

**Submission
No 134**

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

Name: Mr Steven Clark

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13/7/2023

To the Legislative Council Standing Committee on State Development, Parliament of NSW.

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

Dear Chair and Members,

You will hear in your inquiry that we simply can't afford to build underground transmission.

I assert that we simply can't afford not to.

From the Australian Energy Regulator (<https://www.aer.gov.au/about-us>): "We recognise that energy is an essential service for Australian households and businesses and a critical contributor to the long term success of the Australian economy".

Our transition from fossil fuels to renewables will necessitate a near complete dependence on a single form of energy.

Any failures in electricity transmission will have widespread and compounding consequences.

This article on Watt Clarity from 2022, highlights the alarming frequency of overhead transmission tower failures in the National Electricity Market.

<https://wattclarity.com.au/articles/2022/12/how-common-are-islandings-and-transmission-tower-failures-in-the-nem/>

Under the NEM rules, transmission infrastructure failures due to natural disaster result in positive cost pass throughs. These additional costs are borne by all energy consumers.

<https://www.aer.gov.au/networks-pipelines/determinations-access-arrangements/cost-pass-throughs>

We are told that climate change will bring an increased frequency in extreme weather events.

From the 2020 Royal Commission into National Natural Disaster Arrangements

<https://www.royalcommission.gov.au/natural-disasters>

Under the heading: The causes of outages during the 2019-2020 bushfires.

"9.19 Australia's electricity network 'has a large number of very long lines which are expensive to maintain and vulnerable to natural hazards'. When disasters occur...there can be multiple failures, or failures of multiple assets, leading to cascading impacts, as impact in one aspect of life, sector or service flows on to others. Power outages were a widespread cause of cascading failures during the 2019-2020 bushfires.

9.71 Throughout the course of our inquiry, we also explored a range of additional actions that could be taken to mitigate natural disaster risks to critical infrastructure assets, including:

placing infrastructure (eg powerlines and telecommunications cables) underground to reduce exposure to natural disasters".

The Inquiry should also be mindful that transmission companies can be unwilling to entertain underground construction and may deliberately inflate the costs and technical constraints.

For example, the Western Renewables Link underground construction summary 2021, shows a HVDC concept design for the WRL on page 6. It consists of 5 trenches of 3 cables for a total of 15 cables. In addition, the document states, “for HVDC, five cable joint pits are required approximately every 550m to join the 15 cables”. “Underground cables are joined in concrete walled cable joint pits”, “Cable joint pits are typically around 10m long by 3m wide and 2m deep”, “For Western Renewables Link, around 1700 cable joint pits would be required to make and protect the more than 5000 cable joints”.

The number of cables and pits would be an enormous expense.

<https://www.westernrenewableslink.com.au/assets/resources/Underground-construction-summary-November-2021.pdf>

The reality of how HVDC underground cables can be constructed is demonstrated in this video by Tenet on a project in Germany: <https://youtu.be/FjPFpJnOUrg>

YouTube Channel ‘Just Have A Think’, explains the current state of HVDC underground transmission well in this episode: <https://youtu.be/XmqSnoH6rfo>

Please note, the break even distance for HVDC, the SOO Green proposal to use the easements of existing transport corridors, and that SuedLink was originally proposed to be an overhead transmission project, but community opposition caused parliament to change it to underground HVDC. .

Engineering with Rosie also has a nice video on HVDC here: https://youtu.be/JH9-0AbR_1U

Regards,

Steve Clark