existence in Australia.

The NSW Bushfire Inquiry Report into the 2019/20 fires also noted that high voltage overhead powerlines are a hazard that can lead to bushfires and the NSW RFS believe that a number of the larger, damaging fires were caused by overhead powerlines.

This Inquiry should consider the testimony from local firefighters who fear for their lives if HumeLink goes ahead in its current form: "Having lived through the devastating Black Summer bushfires, leading teams of volunteer fire fighters as a local NSW Rural Fire Service (RFS) Captain, I have seen the devastation caused by overhead transmission lines first hand, including terrifying arcing activity. I have witnessed the rapid spread of spot fires caused by arcing during fires, and the resulting risk to human life, wildlife and property directly caused by these structures," Bill Kingwill wrote. "I am personally very concerned for the safety of our community and future firefighters in an environment dominated by these massive and deadly structures, and fearful of the unnecessary risk that HumeLink will create for our already fire-prone region."

Faults in electrical distribution networks are one of the primary sources of major bushfires. Power line related faults cause 2-4% of all rural fires in Australia. [However, when weather conditions elevate fire risk, up to 50% of major fires are ignited by faults in distribution networks.](#)

Landowners who already have smaller transmission lines on their properties know the dangers because they experienced the Black Summer bushfires and suffered significant losses as a result of not being able to fight the fires. Some of these people now face a double whammy of have two or even three transmission lines through the middle of their properties, and multiple deadly electrified walls to deal with in a fire – a virtual prison.

It is also impossible to take low flying aircraft anywhere near a high voltage transmission line, or any other vehicle under the lines once the air is filled with highly conductive smoke. Rescue is simply not possible.

One of the suggestions handed down by **Transgrid's own independent review** by Dr Brendan Nelson, was that Transgrid **put HumeLink underground to reduce risks in bushfire prone areas**. Dr Nelson also shared that there were 65 outages caused by arcing and flashovers in the Black Summer Fires.

Claim: Transgrid immediately de-energises lines in bushfires so nobody needs to worry

Local firefighters strongly refute Transgrid's claims. They say:

- Transgrid swears black and blue that they were responsive to safety concerns in Black Summer Fires, but we know there were calls from the fireground to switch off transmission lines that were denied despite the risk to life and property.
- Transgrid's own experts have told the community that they wouldn't switch off the lines because they provided electricity to the cities on the eastern seaboard.
- In a bushfire workshop, Transgrid's own expert admitted that he, as a Transgrid employee on the ground in a safety role, was unable to get them turned off because they serve the city.
- Transgrid's own expert stated that even if the lines were switched off, they would not be de-energised, which means they retain residual energy in the lines, and still pose a safety threat.
- Transgrid's own expert stated that if one set of lines is de-energised, and it follows parallel to other lines, there could be power transfer between them, and the de-energised line could become re-energised.
- Transgrid's expert also stated that there is an area at each end of a "section" that can be tested to make sure the power is no longer live, but this process takes a long time.
- We know during the Dunns Rd Fire that Transgrid wanted to reenergise lines where volunteer firefighters were working under and around them.

During Black Summer, Andrea and Paul Sturgess' property near Batlow was devastated in the Dunn's Road fire, which saw 162 homes lost.

Like many others, Andrea and Paul were told they had to fend for themselves because of two existing overhead electricity transmission lines that crossed her property prevented land and air access by fire crews.

"We were told we were on our own because of the transmission lines," said Andrea.

Now they face the prospect of a third, much bigger line, crossing the property if HumeLink is built overhead.

“There’s no way known we could defend our property in a fire if HumeLink goes ahead as planned, said Andrea. “The State and Federal Governments, the electricity regulators and Transgrid needs to listen to our very real concerns and underground HumeLink. It’s the safest option for us and for our future generations.”

Claim: Overground transmission lines are not impacted by bushfires, only distribution

[AER’s report on bushfire damage of the 2019/20 bushfire season](#) (August 2019 – March 2020) on Transgrid’s network said: “Transmission line assets form the vast majority of damaged infrastructure given their proximity and exposure to bushfires across the state of NSW”. This included:

- 249 transmission line fault and forced outages caused by bushfires, 20 times higher than past seasons.
- 65% more fault outages than the 10-year average for the same period. This included 275 forced outages.
- Two NEM regional separation events, one involving the NSW to Victorian interconnection and the other involving the NSW to Queensland interconnection, compared to zero separation events in 2018/19.

The report said that in Southern NSW where HumeLink is proposed: “In late December and Early January, the Snowy mountains fires took hold, resulting in 65 outages of 330 kV assets.

“Unfortunately, on the 4th January, four of the 330 kV lines tripped within minutes of each other and caused the NEM regional separation of NSW from Victoria ... One of the four lines out of service was the most damaged line within Transgrid’s 330 kV network, line 2. **This line had sufficiently damaged insulators on multiple structures such that it was impossible to re-energise the line. This line took a number of weeks to repair due to both the significance of the damage and the difficulty in assessing and clearing the access tracks to the site.**”

As a result of the impact of 2019-2020 bushfires, Transgrid reports in [its Cost Passthrough Application](#), that the incremental Opex and Capex costs for repairs to the prescribed transmission services was \$49.8 million.

Claim: Undergrounding of transmission lines doesn’t happen in California, only distribution

This statement conflicts with [PG&E’s announcement](#) in July 2021, which says: it “aims to bury about 10% of PG&E’s distribution and transmission lines at a projected cost of \$15 billion to as much as \$30 billion, based on how much the process currently costs.”

It also conflicts with Public Utilities Commission of California’s [Undergrounding Programs Description](#) - Conversion of Overhead Electric Lines to Underground Facilities and Construction of New Underground Electric Lines. This document not only includes transmission but costs it: “For transmission, the cost for constructing new overhead transmission ranges from \$1 million to \$11 million per mile.”

Claim: It is uneconomic to tap into HumeLink if it is a DC transmission line

This is a lazy argument that assumes the idea is to replace a “traditional” AC line with a HVDC system.

When incorporating HVDC transmission into an existing AC network the HVDC system may be better conceived and designed as a bypass of the existing network for shunting or transfer of bulk power more directly from generation source to the main load centres (aka superhighway) thereby alleviating constraints on the existing network that can then be better utilised for connection of localised generation, thereby making more efficient use of the existing AC network.

It is worth noting that Transgrid has not proposed any tie-in connections of renewable sources along the route of HumeLink – i.e., from Maragle to Wagga Wagga or from Maragle to Bannaby. It is expected that renewable energy sources along the route will connect to the existing 132kV and 330 kV networks, which will link with HumeLink at Wagga Wagga and Bannaby.

In any case, **HumeLink will be almost maxed out capacity when Snowy 2.0 is pumping or generating at full input/output, so it has minimal capacity of around 500 MW for tapping-in additional generators anyway.**

Myth: HumeLink will be delayed by undergrounding

It is understood that community opposition to overhead transmission lines in NSW and Victoria has already added some \$4 billion to the cost of AEMO's proposed 500kV interconnector between Melbourne and Sydney (being planned in 4 sections WRL, VNI West, HumeLink and Sydney Ring).

Undergrounding HumeLink would grant Transgrid a 'social licence' that will substantially remove community opposition.

Given that Snowy Hydro has been delayed until December 2029, HumeLink can be delivered when needed as an underground solution. After all, AEMO's own modelling shows the optimal timing of HumeLink was 2028-29 in the Step Change scenario; and 2033-34 in Progressive Change scenario.

Conclusion

We trust this and the many hundreds of submissions provided, including those by leading experts in underground transmission technology, debunks some of the misinformation presented to the committee and highlights the reason why it should recommend the Government "Stop, Rethink HumeLink" and give proper independent consideration to undergrounding transmission.

Thank you again for your consideration.

Yours sincerely,

MICHAEL KATZ
Stop, Rethink HumeLink campaign