

**REPORT ON PROCEEDINGS BEFORE**

**STANDING COMMITTEE ON STATE DEVELOPMENT**

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

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**At Macquarie Room, Parliament House, Sydney on Monday 7 August 2023**

**The Committee met at 2:00.**

**PRESENT**

The Hon. Emily Suvaal (Chair)

The Hon. Mark Buttigieg

Ms Cate Faehrmann

The Hon. Emma Hurst

The Hon. Stephen Lawrence

The Hon. Taylor Martin

The Hon. Peter Primrose

**PRESENT VIA VIDEOCONFERENCE**

The Hon. Wes Fang

\* Please note:

[inaudible] is used when audio words cannot be deciphered.

[audio malfunction] is used when words are lost due to a technical malfunction.

[disorder] is used when members or witnesses speak over one another.



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**The CHAIR:** Welcome to the fourth hearing of the Standing Committee on State Development inquiry into the feasibility of undergrounding the transmission infrastructure for renewable energy projects. I acknowledge the Gadigal people of the Eora nation, the traditional custodians of the lands on which we are meeting today. I pay respects to Elders past and present, and celebrate the diversity of Aboriginal people and their ongoing cultures and connections to the lands and waters in New South Wales. I also acknowledge and pay my respects to any Aboriginal or Torres Strait Islander people who are joining us here today. Today we will be hearing from both Transgrid and the Australian Energy Regulator. I thank everyone for making the time to give evidence to this important inquiry.

Before we commence, I would like to make some brief comments about the procedures for today's hearing. Today's hearing is being broadcast live via the Parliament's website. A transcript of today's hearing will be placed on the Committee's website when it becomes available. In accordance with the broadcasting guidelines, the House has authorised the filming, broadcasting and photography of Committee proceedings by representatives of media organisations from any position in the room and by any member of the public from any position in the audience. Any person filming or photographing proceedings must take responsibility for the proper use of that material. This is detailed in the broadcasting resolution, a copy of which is available from the secretariat.

While parliamentary privilege applies to witnesses giving evidence today, it does not apply to what witnesses say outside of their evidence at the hearing. I therefore urge witnesses to be careful about comments they may make to the media or to others after they complete their evidence. Committee hearings are not intended to provide a forum for people to make adverse reflections about others under the protection of parliamentary privilege. In that regard, it is important that witnesses focus on the issues raised by the inquiry terms of reference and avoid naming individuals unnecessarily.

All witnesses have a right to procedural fairness according to the procedural fairness resolution adopted by the House in 2018. If witnesses are unable to answer a question today and want more time to respond, they can take the question on notice and provide a written answer. If witnesses wish to hand up documents, they should do so through the Committee staff. In terms of the audibility of the hearing today, I remind both Committee members and witnesses to speak into the microphones. Finally, could everyone please turn their mobile phones to silent for the duration of the hearing.

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**Ms MARIE JORDAN**, Executive General Manager—Network, Transgrid, on former oath

**Mr JEREMY ROBERTS**, Major Project Delivery Director, Transgrid, on former oath

**The CHAIR:** I now welcome our witnesses. Would either of you like to start by making a short opening statement?

**MARIE JORDAN:** Yes, I would. I appreciate the opportunity to appear this afternoon. I'm responsible for the network operations, reliability, system security at Transgrid. I, too, acknowledge the traditional custodians of the land on which we meet this afternoon, the Gadigal people of the Eora Nation, and I pay my respects to their Elders past and present. I also acknowledge their continuing connection to country. I've worked extensively in the energy sector for more than 40 years, primarily in North America. This includes executive roles at Pacific Gas and Electric Company, National Grid and Peak Reliability and as a transmission consultant to the California Public Utilities Commission. As CEO of Peak Reliability, my remit included operational oversight of the transmission system for the 14 western States in the US, as well as British Columbia in Canada and Baja California in Mexico. While at National Grid, I also worked closely with my colleagues in the United Kingdom.

I was invited to Australia to lend my experience to delivering the transition to renewables. Transgrid is working with the Australian Energy Market Operator on the delivery of nation-critical energy projects identified in the 2022 Integrated System Plan, which is a whole-of-system plan that provides an integrated road map for the efficient development of the national electricity market over the next 20 years and beyond. Its primary objective is to optimise value to end customers by designing the lowest-cost secure and reliable energy system capable of meeting any emission targets determined by policymakers at an acceptable level of risk.

We have been following the inquiry and I would like to again acknowledge the concerns of landowners and local communities. I would also like to provide clarity for the Committee on some of the assertions made over the past few weeks. Those will be focused on bushfire, delivery of the ISP and HVDC undergrounding. We recognise the long-lasting devastation of the 2019 and 2020 bushfires. I have experienced personally the tragedy of wildfires and I know they have a profound and lasting impact on landowners, businesses and communities as a whole. I would like to update the Committee on concerns raised in the testimony in relation to Transgrid's role in those bushfires.

Transgrid has a liaison officer in the Rural Fire Service incident management team of these events for the purpose of providing advice related to the impacts and risks of various strategies in relation to the transmission infrastructure. As network operator, responsible for keeping the grid operating safely, this also extends to the impacts of fire transmission infrastructure and preventing power loss for the more than eight million people across New South Wales. Our officer acts as a conduit between the RFS incident commander and the Transgrid control centre specifically in relation to queries from landowners suggesting Transgrid did not agree to a request from the RFS to turn off our lines. Our records indicate in relation to the Dunns Road fire, which burned within the Snowy Valley local government area from 28 December 2019 to 15 February 2020, our control centre received five separate requests to de-energise overhead lines and all of those requests were actioned. Last week Transgrid met with the RFS. My colleague Jeremy Roberts, who is joining me here today, was at last week's meeting. He will be able to provide you with an update on that meeting if you wish.

Managing bushfire risk: For all major projects our planning, design, construction and operation takes bushfire risk into consideration every step of the way. That includes risk assessments and mitigation, constraint mapping, vegetation controls and engagement with emergency services and local communities. We also provide fire truck access roads, which assist the RFS in both access and firebreaks. Around 50 per cent of our direct maintenance expenditures each year relate to mitigating bushfire risk. This includes both veg management and our asset condition programs. On the delivery of ISP projects to ensure energy security, I just need to reiterate the criticality of HumeLink project in the context of the energy transition, not just here in New South Wales but the entire eastern seaboard.

HumeLink is an actionable project in the ISP to be delivered by 2026. Any delay to this delivery could put the security and reliability of the electricity network at risk, and that supplies millions of Australians. Let me be clear on what that would look like. Even if the AER believed undergrounding was a viable option for HumeLink, it would require a complete reset in terms of route selection, RIT-T process and environmental assessments, material orders, and finding contractors capable of delivering an HVDC line and the inevitable delays that would follow. In addition to the construction of underground, it's a significantly longer process. We would expect a delay of approximately five years. The quicker we transition to renewable energy, the quicker all consumers in the cities and in the regions will have energy security and access to lower cost energy.

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Finally, the inquiry has also discussed the merits of high-voltage direct current underground lines. There are also technical aspects to consider when designing and constructing transmission infrastructure, including the voltage level that's being transmitted, the distance of the line being installed, and the terrain and environment that is crossed. While there has been a discussion on the dimensions of a trench and the methodology, we have brought photos of both NordLink and SuedLink, having been part of the discussions in the hearings. Long-distance underground transmission lines are most often HVDC and are designed to deliver areas of high concentration of generation to load points. There are good examples in both Australia and around the world that demonstrate the benefits of underground transmission lines and the use of HVDC. It's commonly used for offshore wind farms. It is a proven alternative for underwater cable. HVDC transmission is known for its ability to transmit power efficiently over long distances, connecting remote generation sources to areas requiring generation.

But HVDC lines do have limitations. Transmission projects, including HumeLink, which forms part of the National Electricity Market superhighway, require a high-voltage alternating current transmission line that will allow connection points for generations as well as new loads. At a minimum, there will be three HVDC converter stations adjacent to traditional substations—one at the beginning of it in the Sydney region, a connection point at Snowy, and a new station at Gugaa, near Wagga. Converter stations globally have a reliability of about 98 per cent. This is much lower than our current reliability expectation in New South Wales of 99.998 per cent. The stations are nearly half a billion dollars each. To construct these additional stations, those costs are borne by the consumers. Our role is to provide the Australian Energy Regulator with the most viable option for its assessment that includes the least cost to eight million consumers in New South Wales.

We are committed to improving our community engagement processes. We are also committed to leaving a positive legacy in the communities where we have our transmission projects, and we want to continue to work with communities to minimise the impact of critical infrastructure and ensure landowners are properly consulted and compensated. Those are my remarks. Thank you.

**The Hon. WES FANG:** Thank you, Chair. [Inaudible]. Apologies, I was due to fly up this morning, but my flight was cancelled.

**The Hon. EMMA HURST:** Sorry, Wes, we can't hear you.

**The CHAIR:** Your audio is not great, Wes.

**The Hon. WES FANG:** Sorry?

**The CHAIR:** Your audio is not great. If you could speak directly into your—

**The Hon. WES FANG:** Apologies. Is that better?

**The CHAIR:** Yes.

**The Hon. WES FANG:** Sorry. I was just saying that I was meant to be with you this afternoon, but my flight was cancelled this morning, so I'm joining you via AV link. My first question leads out of your opening statement, Ms Jordan, where you said that it's the responsibility of Transgrid to provide the lowest cost to eight million consumers. What is your requirement to provide this system which perhaps leads to an unbearable cost to those impacted residents where the line is going to cut through their properties and their communities?

**MARIE JORDAN:** I fully understand the impact and have empathy for each one of those property owners. But when we look at transitioning the system to the renewable portfolio, and the time lines we have ahead of us, we are looking at the cost for all consumers. We are looking at both the people in the cities and in the rural regions. We are looking at how we bring the lower-cost renewable energy to all of the Australians in New South Wales.

**The Hon. WES FANG:** I have just switched microphones. I don't know if that works better?

**The CHAIR:** That is much better, yes.

**MARIE JORDAN:** Much better.

**The Hon. WES FANG:** While I accept that, there is no doubt that the cost to the landholders is greater than the bill price that is going to impact metropolitan areas. I think this is part of the issue that landholders have. I have calculated the difference between the bill with underground versus the bill with HumeLink, as proposed at the moment, to be about \$8 per household. Your impact on those landholders and the communities is going to be much greater than that. You're asking a small number of people to bear the load of this project in order to provide a cheaper power bill. Do you not have an issue with that and the way that sits with Transgrid's social position?

**JEREMY ROBERTS:** I'll answer that one. Absolutely, the landowner that is impacted is greatly impacted by that. Part of our requirements are that we are bound to follow the Just Terms Act through our regulated

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process, as well as assess the injurious affection of the landowner to ensure that they are compensated—now, noting that financial compensation is only one element. But the financial compensation is to take into account the land uses and the impacts that we have on that land. That is one element; the other element is the timing. To go to the underground scenario, as Marie mentioned before, the delay to five years means the consumer will incur higher costs for an additional five years—limiting the access of more renewables to come into the network as well as increasing the risk to reliability for the network. So as much as the consumer bill may seem like a small impact using the numbers you used, it is the timing component to it, the loss that the consumer will feel for those extra five years, as well as the compensation regime that we're bound to under the Just Terms Act, as well as the strategic benefits payments that the Government has put in place.

**The Hon. WES FANG:** I will come to the timing a little bit later in questioning, but for the moment I want to stay with the issue of impacts to landholders. In these circumstances where you have the Just Terms Act defining how you will compensate impacted landholders, do you believe, Mr Roberts, that that is an adequate recognition of and a proper and just settlement for the impacts that you will be imposing on those landholders?

**JEREMY ROBERTS:** I believe it's following the requirements that we have to, that we're bound to do it.

**The Hon. WES FANG:** I understand the requirements issue. What I'm talking about is do you believe that it is appropriate?

**JEREMY ROBERTS:** Around 50 per cent of our line has an existing easement in place already, so it is an impact again on those landowners. It is a greater impact in those areas for those people. I have heard anecdotally from landowners that have gone through the process who believe—once they've gone through the process, understanding the compensation regime and the injurious affection of how it affects their lands—that they were fairly compensated through that process. However, I note that for some landowners there is no compensation value that will equal the impact that they will feel on their generational farming.

**The Hon. WES FANG:** Well, Mr Roberts, I would like to meet the landholders that you referred to that you believe are happy with the compensation. Perhaps there are one or two issues here. If it is that landholders are happy with what happens in relation to compensation, you're perhaps not explaining it right for the people particularly around the Armidale and Tumut areas, because it seems that nobody there is happy with what is on offer in relation to the detrimental impacts you will have on their land. So if you believe that what you say is correct and that people are happy, then you perhaps have a selling problem, because I can tell you that nobody came to us during either of those hearings and said, "We are happy with what's proposed."

**JEREMY ROBERTS:** Yes, and I acknowledge that. There are a lot of people that are not happy with it.

**The Hon. WES FANG:** Right. In that circumstance, I'll come back to my original question on this issue. Do you believe it is appropriate? Or do you believe that you've explained it well?

**JEREMY ROBERTS:** There are a couple of elements to it. The engagement process requires us to have an individual land valuer engaged, independent of our processes, that will undertake that assessment and undertake the assessment of injurious affection. They do that compensation component. To the emotional component, I can't comment on whether I think it's sufficient or not because it's dependent on the individual landowner—of what monetary value they would put on that process. I would say that the State did put together the strategic benefit payments, which we lobbied hard for, to have that in place to increase the benefits for our affected landowners.

**The Hon. WES FANG:** In the circumstance that you have a landholder that is seeking to not have their land impacted in the way that you will with the 500 kVA lines—the requirements to build crane pads in order to lift those towers and the actual impacts during construction, but also once it's built—what can you offer around ameliorating those concerns, other than money?

**JEREMY ROBERTS:** Part of the process was that during the engagement we set up the property management plans, which are bespoke and individual and tailored for the individual landowner, which step through how we will be on their site, the durations, the transient nature of—we will be there for survey, then we'll leave. We'll be back again during the access track building—transient again—and then through to the construction of foundations and the towers, and then finally stringing. So there are a couple of different times when we will be there and time when we won't be there, so it is not a continuous construction phase. Through that process and the property management plan, we engage with the landowner to find suitable times and suitable processes during the construction, understanding the impacts that we will have, to try to work with them. That forms part of the options agreement and options deed for the easement that we're acquiring, so we try to work with the landowners and our contractors through that process.

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**The Hon. WES FANG:** We keep hearing the word "consultation" used. What I note about this is that consultation, by anyone's definition, would be that you are seeking engagement in informing you but also seeking a response in relation to that process. One of the criticisms that I've heard is that, basically, Transgrid arrives and, in effect, lays out what they're going to do. It's less consultation, more information. Where there is pushback in the consultation phase, like you've just referred to in relation to the landholder impacts, in the consultation that you've had, what changes have you made, or did Transgrid make, on the back of that feedback?

**JEREMY ROBERTS:** Through the process, we have had 28 combined consultative group sessions along the whole transmission route. We've had 44 community events and 10,000 interactions with affected easement holdings through the process. So there has been a considerable amount of engagement, and we're happy to provide some more facts on that information. During the route—

**The Hon. WES FANG:** I've got the numbers on engagement. I'm asking what changes have been implemented off the back of that 10,000 number of consultations. That is face to face, I'm assuming. I really haven't seen a lot.

**JEREMY ROBERTS:** Through that process with individual landowners, 77 per cent of route refinements on an individual's land we have accommodated and moved. Where we're impacting a landowner, we've discussed and actually microsited and changed towers and routes on the back of consultation with the landowners. That is about, I think, 20-odd out of 30 requests from individual landowners to move. We're going through the process right now of route refinement on a community-led consultation where they prefer a different route. We're in the final stages. Through our constraints mapping, evaluation and looking at proposing to move that route, that's in those final stages. We are listening to and taking on board the route refinement process through our consultation.

**The Hon. WES FANG:** That's a very interesting answer, Mr Roberts, because one of the properties that we went to see just to the north of Tumut—and I'm just trying to remember the name of the road. It was over where the Dunns Road fire was. The property had a set of maps, and we sat at the top of the hill looking over the valley. They said that there had been discussions with Transgrid about the possibility of moving the line and it was to head further south instead of going straight through the valley and through people's properties. It wasn't until the maps were published that they realised that it basically kept going straight through the property that we were inspecting. So where there has been a clear position of those landholders saying to you, "We don't want to go this way; how about you go this path?"—and there has been a lot of discussion around that—and they discover, when the maps come out, that all that consultation has been rejected, how does that occur?

**JEREMY ROBERTS:** I'm not aware of that exact scenario, Mr Fang. I would be happy to take that one on notice to understand the exact scenario. However, we undertake the constraints mapping and we consider the environmental impacts through our route selection. We consider the cost in determining which route selection we undertake, and then also the time to do that change and also impacting how many landowners. So if there are 10 landowners in one area and 10 landowners in the other area, is it less of an impact or just a different impact for different people? All of those factors are considered. But on that exact example, I will take it on notice to consider what feedback should have been given prior.

**The Hon. WES FANG:** I will give you some details as well. I understand it was a bit vague; my apologies. It has been a bit of a rush to get sorted into this position after this morning. In relation to costings, we discovered, after Transgrid's last appearance, that the \$3.3 billion figure or thereabouts had escalated to around \$5 billion. Have you had the opportunity to further refine that costing for HumeLink with overhead lines? Could you provide the Committee with some guidance as to what you believe that will be? I will then come to the cost of undergrounding.

**JEREMY ROBERTS:** Sure. Our latest figure for the HumeLink project is \$4.89 billion in real dollars as of FY 2023, and that was published last Friday by AEMO.

**The Hon. WES FANG:** I noted in the opening statement that there were discussions around the materials that have already been ordered. How much has already been ordered in relation to the material costs for the overhead system?

**JEREMY ROBERTS:** There are a couple of elements to it. There has been a lot of development that was undertaken to get it to the phase there is. So there are a lot of costs incurred through the development phase: route refinement; property easements; we have acquired quite a few option agreements throughout the process, and land; and the EIS developments, to the point where we are ready to go on public exhibition next month—so quite a lot of development work. From a long-lead equipment perspective, we have ordered 16 high-voltage transformers and reactors, and we are very close to ordering the conductor, and the transmission line steel will be ordered very soon as well—so all the requirements to meet the transition time frames. We are bound by AEMO's



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ISP for mid-2026 to be energised. Therefore, we have had to commence procurement through the process of development.

**The Hon. WES FANG:** So we are at about \$4.89 billion. Do you know how much Transgrid has spent in relation to procurement at this stage?

**JEREMY ROBERTS:** I'll come back with the exact figure, Mr Fang, so I don't give an approximation.

**The Hon. WES FANG:** We heard from some electrical network experts during the Tumut hearings that the costings that are available as a best guess for the HVDC—there is obviously a figure that was tabled before the Committee of about \$11.5 billion, which was the figure that was led to by the consultation group and Transgrid overlooking, where the CEO indicated that he doesn't believe that he could find anyone to build it for that price. We heard testimony at the Tumut hearing that it could potentially be less than that, so somewhere in the region—I will use round figures—of around \$9 billion. That would put it at less than double the figure that you have for the overhead. Have you done any further work in relation to the cost of undergrounding, and have you advanced the understanding of HVDC, given that we were advised that there have been, in recent times, developments on the technology that is implemented?

**JEREMY ROBERTS:** I'll talk to the specifics of the underground study for HumeLink and I'll pass to Marie for the more general one. So, similar to our costs going up, we look at inflation and then a real cost increase of 26 per cent on top of ours. In just the construction industry, we are seeing 30 per cent increases in construction across the board. So applying inflation to that \$11.49 billion would put it at \$13 billion at the lower end and up to \$17 billion at the higher end. We still stand by that being the lower end.

Refinement for the route—to go through that process, we need to consider the whole route again for the project. That's a whole new round of landowners, route refinement, EIS, the constraints mapping of where we would be undertaking the line, and the topography comes into account and is very critical when you're looking at your underground. Do you have to tunnel where it is too steep to trench? Can you access it with trenches? A lot of work would need to be done to refine that process, hence why it is a large range from, say, \$13 billion to \$17 billion, because depending on your trench, your topography, if you are tunnelling anywhere, that greatly significantly increases your HVDC costs.

**MARIE JORDAN:** On a general point, too, when I was listening to the Tumut inquiry the comment was made that that was what they felt was a bit under for the cost of cabling. They were very specific that the HVDC converter stations were not included in that number. We would need three and they're half a billion dollars each, and the substations we have planned and the substation equipment that's planned would also be installed. So it would have to come up and convert and go into a substation and collect in additional energy from lines at those locations. So you end up with the redundancy of both the converter station and the substation, and those were not factored in based on the comments made in that inquiry.

**The Hon. WES FANG:** Right. I think I have a bit of an understanding now of some of the more technical aspects which are precluding undergrounding, as you are articulating in this argument. But some of the other evidence that we've heard in relation to undergrounding is that if you're seeking to do the whole line underground, then, certainly, HVDC is a better option because of the efficiency et cetera, but there is the cost of the installation. But you can—or my understanding is that—for certain distances underground AC high voltage for around 40 kilometres. Would that be a reasonable assumption to make, Ms Jordan?

**MARIE JORDAN:** For AC, it can be undergrounded for that approximate length. But a very good example is one that was done by Southern California Edison. I was actually acting as an auditor for the California Public Utility Commission, and looking at that section, which was about 40 kilometres, it was incredibly expensive to underground AC. It was the first underground 500 kV AC in the US. It's not typical, it's not cost-effective and it requires a lot of equipment. But, yes, feasibility wise, you can do it, but it typically dwarfs the cost of the overhead much higher than the numbers that are the three to 10 times. It would probably be closer to the eight to 10 times rather than the three that you get for HVDC.

**The Hon. WES FANG:** Right. In circumstances where the community is looking for you to underground these cables so that you don't have the fire risk, the amenity impacts, the other issues that come around the wide easement issues and the general opposition to having these overhead powerlines, and you are rightly saying there is a greater cost to this HVDC system and limitations around the system with converter stations and being able to tap in and out and redundancy and the fallback of 98 per cent versus 99.9 per cent—I'm understanding all of those issues. But what about the possibility of something like a hybrid where you have overhead for part of it and underground where people have an absolute opposition to it and then where there's less of an issue or it's on public land, you can go back to overhead?

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Is that not something that is a feasible solution that we try and work in with people? I've got to say that what I'm getting the sense of is that you've spoken about the need for, if you were to go back to HVDC, further planning, further environmental impact studies, further studies et cetera, but perhaps that all should've been done at the start of this project when it was dismissed. Perhaps now, given the time frame and your pushing for this construction to start now, if you're going to impact on people, we perhaps need to try and make the plan work in either circumstance.

**MARIE JORDAN:** I have not seen multiple underground to overhead on a single line. That is something I haven't seen. I don't think it's feasible. When we looked at HumeLink from the very start, as we do with all projects, you have to look at what's the right construction, both for where you're going, the terrain and the cost. Those have fallen out early on, based on looking at the most cost-efficient design. We are building—what is it?—in the ISP, 10,000 kilometres of line. So to think about that as a whole and to think about the cost implications that that could create, if we set precedents on doing underground to overhead at such a high dollar value, I think the cost wouldn't be prudent for the consumers, when we're trying to make this transition. Even a short distance of underground will create a new scenario where you're looking at the route that you've chosen and the ability to be able to put that line underground, new EIS studies. So even a short piece is a very different change to the project and would cause delays.

**The Hon. WES FANG:** This is, I guess, part of the problem that I have in relation to that rhetoric around the design and the impacts and the cost et cetera. Yes, I appreciate that probably the standard way of constructing a 500-kVA line would be using overhead system, AC, high voltage, as is proposed. However, where there are cost implications for residents and their power bills, there is a lifestyle and—not only a lifestyle, but it's an impact on so many aspects of those impacted residents. It's an impact on their mental health. It's an impact on their land values. It's an impact on the way they can use their land, because of (1) having the tower, (2) the easements, (3) the bushfire risk et cetera.

While I appreciate some of the arguments around bushfire that you've presented, for those farmers that perhaps use aerial spraying or are looking to have aerial protection in case of a bushfire, those high 75-metre voltage lines preclude a lot of that happening. They're bearing the total cost of that—the total cost. And they don't want it on their land, but it's being forced on them so that you can provide a cheaper power bill to residents. Do you not see that there might be something fundamentally wrong with that idea, that we're going to impact these people for generations, create permanent issues on their land, so that we can provide people with cheaper power bills?

**MARIE JORDAN:** Mr Fang, I've been at this a very long time, and I don't think any company is excited to encumber someone's property. But when we're looking at transmission lines—I've done them in California, in some of the very challenging areas to bring these lines through, as well as the north-east. I have empathy for the landowners, but I also realise we have to provide reliability, security of supply, and we have to serve the broader population. It's not comfortable; it's a fact. And it's just not cost, as Jeremy said; it's timing, making sure that we meet the time frame for some of the things that are challenging the system today, the timing to make sure we have adequate ability to serve the load and bring in more generation into New South Wales. So it's never an easy conversation. I can't quantify it. It's not my position to quantify it. My position is to look at how do we resolve—for the broader New South Wales—security, supply, reliability and the least cost option for consumers as a whole.

**The Hon. WES FANG:** I want to turn to timing now, which I said I would do earlier. What we've seen is that, in effect, HumeLink was proposed to provide the ability to link the Snowy 2.0 project to the more populated areas and transmit that renewable energy to and from, and also now being able to link in some of the other renewable energy zones and provide that feeder link. Would that be a fair assumption?

**JEREMY ROBERTS:** As to the need, Mr Fang, of HumeLink? What the driving need is?

**The Hon. WES FANG:** Yes, the reason that it was proposed initially. HumeLink was proposed to get the power out from Snowy 2.0 and then, later on, be used to provide that interconnection between the REZs et cetera.

**JEREMY ROBERTS:** Sure. I think that prior to HumeLink was Project EnergyConnect, which is under construction now. It brings connections from South Australia to Wagga and picks up that real rich renewable energy source of the south-west, which is also the proposed future REZ location of south-west New South Wales. The requirements for HumeLink are to bring the south-west renewables across from Wagga and up to Sydney and Bannaby, as well as bringing that renewable across to the Snowy so that it can pump back up and then discharge when the renewables aren't going—to use it as a battery—and bring that up to Sydney, as well as strengthen down south into Victoria as part of the integrated network. There's multiple needs for it.

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**The Hon. WES FANG:** Probably the first question I should ask is what is the time frame from the start of construction to having HumeLink completed, in your estimates?

**JEREMY ROBERTS:** Our estimate is still mid-2026 as required by AEMO under their ISP. The latest published in 2020 was to have it by mid-2026 or earlier for completion. Our current time frame is to meet that requirement.

**The Hon. WES FANG:** So construction some time later in the year to finish mid-2026?

**JEREMY ROBERTS:** I can step through the approvals process if you like?

**The Hon. WES FANG:** Just talking about construction times, we're talking about three years to construct the line as proposed if you were to start digging dirt now?

**JEREMY ROBERTS:** No, we cannot do construction until the EIS is completed, which is currently forecast for mid-2024. We will then do enabling works while the management plans are in place and full construction, after camps or other arrangements are set up, will be from the start of 2025 through to mid-2026.

**The Hon. WES FANG:** Okay. Construction time after the approvals being in place is about a year—

**JEREMY ROBERTS:** Year and a half.

**The Hon. WES FANG:** What is the great rush given that 2.0 is, I guess, in no-man's-land at the moment? I think they're talking about a completion with a 23 something something, no doubt. There's no rush there and the energy-rich south-west area, as you've described it—is it, whilst online, going to materially create a difference in people's power bills if it's linked in by mid-2026? Have we not got time to get this right and make sure that, if we are doing this project, it's done with the least impact to the landholders who are on the route?

**JEREMY ROBERTS:** So we've confirmed with the market operator, AEMO, that with the Snowy delays HumeLink is more critical to increase the resilience of the network. Without the Snowy coming on as soon as it was, that resilience requirement for the network is even more critical—especially that connection from Wagga through to Bannaby. To improve that, it allows the Project EnergyConnect to come through and bring that power through from South Australia, as well as relieve constraints in that south-west region of the network that currently exist, therefore increasing the ability for renewables to come onto the network which allows for a more competitive market with more renewables being able to access the market.

**The Hon. WES FANG:** So, in effect, this is really about the fact that because we're losing a number of the coal-fired power stations out of the Hunter region, you will have to bring power from somewhere else. That's why HumeLink is required now—so that you can move that power up because we're not going to have enough power in New South Wales. Is that, in effect, what you're saying?

**JEREMY ROBERTS:** Mr Fang, I'm saying that the network strength improves. As coal-fired generation across the whole grid is retiring as we transition to a greener, renewable future, more transmission lines are required to strengthen the network and reshape where our generation sources are coming from.

**The Hon. WES FANG:** I'd rather have a cheaper and more reliable power system, frankly, but it would seem to me that if we were to keep some of the coal-fired power stations—

**The CHAIR:** Wes, your time is up, sorry.

**The Hon. WES FANG:** Just a last question: If those coal-fired power stations were kept operating in New South Wales, we wouldn't need HumeLink.

**The Hon. STEPHEN LAWRENCE:** Point of order—

**The CHAIR:** Wes, your time expired a while ago. We'll move now to the crossbench for questioning.

**The Hon. EMMA HURST:** Thank you for coming back today. I know we've talked a little bit about consultation and the fact that there was a lot of feedback from the community that they felt like there wasn't genuine consultation. One stakeholder described the process as a charade, and many others said that they didn't feel that they had been listened to or consulted beforehand, but only after the decision had already been made. In light of that feedback from this inquiry, what steps, if any, will Transgrid make to ensure that better and more genuine consultation about these projects is done in the future?

**JEREMY ROBERTS:** Thank you for the question. I agree that, at the start, the consultation was not the best. We commissioned an independent report by Rod Stowe that reviewed our consultation methodologies and provided a list of recommendations. Transgrid took on all of those recommendations to improve our consultation. Some of the benefits include having an individual land liaison officer for each landowner as well as a placement community officer, to help provide that genuine one-to-one relationship so that landowners could

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understand the process, as well as increasing our committee groups across the whole network. We looked to seriously improve our consultation, took on the feedback from an independent report and have implemented that process.

**The Hon. EMMA HURST:** Have you had any feedback since then that people are feeling like they've been part of this process more, or are you unaware at this stage whether it's made any difference?

**JEREMY ROBERTS:** I suppose I won't comment on the general sentiment of different landowners. We work closely with Andrew Dyer to ensure that our property and our land processes are up to best practice and provide the property. We are tracking to plan of options agreements being in place, and consent to enter across the route is improving, so we are making progress on engagement and land option agreements.

**The Hon. EMMA HURST:** Will those changes be implemented in future projects?

**JEREMY ROBERTS:** Yes, absolutely. We've taken that on board to ensure that our other projects—like VNI, Sydney Ring—have an improved community consultation process.

**The Hon. EMMA HURST:** I want to touch on the key concern that was raised by Wagga council regarding acquiring the 1.8-kilometre waste facility in the area. The council considered it a valuable asset, and they argued strongly that it shouldn't be included in the HumeLink. Can you explain why the decision was made over the objection of the council and others in the community to continue as is?

**JEREMY ROBERTS:** I believe that was on the Project EnergyConnect project, not HumeLink, that waste facility. We are bound to follow the just terms requirements and have an independent valuer assess the value of the land, and follow those requirements, rather than go off potentially what someone else thinks the land is worth. We have to follow the requirements of the regulator, and that's where we've come to our assessment, taking into account use of the land into that assessment.

**The Hon. EMMA HURST:** What was the difference between how it was valued through Transgrid versus the council?

**JEREMY ROBERTS:** I will come back to you on that one.

**MARIE JORDAN:** We really should not be commenting because that could be subject to court proceedings.

**The Hon. STEPHEN LAWRENCE:** Is that Walcha or Wagga council?

**The Hon. EMMA HURST:** Wagga.

**The Hon. STEPHEN LAWRENCE:** Sorry, I misheard you.

**The Hon. EMMA HURST:** In one of your answers to the questions on notice that were sent through, you say that one of the variations to the route of HumeLink was to go through Green Hills State Forest to minimise the impacts to private landowners. Can you tell me what assessment was done, if any, to determine the impact on animals or the environment by going through the State forest instead?

**JEREMY ROBERTS:** That is still being assessed. We look at the constraints and we undertake the surveys to understand what animals or flora and fauna are in place. That is part of the assessment. Upcoming very soon we'll start our spring surveys in that area to assess that, which means that we have to walk the whole route and assess. Where presence should be, we will assume presence until it's proven that it's not through that area. We will continue to do that right through until construction.

**The Hon. EMMA HURST:** When is that process expected to be completed?

**JEREMY ROBERTS:** Spring surveys will happen in the upcoming spring. If the decision is made that that is the preferred route, which we're still in the final negotiations about, that would form part of an amendment into the EIS process.

**The Hon. EMMA HURST:** If you saw that there was a significant impact to animals and the environment going through there, what are the other options at that stage if it hasn't been solidified at this point?

**JEREMY ROBERTS:** We've got two routes at the moment and that's part of our assessment right now—to consider the impacts to environment, landowners, cost, duration et cetera. All of those are taken into account as part of our assessment.

**The Hon. EMMA HURST:** Have any variations to the route been made because of the impacts on animals or the environment to date? Have you made any decisions that this was going to be too impactful in certain areas?

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**JEREMY ROBERTS:** Very early on in the route selection process, that forms the high-tier requirements of constraints, of where we can avoid—always trying to avoid and then mitigate impacts to the environment. That was definitely formed very early on in the route selection process to refine the route.

**The Hon. EMMA HURST:** When you are deciding where the route will be, have there been any assessments where you've said, "Actually, we can't go through here because of the impact on the environment," rather than a general consideration from the beginning?

**JEREMY ROBERTS:** I am happy to take that on notice and come back and give some examples to that.

**The Hon. EMMA HURST:** Obviously, there is going to be a whole range of impacts no matter where you go, whether you are go through private landowners or through State forest. How do you balance those and what sort of weight are you giving to things like the environment or the animals or land value? Where does that all sit in regards to the overall decision?

**JEREMY ROBERTS:** We go through that multilayered constraints mapping. When we look at every route refinement, we go through and assess how many landowners, the cost and the impact to environment. Biodiversity offsets is a large calculation in that. What type of vegetation it is, how much clearing would be required, the bushfire risk and impact to land are all part of the assessment, which is undertaken by multiple team members and SMEs in the different areas to ensure that it's given the valid and appropriate route selection.

**The Hon. EMMA HURST:** I believe that the public consultation on the environmental impacts report is due to occur later this year. Do you expect that there will be variations to the route based on impacts to animals and environment from that report?

**JEREMY ROBERTS:** Potentially not in the public exhibition phase. We've surveyed 70 per cent of the route, where we've walked the route and undertaken the surveys. That's what we've assessed it on at the moment. For the other areas where we haven't made it, we've assumed presence in those areas. We go through that process to ensure that it's assumed that it's there, not that it's not there. And then, once we have access, that is when we will undergo and walk the line and undertake that assessment throughout. Via that process, we will then be into mitigating, so either micro-siting towers or, in the worst case, having to pay the offset for where we've had to—and, if it was an animal, obviously, you go through that process of relocation if habitat was to be destroyed.

**The Hon. EMMA HURST:** In which case, you don't think the public consultation will lead to any changes in the route. What aspects of the public consultation will you consider in regards to the project overall?

**JEREMY ROBERTS:** Sorry, if there is, under the public consultation, found to be some requirement to change route, we would obviously assess that. There's an opportunity through the amendment process where we would consider, taking on feedback from the DPE or consultation, if there's some requirement to refine or change some elements of there, depending on the size and the nature of what we would have to do. We've done an assessment of a 200-metre corridor, so there is some flexibility within there where, if there was a constraint, we could look to move that.

**The Hon. EMMA HURST:** Just to confirm, I thought you said on the last answer that public consultation probably wouldn't change the route in regards to environmental or animal impacts. Perhaps I've misunderstood your answer.

**JEREMY ROBERTS:** It would depend what information we find in there. If that gave us access to more of the area than potentially it would; it would just depend on what that consultation comes up with. If there's something that's new information for us, where we've surveyed 70 per cent, if we were able to access more, then obviously we will take them into consideration.

**The Hon. EMMA HURST:** Thank you.

**Ms CATE FAEHRMANN:** Thanks for reappearing before this Committee. Just going back to the questions asked by my colleague from the crossbench here, you've surveyed 70 per cent. You're saying if you get access to the 30 per cent—what do you mean if you get access?

**JEREMY ROBERTS:** If that happened during the public exhibition process, we'll take it onboard there; otherwise, it'll be further into the compulsory acquisition process if we had to go down that route. We're continuing to try to get consent to enter throughout the whole route and as soon as we can get consent to enter, we can undertake the survey and walk the route to do that final assessment. But in the interim we've had to assume that there is presence of what's expected of species in those areas.

**Ms CATE FAEHRMANN:** You have 70 per cent. You've surveyed 70 per cent.

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**JEREMY ROBERTS:** Yes.

**Ms CATE FAEHRMANN:** You've walked that line of the entire—sorry, what's the length of it again?

**JEREMY ROBERTS:** Three-sixty kilometres.

**Ms CATE FAEHRMANN:** So you're saying that a third of that 360 kilometres—120 kilometres; is that right?—you haven't been able to survey. Is that correct?

**JEREMY ROBERTS:** I'll come back on the exact—

**Ms CATE FAEHRMANN:** Because landholders won't let you onto their property because they're in opposition. Is that what you're referring to?

**JEREMY ROBERTS:** I'll come back to the exact kilometres amounts; but, yes, we've done 70 per cent of the route, where the other 30 per cent have not allowed access.

**Ms CATE FAEHRMANN:** How much of that 70 per cent is through public land?

**JEREMY ROBERTS:** I'll have to confirm.

**Ms CATE FAEHRMANN:** Is it a significant number, then, of the 30 per cent? Is that a significant number of the total quantity of private land that you need to build the transmission line on that you've been refused access?

**JEREMY ROBERTS:** I'll come back on the exact what was private versus public of that 70 per cent versus 30 per cent of where we've assessed it.

**Ms CATE FAEHRMANN:** When do you expect HumeLink to be built by?

**JEREMY ROBERTS:** Mid-2026.

**Ms CATE FAEHRMANN:** You're confident of that?

**JEREMY ROBERTS:** That's our current time frame that we are aiming for, yes.

**Ms CATE FAEHRMANN:** That's what you keep stressing in all of the submissions and evidence to this inquiry—how urgent it is.

**JEREMY ROBERTS:** Yes.

**Ms CATE FAEHRMANN:** When is the EIS coming out?

**JEREMY ROBERTS:** For public exhibition? It is currently planned by 30 August to go on public exhibition in September.

**Ms CATE FAEHRMANN:** How long will that be? What's the usual—

**JEREMY ROBERTS:** As a State significant infrastructure project, I believe it's planned for four weeks.

**Ms CATE FAEHRMANN:** What do you plan to do with the fact that we've had before this inquiry quite a few private landholders who have said that there is no way that you can go onto their property, and that they would welcome you with open arms, essentially, if it was underground transmission? What is Transgrid's approach to the landholders who have said to us quite clearly that they're not going to grant you access to their property?

**JEREMY ROBERTS:** We continue to try to negotiate with landowners, and that has been progressing one on one, to increase the consent to enter and the options agreements being converted. That is an ongoing process. We generally continue all the way through this process to negotiate to get access to allow us to do the survey requirements and limit that even to just the survey, if they were concerned about other activities such as geotech that may have been an option in some scenarios. We're trying to tailor it to get consent purely for the survey requirements, to increase the consent to enter and survey period. It is genuine that we are trying to continue that process currently.

**Ms CATE FAEHRMANN:** I have no doubt, maybe, that it is genuine that you are trying to continue that process, but we have been told unequivocally that landholders won't want you on their property. So what happens then? You've just said you're doing the "ask nicely" with the surveys. What's the next step? Because, again, this Committee has been told in no uncertain terms that you're not welcome in terms of overhead transmission; underground transmission, you can start tomorrow.

**JEREMY ROBERTS:** To start tomorrow we would have to reassess route, work through with different landowners potentially and undertake that process. We're not sure that the same landowners would be the impacted

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ones and whether they would welcome us to undertake surveys straightaway either. There is the requirement to start from that process, to re-refine the route, depending on where the topography suits for an underground cable to go through. But through our processes, similar to what we've done in Project EnergyConnect, we would have to go through the compulsory acquisition process as that final requirement, to ensure that we can continue to build by our required time frames.

**Ms CATE FAEHRMANN:** How long does all of that take? Teasing out this 2026 start date, in terms of compulsory acquisition and then commencing the project, how long do you think it will take to try to get landholders' approval and acceptance, ideally, if not compulsory acquisition, and to survey that 30 per cent? Have you factored all of that into this 2026 time frame?

**JEREMY ROBERTS:** Yes.

**Ms CATE FAEHRMANN:** When is all that happening? How long is that going to take? We've got the public exhibition process completed, say, October or November. Then you'll be continuing to liaise with the landholders, I assume, after that.

**JEREMY ROBERTS:** Yes.

**Ms CATE FAEHRMANN:** How many months are you giving that process before, if you don't get agreement and permission, you're compulsorily acquiring and forcing your way onto their property to do the surveys?

**JEREMY ROBERTS:** We would generally continue to try to liaise and work through an amicable solution. I empathise with the people who do not agree with the process. That is the process that we are required to follow to meet our required time frames for the consumer to have a reliable and cost-effective power network. We have factored that in, into next year, to have land available for the survey process and then through into construction.

**Ms CATE FAEHRMANN:** What's factored in? What is that factored in by? What month? After the public exhibition at the end of this year, you'll continue working with landholders, but what have you factored in in terms of when you pull trying to get agreement and you start going on to compulsorily acquire? What time frame have you given that? Three months? Six months?

**JEREMY ROBERTS:** Ideally, we're aiming to have all land available for access for construction by mid to late next year, or late next year. I'll come back with some actual dates of the land acquisition process.

**Ms CATE FAEHRMANN:** Available for construction or surveying, just to be clear?

**JEREMY ROBERTS:** Survey has to happen for construction.

**Ms CATE FAEHRMANN:** Yes.

**JEREMY ROBERTS:** I'll come back with exact dates on that.

**Ms CATE FAEHRMANN:** Okay. Moving on to Snowy 2.0, was there a reason why, in the original submission that Transgrid made to this inquiry, the delay to Snowy 2.0 was labelled as potential delay?

**JEREMY ROBERTS:** To Snowy 2.0, Snowy Hydro's project?

**Ms CATE FAEHRMANN:** Yes.

**JEREMY ROBERTS:** I'm not sure why the potential was there rather than actual delay.

**Ms CATE FAEHRMANN:** Because it is an actual delay, isn't it?

**JEREMY ROBERTS:** My understanding is that it is, but I'll take that on notice and come back. My understanding is that it is a real delay.

**Ms CATE FAEHRMANN:** With respect, Mr Roberts, surely it is something that you would be—this is your business, much more than it is mine, and I found that out pretty easily.

**JEREMY ROBERTS:** Yes.

**Ms CATE FAEHRMANN:** It's 2029 at least, isn't it? Ms Jordan?

**MARIE JORDAN:** Yes, I would be happy to answer that. We do realise it's delayed. We do not have a final date. We have interest in HumeLink for a broad variety of uses. Snowy 2.0 is one connection into a much larger scheme. When we run our power flow studies and when we look at—we're releasing our transmission annual planning report this month. When we look at that, we did take into account Snowy's delay. But when you

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look at the whole system, back to, it's one piece of the puzzle. It's clear in the report, and also in the ISP, that it is much broader than Snowy 2.0.

The need for HumeLink, the need for PEC, VNI and even the continuation up into the northern area of Hunter transmission line and connecting CWO REZ, getting the Waratah Super Battery up and online by 2025—all of those are very key and critical, and they all work together. When we look at our system and we run our power flows, we are looking beyond the borders of New South Wales. We're getting information from other transmission companies, distribution companies and large-load customers. All of that is factored in, and we look at it as a whole and how we have to participate in the broader eastern seaboard of Australia to make sure that we have the power flows we need—Queensland, Victoria, South Australia and even into Tasmania.

**Ms CATE FAEHRMANN:** Could you please provide to the Committee the specific renewable energy zones and projects that you expect HumeLink to be able to assist with in terms of transmission? You have just named a few. Could you provide that information to the Committee?

**MARIE JORDAN:** So how HumeLink is part of the overall system? Yes, our transmission annual planning report is due out in August, and AEMO's ISP also outlines it. Is that what you're referring to?

**Ms CATE FAEHRMANN:** Sure, yes.

**MARIE JORDAN:** We would be happy to make sure that once this TAPR is released it is received by this Committee.

**Ms CATE FAEHRMANN:** What was the original—how long ago was it, 2018? The cost of HumeLink has increased almost five-fold since then. What was the original cost estimate of HumeLink in 2018?

**MARIE JORDAN:** I'm sorry, I don't know that figure. We'll take that on notice, what the original cost was. When we talk about the original cost, I believe that's the one that the ISP uses—the construction cost reports—and then we go through and do a detailed study. At that point, it's very much on without looking at specifics of the area. I know that to be fact. Once we started to get through that process, I believe the number that I saw after we had looked at it, but I'm going to look at Jeremy to kick me under the table if I'm incorrect, was \$3.3 billion.

**JEREMY ROBERTS:** So 3.3 was the last assessed cost that was published prior.

**Ms CATE FAEHRMANN:** The last one. That's what you gave this Committee three weeks ago.

**MARIE JORDAN:** Then when we look at the cost adjusted and then to today's cost, it's a 26 per cent, 27 per cent increase.

**Ms CATE FAEHRMANN:** In relation to the capacity of HumeLink, I understand that it has decreased from what it was when it was originally proposed. The capacity is now 2,200 megawatts, which has decreased, I think. Is that correct?

**JEREMY ROBERTS:** I will have to confirm whether it was decreased, depending on which way the power is flowing: whether it's flowing towards Snowy to pump up or whether it's discharging. I will take that one on notice—of the parameters changing.

**Ms CATE FAEHRMANN:** If Snowy 2.0 does get built—I am just trying to understand capacity here—what will be the capacity requirements of Snowy 2.0? Are you aware of that, or am I asking you detail that is—

**MARIE JORDAN:** Sorry, the detailed information like that on specific megawatt hours, I do not have with me.

**Ms CATE FAEHRMANN:** I have questions about the AEMO report that has just come out—the transmission expansion options report, which I assume you—

**MARIE JORDAN:** We participated in that, correct.

**Ms CATE FAEHRMANN:** —would be reasonably familiar with. How does that impact HumeLink, the existing project? Does it change it in any way?

**MARIE JORDAN:** I'm not understanding the question. What do you mean by—

**Ms CATE FAEHRMANN:** Based on the fact that AEMO has just issued this—there are maps that indicate conceptual renewable energy zone expansion options—does it change anything in terms of the way in which you would build HumeLink, now that this is up, or were you expecting it?

**MARIE JORDAN:** We provided information to that cost report, and when the ISP comes out in December time frame, the draft, there may be additional pieces to it that are accumulated from the NIS, from



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EnergyCo, as well as information from ours. That's why our transmission annual planning report is provided. But we do not anticipate any changes to HumeLink.

**Ms CATE FAEHRMANN:** Do you think there will be additional transmission lines required to increase the capacity of HumeLink within the next decade or so, for example, in five years or 10 years? Will that be required, based on what AEMO has released? Will there be additional transmission lines required close by?

**MARIE JORDAN:** I can't answer that based on that report, but we will know more when the 2024 draft ISP comes out. Then we will have more specific information.

**Ms CATE FAEHRMANN:** Is it a possibility, though, that more transmission lines—

**MARIE JORDAN:** I couldn't comment, and it would be truly just my opinion. My planning team is much closer to it, but I would be uncomfortable making any kind of assertion there.

**Ms CATE FAEHRMANN:** Has Transgrid already signed up any contractors to build HumeLink?

**JEREMY ROBERTS:** We are very close to commencing early design works with our contracting parties, but we have not signed them up yet.

**Ms CATE FAEHRMANN:** You have contracting parties that are ready to do design work but you haven't signed anything with them?

**JEREMY ROBERTS:** Not with those parties yet. We're going through the early involvement process, part of the procurement process, which we are required to do during this phase of our contingent project. Part 1 funding from the regulator is to shore up the price, hence why the price is now being reported; and also to commence early works on time to meet the required time frame of mid-2026.

**Ms CATE FAEHRMANN:** The early works are what, sorry?

**JEREMY ROBERTS:** Design—so the detailed design process, the tower design and prototype testing of the transmission towers, recruitment to ensure that the resourcing is adequate to deliver the project, and early procurement for the project.

**Ms CATE FAEHRMANN:** All of that, you essentially contract out companies to start the process before things like the environmental impact assessment has been undertaken and public consultation has taken place?

**JEREMY ROBERTS:** From early design process, yes, we're doing that in parallel to meet the time frames.

**Ms CATE FAEHRMANN:** But that essentially just locks you in, doesn't it, in terms of it being approved? The environmental impact assessment consultation is essentially just a tick-a-box, then, isn't it? You put out the impact that this will have on the environment and you call for public consultation. What does the public feed in on, and what can they hope to influence in any way in that process?

**JEREMY ROBERTS:** We, with our contractors, work through what we can do in this phase of a design tower type testing phase. We take into consideration other approvals in the same areas of transmission projects to factor in what requirements may be in place, and work closely with the DPE through this process to follow their process for the consultation process.

**Ms CATE FAEHRMANN:** How much is the commitment Transgrid has made financially for those early works? When you're saying you haven't quite signed the contracts but you would know what that is costing, how much is that?

**JEREMY ROBERTS:** Over the early works phase, that will be roughly \$50 million per contractor, and there are two contractors.

**Ms CATE FAEHRMANN:** Has anything else beyond that been committed in terms of the project and expenditure?

**JEREMY ROBERTS:** Yes. As I previously stated, we've ordered transformers and reactors, we're very close to ordering a conductor and we'll also start to procure some of the early steel manufacture for the towers as well.

**Ms CATE FAEHRMANN:** And how much is all of that again? Excuse me, if you said you have already mentioned it.

**JEREMY ROBERTS:** Yes. I would have to come back with how much that's all costing in total.

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**Ms CATE FAEHRMANN:** Could you provide that to the Committee?

**JEREMY ROBERTS:** Yes.

**Ms CATE FAEHRMANN:** I just wanted to ask about the fire situation. I appreciate you, Ms Jordan, clarifying some of that at the beginning in terms of your opening statement. At the last inquiry, I think Mr Redman said that in Australia we can't find any instance of a bushfire started by any transmission line more than 66 kV, and one of the main reasons is that trees fall onto transmission lines and that Transgrid employees keep that pretty clear. But you did listen to the hearing in Tumut, and I think we had similar evidence before us in Armidale. We heard evidence from the deputy fire commissioner, I believe. They talked about the arcing from the lines. Sometimes the lines, in very intense fire conditions—those firestorms, if you like—can touch each other. And they did say that they were bigger transmission lines that were causing that. Did you hear that evidence?

**MARIE JORDAN:** I did and when I went back to my asset management team, they checked our records back to 1960, and we do not have any information that supports that we started a bushfire, since 1960, with our transmission lines.

**Ms CATE FAEHRMANN:** What do you need in terms of requiring evidence? How do you collect that evidence? Because this was evidence from local members of the community as well as people who were volunteers of their bushfire brigade. I understand one of them was a bushfire brigade captain who gave evidence saying that, yes, he has seen it with his own eyes—the arcing from the transmission lines. Somebody else was saying that they touched, and they saw the fire start. How do you collect evidence of fires that start, in terms of your responsibility?

**MARIE JORDAN:** I will take that on notice so it can be detailed and appropriate from the asset management organisation. I did hear, quite often, a reference to powerlines, and not specifically transmission lines. And I also heard a lot of discussion about PG&E undergrounding 10,000 miles of powerlines, and those powerlines—they have chosen to underground the highest risk lines, and those are the distribution lines. The commitment on that underground does not underground any transmission in California. Typically, in California, if you go back through the fire starts there—and I lived through a lot of those—they were distribution powerlines. They had different criteria and settings on those lines that do not match how a transmission line is run. So I will take that on notice—on how we do the investigation—and get back to the Committee with that information.

**Ms CATE FAEHRMANN:** I was just trying to find the transcript, but I can't do it in the time here. But I think I can recall asking, quite specifically, and confirming with the witnesses, when I asked about the fire, that it was a transmission line, and a high voltage—I think one of them said 330 kV. It was very clear that we were asking about whether it was a transmission line that they saw this fire being started on, and they said yes. You were listening, I think, to both days, were you, Ms Jordan?

**MARIE JORDAN:** Not in its entirety. The piece I heard were powerlines. I didn't hear the specific. We will get back to you on that specific instance and information associated with what was brought up. If they, in fact, have the specifics on the voltage, I will make sure we get back to the Committee with that.

**Ms CATE FAEHRMANN:** Another issue that came up, again, particularly from experts that appeared in Tumut, was essentially challenging your evidence in relation to the area being sterilised if it was used for underground transmission lines—essentially the whole area being sterilised; that you needed to access the whole area to dig it up. Their evidence was that, in fact, light agricultural activities could take place on it. You probably wouldn't plant deep-rooted trees, but that in other areas where underground transmission lines had been built they were covered up and the activity that was taking place there is able to continue. Do you accept that evidence?

**MARIE JORDAN:** When we had discussed how the underground transmission lines—and some of the specific figures I gave were associated with the alternating current—I have provided pictures of 500 kV transmission lines. There's also a diagram from National Grid that shows what type of things can be above it: It's low shrubby-like grass. What you don't have the ability to do is to do any type of agricultural work that would require any kind of ploughing or disruption of the soil. There is a small layer of native soil a little bit deeper in a high-voltage HVDC line because there is a lower temperature on that. So the information we gave today is in response to the inquiry and the discussions around HVDC. All of the pictures shown are HVDC, and you can see that it's still a very expansive process as you dig a trench to put in 500 kV. I also heard part of the testimony where they discussed boring under trees and not disrupting. I'm in disagreement of that. I have not seen that done for this type of voltage. As I shared, I've got a lot of global experience with this type of work and I've yet to see somebody do a bore underneath trees for a 500 kV HVDC line.

**The Hon. MARK BUTTIGIEG:** Ms Jordan, if I could just ask you to give us a bit of a helicopter, I suppose, macro picture of this whole—ultimately what we're trying to achieve is net zero by 2050, correct? The means to get there is to interconnect a whole bunch of renewable energy sources, be it solar, wind, battery or whatever. We need this web. Part of that web is transmission, as you have outlined. Has anyone done an analysis

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of the combination between transmission and distribution that we require to get us there? In other words, has anyone done an overall schematic of the pathway that we need to get there based on the likely energy—the renewable sources—to get to that point? At the moment the discussion has been confined to segmented parts of the first steps along there, if you like. I'm just trying to get an overall picture of whether there has been any forward planning done on the whole pathway and to what degree Transgrid has been involved in those discussions.

**MARIE JORDAN:** We are very involved with our distribution partners as we're doing our planning. We do have 132 kV lines that are distribution voltage that are owned by four partners we have: Endeavour, Ausgrid, Essential Energy and, in the ACT, Evoenergy. They all have some 132kV. They do provide input into our plan. Any of the generation on those resources are looked at by AEMO. We don't look at the generation sources really; we look at the flows and how we're going to manage the network.

**The Hon. MARK BUTTIGIEG:** Based on an assumption that the generation sources will materialise between—

**MARIE JORDAN:** Yes.

**The Hon. MARK BUTTIGIEG:** In terms of the non-transmission segments of that spider web—if I can put it in layman's terms—your evidence here today is that that's much more amenable to undergrounding?

**MARIE JORDAN:** The lower voltages—not necessarily the 132kV. Typically, when you get down to undergrounding, it's distribution voltage. When I'm talking about a distribution voltage, it's like for a neighbourhood or light commercial. Typically you don't have generation sources connecting into those unless it's a small, you know, distributed resource network where they're doing something a bit, I would say, almost off the grid. The other generation source that is growing rapidly on the distribution side is rooftop solar.

**The Hon. MARK BUTTIGIEG:** So we've got rooftop solar potentially coming into the lower voltage distribution side. But then at the higher end, even if it's 132kV, it could be much more easily undergrounded than, say, 550kV or 330kV. Is that correct?

**MARIE JORDAN:** Yes, that is correct.

**The Hon. MARK BUTTIGIEG:** So we could end up in a situation where, in the course of time—we are in 2023 now. We've got 27 years to get there. We could end up with quite a significant portion of that network undergrounded because we don't need transmission lines everywhere.

**MARIE JORDAN:** I would disagree with that because, when you look at the interconnection of the grid—and the voltage is very important for the ability to move large amounts of electricity. The distribution level voltage has always been: you consider it, you make sure that you can adequately meet the needs of the distribution companies and understand their loads and the impact on the system. But those voltages are not very effective for moving long distances. They have a lot of line loss and they end up with high congestion and you would have a much higher volume of lines trying to do it at a distribution voltage.

**The Hon. MARK BUTTIGIEG:** Transgrid's position is basically that a lot of this is going to have to be overhead because of cost and time but, to the extent that we have rooftop solar proliferating, that will take some of the load off because you can use underground low-voltage networks. Would that be a fair enough assessment?

**JEREMY ROBERTS:** I suppose I will add to that. Your rooftop solar will locally provide some of your generation source. When the sun is shining, you can have a lot more batteries in those areas, but that will look after a small consumer element to it, not any of the industry level—which you need your high-voltage network, the backbone, which is required more now than even previously. As we have more of the generation types changing around the network, we need to be able to harness the large solar from our south-west and the wind areas as well and the hydro and the offshore, meaning you need the strong, high-voltage transmission network integrated in the web across all of New South Wales and between the States.

**MARIE JORDAN:** One more, if I can hop on—the variable generation. It's important also to have that wide web because, when it's foggy in Victoria or overcast in Victoria, they are going to have less solar, so having this large interconnected web gives you that geographic difference across the area so you can have different available generation supporting the network.

**The Hon. MARK BUTTIGIEG:** Given that the evidence is that you're going to have to have a significant portion of this network as transmission, which then implies a big cost factor for putting it underground as well as a time delay, has anyone done a cost-benefit analysis of the big picture? In other words, "There are two alternate pathways. I can go underground between now and 2050 and that gets us there. It's going to cost us X. Or we go overhead. It gets us there much quicker. It's going to cost us Y."

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**MARIE JORDAN:** I don't know if a comprehensive study has been done, but there are some global studies that are very interesting about length of the line and when HVDC actually makes sense. There's a cost benefit and you can see it; it's somewhere between 800 and 1,000 kilometres for a single line when it really makes sense.

**The Hon. MARK BUTTIGIEG:** Eight hundred to 1,000 kilometres?

**MARIE JORDAN:** Kilometres, because there's a factor of cost on the underground, or on HVDC in general, and the high cost of some of the equipment associated with HVDC. Even an overhead HVDC versus an overhead AC line—it takes a long distance to make it cost effective because of the converter stations. When you get to the point of distance, there is, say, a break-even point where it does make sense to go HVDC, but those are very long lines.

**The Hon. MARK BUTTIGIEG:** As a general rule of thumb, would we be talking about a ratio of somewhere between two and three times the cost, assuming the timing wasn't an issue?

**MARIE JORDAN:** Two to three times the cost, if it was a single line—and typically it is that 600 to 800 kilometres to really get the value with the converter stations, but two to three times the cost with a long line and two stations.

**The Hon. MARK BUTTIGIEG:** That would be a reasonable assumption, yes. In terms of the timing, let's assume we are in an ideal world where we've got bucketloads of money and we can do it. We just wouldn't get there, would we? There wouldn't be enough time to do it.

**MARIE JORDAN:** There wouldn't.

**The Hon. MARK BUTTIGIEG:** And why is that?

**MARIE JORDAN:** The most significant piece is the age of the coal-fired generation that is in New South Wales and the capability for keeping it on much longer and the cost impact. June of 2022 was three months after I arrived and it was an interesting phenomenon to see just how the ageing coal fleet contributes to unplanned outages, unplanned occurrences on the system. And they aren't from losing the whole turbine; it could just be the conveyor belt bringing in coal. All of the things in the ageing coal-fired plants are showing up. As we look to make this transition—and part of my interest in coming here—this is at a pace that I haven't seen before in the industry, and I have done a lot of work on renewable transitions. We are at a pace that's set by where we are today and where we need to be tomorrow based on the cost of energy. In the US you had a lot of years of subsidy going into your renewable portfolio. It helped bring that portfolio to bear before the market did.

**The Hon. MARK BUTTIGIEG:** Are you saying that the government in California was a lot more pre-emptive of the transition than we've been here?

**MARIE JORDAN:** I would not say with transmission. I would say that what they—

**The Hon. MARK BUTTIGIEG:** Sorry, the transition to renewables.

**MARIE JORDAN:** Transition to renewables—they helped fund it. There was a lot of opposition to that as well, but when you see the amount we invested in transmission and subsidisation of the renewable portfolio, you are seeing the cost change in California—the cost of electricity. I ran the peak reliability, which moved all the energy across, and we would see the trading costs and things like that, because we managed the 14 western States. I would watch California, who had subsidised a lot of renewables, paying the States nearby to take it. It really reduced down the cost of energy in the whole 14 western States.

**The Hon. MARK BUTTIGIEG:** This sort of phenomenon you have pointed out with these ageing coal-fired power stations—is that a double whammy in the sense that you've got to prop them up because they are falling apart, so there are costs there, but you are also having to elongate the burning of fossil fuels in the meantime so that you can spend three times as much undergrounding the transmission network?

**MARIE JORDAN:** I wouldn't say they're completely falling apart because they actually do still perform a good function.

**The Hon. MARK BUTTIGIEG:** Clearly.

**MARIE JORDAN:** But you're absolutely right. Up in the north-east, there were times we extended coal-fired generation trying to race with transmission, and it was a significant impact. In upstate New York, there were periods of time where you would have hundreds of millions of dollars that were an additional cost to consumers because we had an unplanned shutdown of a coal-fired generator and we were paying to keep them running. It's a different model in the US, but it really pointed to, when it's time to make the change, the transmission

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has to be in place and you have to be able to move to a renewable portfolio. System security, making sure you have adequate system strength—there are so many parts and pieces to this.

**The Hon. MARK BUTTIGIEG:** If I could put it in perhaps a little bit of a pejorative context, which I think is necessary to paint the picture—if you're a firm believer in climate change and you think we're in a climate emergency and you want to get this transition done, we've pretty much got to go with the overhead to get there?

**MARIE JORDAN:** I would agree with that statement.

**The Hon. MARK BUTTIGIEG:** In terms of the Australian Energy Regulator and their funding envelope, let's assume we're in that ideal world where we did have the time and we did have the money. What would be the regulatory hurdles to getting that funding from the AER?

**MARIE JORDAN:** When we put forth solutions, we put forth quite a few in the regulatory investment test process. By the time you get to the end of that, you look at the ones that have the least cost and provide the best market benefits for consumers. So their look through the process has the customer and the consumer who is paying the bill in mind, and they are looking for the best solution for consumers.

**The Hon. MARK BUTTIGIEG:** If Transgrid were to put an argument that said, "Look, this is really bad. We've got landholders understandably upset who want it to go underground. There's too much community pushback against this; we really want to spend the money," is there a world in which the regulator would say, "Well, okay, you can have it"?

**MARIE JORDAN:** I don't think I can answer that with what I know today.

**The Hon. MARK BUTTIGIEG:** Fair enough.

**MARIE JORDAN:** I am taking the frame of reference of where we are, and I believe the AER is up next in this process.

**The Hon. MARK BUTTIGIEG:** That is true. Thank you.

**The Hon. STEPHEN LAWRENCE:** I wanted to ask some questions about HumeLink first. Are you familiar with a document called the Project Assessment Conclusions Report, Ms Jordan?

**MARIE JORDAN:** Yes, I am.

**The Hon. STEPHEN LAWRENCE:** That's a document from July 2021. In that document it apparently says that the net benefit of HumeLink is some \$39 million. Would you agree with that?

**MARIE JORDAN:** I don't recall right off, but I know that there was a market benefit analysis that had an amount.

**The Hon. STEPHEN LAWRENCE:** I was just curious, assuming the correctness of that figure, about how a project that's been described as so critical and so time urgent could have a net benefit of only \$39 million.

**MARIE JORDAN:** When we look at the information that's going to be run by AEMO today—we aren't in the slow change process. We are at that step change process. You will see a change in the market benefits overall for some of these projects. If you take a snapshot in time—and that was before June 2022. As these retirements keep getting moved up as we saw with Eraring—I think it was a seven-year change—all of those things will contribute into the market modelling. Market modelling that we have done on different parts of our system has increased dramatically. We haven't done HumeLink. That will be done by AEMO through the process, but we are seeing all of it ratchet up in very large numbers in some congested areas.

**The Hon. STEPHEN LAWRENCE:** In terms of the increasing cost of the project that you spoke about earlier in your evidence, is there a process by which the net benefit of the project is reassessed in light of that cost increase?

**MARIE JORDAN:** Yes.

**The Hon. STEPHEN LAWRENCE:** Could you explain that process?

**MARIE JORDAN:** We will be filing our next CPA probably towards the end of this year with the new numbers, and it will run the numbers back through AEMO. The number has to be confirmed—that there's still a net market benefit for us to go forward.

**The Hon. STEPHEN LAWRENCE:** Are you able to pre-empt that in any sense in terms of whether you think there will still be a net benefit to the project?

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**MARIE JORDAN:** We can't do it ahead of time. It has to be when AEMO takes the information and runs it. But when we do our own economic modelling we have some of the same inputs and so we are confident that it will pass. But we have not had AEMO run it with the full market analysis.

**The Hon. STEPHEN LAWRENCE:** Does that process involve the application of the regulatory investment test for transmission, which I think is called RIT-T, or is that a separate thing?

**MARIE JORDAN:** No, the RIT-T test concludes with the PACR. Then, what we do with the very large projects, and I believe this is fairly new—and jump in at any point, Jeremy—we go through a process to confirm the dollar amounts. Each one of these tests—a CPA is what?

**JEREMY ROBERTS:** A contingent project application. We undertook contingent project application one, in which we sought funding to develop the project to get it to a certain cost certainty, to allow now the market operator to confirm that it is still on the optimal development pathway. That process is still ahead of us and we will look to try to have a published result by December this year.

**MARIE JORDAN:** So by the time you get to the point where we are, with going in for CPA two, you'll have a strong reasonableness of your numbers because you've done some of the early works and you get a good sense of the project cost. Then they take that last step of running, once again, a feedback loop to ensure that it fits and it's still a market benefit for consumers. There are a lot of checks and balances along the way.

**The Hon. STEPHEN LAWRENCE:** So you don't have to reapply the RIT-T test in light of these cost increases?

**MARIE JORDAN:** No, we don't.

**The Hon. STEPHEN LAWRENCE:** Would you agree that when the project commenced its cost meant that it was right at the margin in terms of approval in the regulatory process?

**MARIE JORDAN:** I just had my colleague whisper in my ear it was \$491 million of market benefits for HumeLink at the PACR.

**The Hon. STEPHEN LAWRENCE:** I think the figure that I had might have excluded environmental community cost and the competition benefits. Does that sound right?

**MARIE JORDAN:** In the RIT-T? I don't believe—let me take that one on notice to make sure that I'm accurate.

**The Hon. STEPHEN LAWRENCE:** Sure.

**MARIE JORDAN:** I don't want to speculate, but usually when you go through the RIT-T process you've put all those costs into your number and then they run a market-benefit analysis based on that investment dollar.

**JEREMY ROBERTS:** I think in reference to whether it was only just market or not, it is an assessment by the market operator whether it proceeds and whether a delay to it creates more benefit, or whether it's an insurance scheme with reliability of the network to say it stacks up still to continue now. We're seeing in the change in the retirement of coal coming off quicker that that insurance benefit is definitely paying out, to have it built sooner rather than later.

**The Hon. STEPHEN LAWRENCE:** I think you've already answered this—and excuse me not being totally on top of these processes—but what's the next stage in ensuring that HumeLink complies with the National Electricity Rules, which I think are called the NER?

**JEREMY ROBERTS:** The next requirement is to submit the feedback loop to AEMO. We need positive confirmation that it is still the optimal time frame now to deliver HumeLink and not delay or stop the project. After that, we will submit our CPA two—our contingent project application—to the regulator to assess that the cost is still prudent and efficient to continue on. That is the final gate in the process for approval.

**The Hon. STEPHEN LAWRENCE:** There has been an array of evidence that I suspect you probably reviewed, which is to the effect that the regulatory test that HumeLink has to satisfy does not take into account a variety of environmental and community costs. Would you agree with that as a broad proposition?

**JEREMY ROBERTS:** The assessment is done on the environmental impacts as required by the Department of Planning and Environment, which is going through a calculation method for the biodiversity offsets. The impact of the project is assessed versus the biodiversity offsets. That's included in that price, and our latest cost estimate includes the environmental impacts, as required to do a project in New South Wales of this size through the DPE.

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**MARIE JORDAN:** Could you be referring to the multi-criteria analysis that's used in Victoria, where there are other inputs into the process that are considered? Because those do not apply, if that's what you're referencing. They don't apply in New South Wales today.

**The Hon. STEPHEN LAWRENCE:** This is a level of generality, but I was referring to, for example, Ms Andrea Strong, who gave evidence on 18 July. She said:

The main problem is that the regulatory investment test for transmission doesn't include the environmental externalities—all the external costs—and the Australian Energy Infrastructure Commissioner has said that the rules of the market are not fit for purpose. So there's a real problem. The New South Wales Government requires environmental externalities—the environmental and community costs—to be taken into account for projects that cost more than \$10 million. These transmission companies are building projects that are worth billions of dollars and aren't taking into account the environmental and community costs.

I'm sorry. That was quite long. Just take that statement as an expression of this broad proposition. Would you agree that the regulatory test somehow excludes these environmental and community costs?

**MARIE JORDAN:** I don't believe they exclude the cost. Those are all in for the costs that we have. But I think there are factors that people would like considered, associated with community benefits and things like that. Our costs are all part of the RIT-T. I might be walking down a path and I'm not understanding what that specific comment was, but I'm thinking it might be really to take into account non-monetary things—impacts to community and things like that. But we can look up that specific question and take it on notice to make sure that I've understood what was trying to be conveyed.

**The Hon. STEPHEN LAWRENCE:** I don't think it was so much a criticism of the figures that Transgrid might be submitting to any particular part of the regulatory process. I think it was more a comment on the way that the regulatory process assesses those things. At the core of the suggestion was the suggestion that the cost to the consumer is given too much weight. I think that's the upshot of it. I was just curious if you could comment on this suggestion that the cost of electricity to the consumer has such weight in the regulatory process that other things, in effect, are not taken into account, such as environmental and community impacts.

**MARIE JORDAN:** It is that way in Victoria, but I do think consumer benefits really need to be—personally. This is Marie Jordan, not even Transgrid. Personally, I think the cost to consumers has a huge impact, because you look at the demographics across New South Wales where a small saving can be a big difference to some of the people impacted by the cost of electricity today. Because it has grown so much, I think it is an important factor. But Victoria does use the multi-criteria analysis that allows other non-consumer cost benefits to be included.

**The Hon. STEPHEN LAWRENCE:** Does that mean that Victoria departs in some way from the national model law?

**MARIE JORDAN:** Yes, it does.

**The Hon. STEPHEN LAWRENCE:** In terms of the impacts of a delay of the project that might occur as a consequence of undergrounding, I'm just curious to get your opinion, Ms Jordan or Mr Roberts, on if undergrounding was to occur in a way consistent with the needs of the National Electricity Market, when would planning and so forth for that had to have started?

**MARIE JORDAN:** To meet the date, we're well past that time period. I will point to a 138 k line that went from Dublin to Belfast. They were in a very similar situation as we are today, with an urgency for the line to be undergrounded.

**The Hon. MARK BUTTIGIEG:** Sorry, 138 kilometres or—

**MARIE JORDAN:** Yes, 138 kilometres. Of that 138 kilometres, it caused an almost six-year delay, and there was a significant cost to consumers in the delay of that project. Switching to undergrounding is a five- to six-year delay on a project that is only 140 kilometres. It will be even more impactful here as we try to do a new analysis on 360 kilometres, and we do not have a lot of HVDC specialists for construction as well as the equipment. So all of that is at a brand-new starting point. That will be very difficult if it has ended up in that direction.

**The CHAIR:** Further to that, Ms Jordan, with comments you made previously about Snowy's delay making HumeLink more critical, I wonder if you would comment about how it would put our country at risk, given other comments that you've made about HumeLink in the ISP being critical in terms of network security and reliability. What are the consequences of that?

**MARIE JORDAN:** The consequences of that would likely be insufficient resources. In June 2022 we spent a lot of time in lack of reserves. They have it categorised from one to three. I would see us in those lack of reserves. If you couldn't get the generation, the next option is rotating blackouts that are managed through the

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distribution network operators. We do have plans; we came very close to executing them in June 2022. We were fortunate that we had a few things occur that stopped that but, having lived through the energy crisis in California, it's real. When the resources aren't there, you go into rolling blackouts. Even in the recent couple of years, with having to turn down transmission lines in California, there was a significant number of rotating blackouts that occurred in my area. I spent quite a few afternoons in the dark in Napa, California, because we turned down some of the transmission lines. That ability to move energy across the regions is critical.

**The Hon. STEPHEN LAWRENCE:** Did the previous State Government—I mean the Government in place before the recent election—take any steps to facilitate or encourage a move towards the undergrounding of HumeLink?

**MARIE JORDAN:** Not that I'm aware of. Jeremy?

**JEREMY ROBERTS:** Not that I'm aware of, no.

**The Hon. PETER PRIMROSE:** Can I ask one question? I note the clock is ticking down here. I am just taking up a point that was raised by my colleague in relation to a question on notice. The question was:

What the percentage increase to the consumer bill would be if HumeLink was undergrounded or some statistic around that increase?

Your answer was, and I quote from the first sentence:

The CPA-2 for HumeLink will look at the indicative impact on consumer bills over the 2023-28 period from our investment in HumeLink, this will be lodged with the Australian Energy Regulator (AER) in October.

I know that work is underway but, in terms of our timetable—which is really the end of August—I was wondering in terms of the economic modelling that's being done for that, and particularly some of the statistics that are feeding into that modelling, whether it would be possible for us to get access to some of that. Because that might be of value for us in trying to meet our terms of reference, in terms of the potential cost to consumers of their bills if it was undergrounded.

**MARIE JORDAN:** We have an executive joint planning committee where all the TNSPs and AEMO get together, and I do know they are frantically rebuilding the ISP 2024 draft. I do not believe that information would be available. They have to run it at their level. They have to get all the planning inputs in. I don't think it would be available by the end of August, but I think that would be a good question for AEMO if there was an ability to do that. I just know from conversations, it's a very detailed process, building all that economic modelling in.

**The Hon. PETER PRIMROSE:** Do us a favour, maybe, and take it on notice because the up-to-date statistics, and particularly the econometric modelling, might be of value, if there is anything available that we could feed into the process.

**MARIE JORDAN:** Yes, I will see what we have. We have utilised Endgame Economics on some of the timing of projects, so there may be something available. But I don't think—

**The Hon. PETER PRIMROSE:** And Nexa economics too, I see.

**MARIE JORDAN:** Yes.

**The CHAIR:** Thank you for attending this hearing again today and the time you've given up to be here.

**MARIE JORDAN:** Thank you for inviting us.

**The CHAIR:** Committee members may have additional questions after the hearing. The Committee has resolved that the answers to those, along with any that you have taken on notice today, be returned within three days because of the tight turnaround of our inquiry. The secretariat will also contact you in relation to those questions.

**(The witnesses withdrew.)**



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**MR JIM COX**, Deputy Chair, Australian Energy Regulator, on former oath

**The CHAIR:** Thank you for joining us again, Mr Cox. It is good to see you. I remind you that, as you have appeared previously before this inquiry, you are appearing today under your prior oath. Would you like to start by making a short statement?

**JIM COX:** I don't think so. I think we made a fairly comprehensive opening statement last time. I don't think there is a need to supplement that in any way. I am happy to go straight to questions.

**The Hon. WES FANG:** Thank you very much for appearing again, Mr Cox. I had some further questions around the guidance and requirements of the regulator in relation to what is put to companies when they're looking at building these sorts of projects. The hearings have really teased out the fact that we are putting the benefit of cost to the consumer, really, above all else. That's the priority, and the cheapest option is often what is prioritised. But what we've heard from communities is that there is a cost with the cheapest option that isn't always a monetary cost. What is the option for the regulator to broaden its scope to include non-monetary costs, such as the cost of mental health, amenity or visual impact, into that cost that it uses to value a project? Is it feasible that you can do that? Do you need a regulation change? Do you need a legislation change? Is it something that you think is a viable option to have a more holistic view of what is the lowest cost?

**JIM COX:** Thank you for that. If we go back to the sorts of things I was saying last time, we're involved with this in two ways: one through our role in, if you like, supervising the application of the regulatory investment test; another one in our role in approving revenues through the contingent project process that Transgrid was talking about a moment ago. If we look at the first one of those, the regulatory investment test, the objective there is to find the option that provides the greatest net benefit. In that context, I think it's not only cost; it's also issues that the community may be concerned about, such as visual impact. I think I'm right in saying that the Commonwealth Minister for Climate Change and Energy, Mr Bowen, is proposing a rule change that will require transmission providers to consult on that, so I think there's a route there. If we then look at our role in approving expenditure under the contingent project process, there we are required to consider issues raised by the communities. We're required to consider that and whether they have been adequately addressed by the transmission provider, so I think there is a scope for that to exist.

Beyond that, obviously it's not the only thing. Obviously I think issues of cost do matter—cost to the general community. There's an element of balancing all those things, but I don't think it's right to say that we're required to take the lowest cost option or that other factors aren't capable of being taken into consideration. I suppose one other thing is when we're looking at the RIT test, what is relevant there are benefits to those that produce or consume electricity. In future, that will include emissions reduction once the law change comes into place. That means there are other things that may be beyond those that consume and produce electricity, transport electricity. It doesn't mean those things are totally ignored because it's open to governments to make a contribution to the cost of transmission projects. If they do that, that reduces the cost that's required to be considered under the RIT test. So there's another route there. I think it's a bit broader than just a lower cost, but I wouldn't want to say that cost to general community is not something that's important or relevant, but it's not the only thing.

**The Hon. WES FANG:** That's really helpful testimony, I think, because there's certainly a view within those communities where we have visited and taken testimony from that there is this requirement to have the cheapest option. What you have indicated is that there is an opportunity for other factors to be considered when these projects are at the planning stage before construction. In that instance, given that there already is, by your answers, some flexibility in not only considering other factors and the fact that we might be looking to amend the rules again if Mr Bowen does what he's indicating and goes down the path of having those other external factors having weight in the calculations, what would have provided Transgrid and HumeLink the opportunity to underground in the current framework? What would have provided your organisation to say, "Yes, that is an appropriate and suitable solution moving forward," given that it, by all accounts, can be weighed into it?

**JIM COX:** Yes. It's important to bear in mind that what we operate is called a proposed response model, whereby the business proposes and we respond. We have not had before us, if you like, a long-link undergrounding project to consider. No-one's actually ever proposed that, so we haven't had to turn our minds to it. I guess what I would say is costs are not irrelevant here—costs to the general community. So, if it's the case that the long underground link was a very expensive link, that would, obviously, tend to count against it in the weighing of costs and benefits. So it does come down to, I suppose, issues of cost, the benefits to the community that gets the benefits of undergrounding versus the cost to the community in general, bearing in mind that the cost of electricity is an issue of great concern to people at the moment.

**The Hon. WES FANG:** I appreciate that. Ironically, I got my electricity bill today. I've never seen one as high.

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**JIM COX:** I got mine over the weekend.

**The Hon. WES FANG:** Yet you managed to pick yourself up off the floor and come in today. Thank you very much. This is where we get into trouble, because part of the reason I wanted to have you come back so that I could, I guess, clarify some things is, in effect, because everybody who appears says, "We're told we have to have these overhead lines because it's the cheapest option and the regulator requires the cheapest option because that impacts power prices." That's the view of the majority of people appearing. In my mind, I'm thinking, "There are other factors. How do we get those weighed in?" I put the question "How do we get them weighed in?" You said, "Actually, they can be. There are mechanisms there and potential future changes." So then I've said, "What are the circumstances where we would've had an underground proposal approved?" And you've effectively said, "We go back to the cost", which is, is it fair to say, the predominant factor with which the projects are assessed?

**JIM COX:** I think it's fair to say, Mr Fang, this is an evolving area of operation. It's true that we haven't had many large transmission links built in recent times. So we're all learning. I think one of the things that we're giving very active consideration to is the general issue of social licence—in other words, what is required for the host community, if you like, to accept that transmission lines may come into those areas. That is an area of active consideration at the moment. But, clearly, if it's the case that various activities need to be undertaken to give the social licence for the transmission company to operate in an area, that's something that we would need to consider both at the RIT stage and also the tender project stage. But those are things that we're actively working on at the moment, and we hope to get further guidance to later in the year.

I think, if you ask why people think it's just cost, it's probably because they haven't really gone through the process in any great detail up to now. But, as we indicated earlier, there is some scope for other things to be considered. But, once again, I wouldn't want to give the impression that we don't care about cost to the general community, which is a very important consideration. If the costs are very high, that, obviously, would tend to work against the project. But it's not to say there are not things that could be done, at reasonable cost, that would make the project more acceptable to the community. That's something which, I think, these processes need to consider.

**The Hon. WES FANG:** Given that you've said that in effect what you operate is a response model where you don't provide the solution—a company comes to you with a project and then you apply your rigour to what's proposed—if Transgrid had provided you the plans for an underground link, would you have assessed it on the merits of the project, or would you have assessed it against something like an overhead system and said, "No, we're not going to approve the undergrounding because the overhead is cheaper"?

**JIM COX:** What would have happened in that case is the project would have to have gone through the RIT-T process, which we described last time. The objective of the proposal is to consider credible options and to identify the one that produces the greatest net economic benefit to those that produce and consume electricity. That wouldn't necessarily have been the cheapest project but the undergrounding project would have to show that it produced greater benefits than an alternative which might have been an overhead project. It would have gone through that process. Perhaps worth mentioning is that were there to be a change to the cost of the project, then it may be necessary for the proponent to go through the RIT process again to demonstrate that the revised project is the one that provides the greatest net economic benefit. We would expect that process to be gone through to demonstrate that the particular project is the one that has the greatest net economic benefit in terms of the RIT test.

**The Hon. WES FANG:** If the approach was, for example, to say it had gone from a \$3.3 billion project to a \$4.9 billion project, would that require a reassessment or are you happy to accept that that is a reflection of the changing circumstances in construction and inflation?

**JIM COX:** You're saying the cost has increased from, say, \$1 billion to \$3 billion? Is that the scenario?

**The Hon. WES FANG:** Apparently HumeLink had gone from being a \$3.3 billion project to now being a \$4.89 billion project in real terms—that was the testimony from Transgrid. I imagine that the assessment was done on the \$3.3 billion. Now there's been a 30 per cent, 35 per cent, 40 per cent change in the pricing structure of that project. Would that trigger a reassessment?

**JIM COX:** What they'd then have to consider is whether it's going to change which is the most preferred option. If in their opinion it would do that then, yes, they have to redo the RIT process.

**The Hon. WES FANG:** In the circumstances where you've said that social licence is obviously becoming a more—I really hate the term "social licence". It's a term that's really got no tangible measurement. It's just this word that's used to describe something where we feel like it makes people have ownership of it. The social licence of the undergrounding was the reason that Transgrid might have put to the regulator the proposal to underground and then in the assessment criteria of other suitable options, overhead had come through as the

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cheaper option and the more effective and cost-effective model for the end user. But because of that social licence issue Transgrid had gone with the undergrounding route. How do you balance that now? Is it the case that perhaps after the energy Minister federally implements some of the changes that he is proposing, that it might be the case that an undergrounding solution that is put forward might be approved by your organisation?

**JIM COX:** Yes. I mean, I think that if the proposed rule change goes ahead, transmission companies will be required to consult more fully with the local communities on the sort of issues that have we've been talking about. What we would then want to see is that the business had considered the input it had received from community and had taken that into account in making its decisions. That doesn't mean they would necessarily do what the community prefers, but it means they would have turned their minds to the issues and seriously addressed them. So we would expect that process to happen.

**The Hon. WES FANG:** If that rule change occurs, will programs be grandfathered? So if that comes in, will HumeLink then have to re-undergo its approval process, or will the fact that it has already been approved effectively grandfather it from having to go through the new rule change?

**JIM COX:** I imagine that the new process would apply to new projects rather than retrospectively to HumeLink, although I'm not 100 per cent sure of that.

**The Hon. WES FANG:** So there is perhaps a real push on now to get HumeLink approved and underway, in order to have it grandfathered, because of the huge community backlash against the towers and the overhead lines.

**JIM COX:** I'm sure that Transgrid has progressed the project and will want to take account of community views to the extent it can. But it has to weigh this against the need for the project, which they talked about just before we came in, and also, of course, issues of the cost to the general community. So there is a balance there.

**The Hon. WES FANG:** By my calculations I believe I've probably run out of time, Chair.

**The CHAIR:** You've got a minute and a half left.

**The Hon. WES FANG:** The last question is a bonus one from me: Will the rule change be in draft form with consultation, or will it just occur? When do you think it will be implemented, and when will it come into effect?

**JIM COX:** The rule change process is run by the Australian Energy Market Commission, so probably the timing is best addressed to them. But their normal practice is to have a consultation process, so there will be the opportunity for the community to have consultation on the law changes.

**The Hon. WES FANG:** How long does that normally take?

**JIM COX:** I think it's best if that question is addressed to the AEMC.

**The Hon. WES FANG:** I imagine I have probably used my minute and a half now. If not, thank you very much, Mr Cox, for everything we've looked at again today and for clarifying some of the issues.

**The Hon. EMMA HURST:** One concern that's been raised with us that I'd like to get your thoughts on or your response to is the lack of focus and emphasis on the significant environmental and community costs associated with a project like this. As the regulator, do you have any response to that, and to the fact that a lot of the concern from the community is that those other areas don't seem to be emphasised as much in overall considerations?

**JIM COX:** The regulatory investment test that we're talking about considers the benefits to those that produce transport, use electricity, so it's an electricity-market-specific test. As we mentioned earlier on, the Commonwealth Government is passing legislation to require us to take emissions reductions into account. So in future, emissions reductions will be treated as, if you like, internal to the market. Other environmental externalities—the businesses are required to meet their environmental obligations.

When we were looking at Project EnergyConnect—which is the one we've actually done, so it's the one real-life experience—we spent a lot of time thinking about biodiversity offsets. I think it's fair to say that Transgrid and probably ElectraNet in South Australia purchase a significant amount of land for biodiversity purposes, and we treated that as a reasonable cost of constructing the powerline. One way and another, a lot of environmental costs do get taken into account in the process. To the extent that people feel that's not satisfactory, it's always open to governments to contribute something towards the costs of these broader social benefits. If they do that, that reduces the cost of the project itself, thus making it perhaps easier for the project to pass the relevant test. I think there are ways in which environmental factors do get taken into account. Also, of course, very relevantly, as we

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were saying, we are moving into increasing concern about social licence issues, and some of those may well be environmental issues. That's another route in which they could get into the process.

**The Hon. EMMA HURST:** Do you think that there is scope for more regulatory framework changes to be made to ensure that more environmental impacts and animals and biodiversity could be taken into account when assessing that cost-benefit ratio?

**JIM COX:** I would say that many of them are already taken into account. We apply the test that is prescribed for us by the various governments. There has been much debate over the years as to whether or not it should be broadened, but I think that probably is an issue for the governments to consider rather than for us as a regulator.

**The Hon. EMMA HURST:** The AEMO 2023 Transmission Expansion Options Report came out in July 2023 and said that costs of the HumeLink have increased from \$3.3 billion to \$4.8 billion. I'm wondering what your response to that is, as the regulator, and if there are concerns that this project is no longer good value for money for consumers in its current form, given that there has been such a significant change.

**JIM COX:** Yes, I think the increase of cost is of concern to us. I think we are concerned that the initial cost estimates proved to be so far wide of the mark. I don't think that's a good situation. Obviously, as we learn more about how to construct these long transmission links, we would expect cost estimation to improve and we have suggested a number of measures to improve the accuracy of cost estimation. It is something that has received attention for us. We are concerned and we are taking action to improve the accuracy of cost measurement.

Does this mean that HumeLink is still the right option? That requires a consideration of costs and benefits. I think Transgrid and perhaps AEMO would argue that the benefits are also increasing, given the rapid transition and that we are moving away from coal toward renewables and given concerns about Snowy 2.0, ironically enough. There we would say the benefits are increasing. Obviously, there would come a point where the costs are so great that perhaps some other option would be preferred. If an increase in cost is enough to cast doubt on the acceptability or whether the preferred option is still the preferred option, then the proponent has an obligation under the RIT test to reapply the test.

**The Hon. EMMA HURST:** When would it come into play that they have to reapply the test?

**JIM COX:** I don't really think it's a precise number. The point is that the proponent has to be persuaded that the existing preferred option is still the preferred option, given that the costs have increased and bearing in mind that the benefits may also be increasing because we are moving more rapidly towards reliance on renewables than we might have expected a couple of years ago.

**Ms CATE FAEHRMANN:** I will build on that line of questioning, if I may. You said that it is up to the proponent—in this case, Transgrid—because of this quite extraordinary increase in the cost, which you acknowledge, to determine if there needs to be a new cost-benefit analysis. Does the regulator play any role in that?

**JIM COX:** No. I think it is up to Transgrid to determine that. It is their responsibility, yes.

**Ms CATE FAEHRMANN:** I'm not sure what the regulatory framework is for this but there is nothing that the regulator can look at and say, "Hey, this has increased a lot. I think your cost-benefit analysis that you provided may not be correct or may not still meet the regulatory investment test"? There's nothing within this regulatory framework that empowers the regulator to do anything?

**JIM COX:** We have no power. I think it is the proponent's responsibility. Obviously, we do talk to them, so they'll be aware of our views.

**Ms CATE FAEHRMANN:** I understand there has been a capacity decrease—I think it was 2,750 megawatts down to now 2,200 megawatts, although the Transgrid senior officials couldn't answer that before—plus the cost has increased so much. Does that constitute a material change in circumstance that could trigger the regulatory investment test to be reviewed? How is that undertaken?

**JIM COX:** That might well be correct. As we acknowledge the costs have increased, I think the question in the mind of the proponent would be whether there are increased benefits that offset those increased costs.

**Ms CATE FAEHRMANN:** Who determines that in the eyes of the proponent? Who determines that? Are they required to put in another cost-benefit analysis that anybody else sees, or is it literally just up to Transgrid?

**JIM COX:** It will be their judgement, I think. They obviously follow the work that AEMO is doing on transition towards net zero and, as we're saying, transition is happening more rapidly than we might have expected

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some years ago, so that tends to increase the benefits of the project. They have to make a comparison of benefits and costs. If, in their judgement, the increase in costs is not outweighed by the increase in benefits, then they must reapply the RIT.

**Ms CATE FAEHRMANN:** Does the regulator have any role, then, in consulting with Transgrid, in indicating any concern, or in suggesting potentially that they should undertake a new cost-benefit analysis in expressing any view on this?

**JIM COX:** We would not be able to have a formal view because it is Transgrid's responsibility. Obviously, we do discuss issues with them.

**Ms CATE FAEHRMANN:** Part of your evidence the other day said that the regulator "is responsible for establishing and amending the cost-benefit analysis guidelines on the application of AEMO's integrated system plan and regulatory investment tertiary transmission guidelines. The cost-benefit guidelines are used to determine the optimal development of the NEM through the lowest system costs associated with generation, storage and transmission investment, and the RIT-T is a cost-benefit analysis that network businesses must perform and consult on before making major investments in their networks."

**JIM COX:** Yes, correct.

**Ms CATE FAEHRMANN:** If the RIT-T is a cost-benefit analysis that network businesses must perform and consult on before making major investments in their networks, based on this, despite what is now a massive increase in costs and a decrease in how much energy those transmission lines are providing, I would think that would be a substantial change to the whole project and would require a new cost-benefit analysis, which it says "that network businesses must perform" before making major investments in their network. There is something there, isn't there, that they have to prove this cost-benefit analysis to someone before they're able to go ahead? At what point can government or the regulator trigger a change? Or is it just completely up to Transgrid? Is that what you're telling this Committee: that there is no other way to get them to undertake another cost-benefit analysis?

**JIM COX:** They are required to undertake the initial cost-benefit analysis and they're required to do it under the guidelines that we set out. Then, after that, there is a disputes procedure so there is opportunity for people to raise disputes about the RIT-T analysis that has been undertaken. We have a dispute at the moment with VNI West, not Transgrid, so we're actually considering a dispute. What you're talking about is what should happen if there is a change in circumstances after the RIT-T has been completed.

**Ms CATE FAEHRMANN:** That's correct. That's what I asked before.

**JIM COX:** There the arrangements are different. Obviously, it is a substantial exercise to undertake the RIT-T process. It takes time and effort to do it, so it is not something you want to do without good reason.

**Ms CATE FAEHRMANN:** What is a good reason?

**JIM COX:** A good reason would be a change in circumstance such that the option previously preferred is no longer the preferred option. Some other option might be a preferred option. It might be a non-network solution, for example, rather than network augmentation. But it does require a consideration of not just costs but costs in relation to the benefits, and that is the responsibility of the project proponent.

**Ms CATE FAEHRMANN:** I will move to another issue. I asked Transgrid earlier a question about the expenditure that has taken place already. I understand that the AER has already approved \$383 million for HumeLink stage one, and Transgrid has requested a further \$250 million. Is that correct?

**JIM COX:** I think you're referring to stage one and stage two. Sorry, for stage one, there's part one and part two. Part one was about what we call early works activities, which is a lot of the planning and community consultation activities that we've been talking about, so it has enabled them to undertake that. Part two was about early purchase of equipment. As Transgrid are saying, there's a great pressure to get this project undertaken as quickly as possible.

**Ms CATE FAEHRMANN:** There's a lot of pressure. Is it reasonable, then, to spend \$633 million—adding both of those up—before, as we heard earlier, the environmental impact statement has even been exhibited yet? Is that a standard process?

**JIM COX:** We were comforted in thinking about that because the equipment is capable of being resold if necessary. The risk to the consumer was not particularly substantial because of the nature of the equipment that was being purchased. We thought it was a reasonable balance, given the national priority in proceeding with these projects as quickly as possible, that we should apply.

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**Ms CATE FAEHRMANN:** In terms of the risk to the consumer, does that mean that if HumeLink doesn't go ahead, what has been bought can be used elsewhere? Is that what you mean?

**JIM COX:** That's what I was trying to say, yes.

**Ms CATE FAEHRMANN:** In terms of the potential start date or delivery date, if it's going ahead, what's your understanding of Snowy 2.0?

**JIM COX:** We are probably not the experts on Snowy 2.0. What I understand is there are still benefits to the HumeLink project even if Snowy 2.0 does not go ahead, in terms of enabling the connection of more renewable energy into the New South Wales electricity transmission system. But I'm not the expert on Snowy 2.0.

**Ms CATE FAEHRMANN:** What you've just said in terms of different renewable energy projects and enabling a transmission link to assist those, is that in the official application by HumeLink, or the official approval, or has that come about in recent months as a result of the Snowy 2.0 delay? Was that included as a basis for the approval originally?

**JIM COX:** I think the original approval would have been on the basis of Snowy 2.0 proceeding as planned. I think the source of what I'm telling you is probably conversations with AEMO, who may be best placed to provide further information on that point.

**The Hon. STEPHEN LAWRENCE:** You've spoken about this extensively, but could you, in simple terms, perhaps, try to explain what the ultimate test is that the AER applies in approving or not approving transmission infrastructure?

**JIM COX:** There are, if you like, two stages. The first stage is the regulatory investment test for the transmission, which we have been discussing. That's the planning process. That is about selecting the option that provides, in net terms, the greatest benefit to those that produce, transport and consume electricity.

**The Hon. STEPHEN LAWRENCE:** Just on that, you said before "the greatest economic benefit"—is that right?

**JIM COX:** Yes, that is correct.

**The Hon. STEPHEN LAWRENCE:** What's the second part?

**JIM COX:** So that's the planning process. The second part is: While the thing is getting constructed, how does the business recover its costs? There what we do is try and determine what we think are the prudent and efficient costs of undertaking the project. So then there is an assessment of the reasonableness of the costs that are being undertaken, which might very well include various sorts of environmental offsets or social licence considerations.

**The Hon. STEPHEN LAWRENCE:** For example, things like the diminution of visual amenity for residents from the installation of a project like HumeLink, is that only taken into account, firstly, to the extent that it might be relevant to the question of the greatest economic benefit to those who produce and use electricity and/or to the next test of the overall reasonableness of the expenditure?

**JIM COX:** You talk about visual amenity in particular. A couple of things there. Firstly, as you probably know, the New South Wales Government has compensation payments to landowners, which might well be taking into account visual amenity.

**The Hon. STEPHEN LAWRENCE:** Sure.

**JIM COX:** Beyond that, we're sort of thinking about neighbours or the broader community. I think it would fall under the heading of social licence costs, what's required for this project to be acceptable to the community that hosts it. But those things are required if the project is going to be taken ahead—sorry, if the project is going to go ahead and need to be considered by us in thinking about what are the prudent and efficient costs.

**The Hon. STEPHEN LAWRENCE:** I'm not completely understanding how those sort of factors really would have a lot of weight or substance in the context of the test that you're talking about.

**JIM COX:** It's difficult to say. We really haven't had many of these things to think about, so how does it work in practice is undiscovered territory in a way. But, suffice to say, obviously I think social licence issues are becoming increasingly to the fore and increasingly being thought about. We mentioned the Minister's rule change is going to require greater consultation on those aspects. I think Andrew Dyer was here last time and spoke about the inquiry that he is undertaking, which is how better to address social licence issues. We ourselves are aware of the need to provide greater guidance to transmission companies as to how they should address social licence issues. That's something that may come out later in the year. I think it is an evolving territory, but certainly

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there is scope to consider these things. But, as I was saying, they have to be weighed against the other thing, which is the cost to the general community and somehow a balance between those things needs to be struck because of concern about high electricity prices, which we all share.

**The Hon. STEPHEN LAWRENCE:** There seemed to be virtual consensus in the evidence both from Transgrid and from experts who were in favour of undergrounding that, as the regulatory arrangements stand, the AER would not have approved an undergrounded option for HumeLink. In those circumstances, is the only way that you could see, under the current framework, undergrounding being approved by the AER would be if a level of government made an investment that offset the cost, effectively?

**JIM COX:** There are number of things to say there. First, we have never had in front of us a direct current link to assess, so it's all really outside our experience. It is alleged the cost is very high by some people. I mean, if the cost is high enough, so to speak, that will make it hard for us to consider the expenditure was prudent because you've got to weigh the interests of the general consumers with those of the host community. Your other point—were government to contribute some revenue towards the cost of undergrounding, yes, that would obviously be a relevant factor that would apply to the tests that we would apply. Yes, that would make it easier.

**The Hon. STEPHEN LAWRENCE:** There has been extensive evidence in the inquiry, including from Transgrid today, that it's too late, effectively, to entertain an undergrounding proposal because it would cause delay of up to five years and have consequent effects on the functioning of the electricity market and system, I suppose. Is that something that you're able to comment on from the AER perspective?

**JIM COX:** What I would say there, I think, is we do have a national energy strategy that is highly dependent on the rapid construction of transmission links, and we are doing what we can to accelerate the investment in those links. Yes, I think a long delay in the present context would be of concern to us, given the other things we are working on.

**The Hon. STEPHEN LAWRENCE:** If one works on the assumption that a significant investment would need to have been made by a level of government in the past to facilitate undergrounding, are you able to say when, realistically, in the past that sort of investment would have needed to have been made in order to avoid above-grounding HumeLink?

**JIM COX:** I probably don't know the answer to that. I think it is a decision for governments, yes.

**The Hon. MARK BUTTIGIEG:** I might pursue some of that line of questioning to clarify a couple of things. In terms of the process, the electricity company, be they a transmission network or a distribution network, submits a regulatory approval to the AER, correct, for a funding envelope? For how many years is that? What period is that?

**JIM COX:** Typically, it would be for five years. There is an issue there that these things typically happen during a determination period. We might make a contingent project decision for, say, three years and then roll it into the general capital program at the end of those three years at the next determination.

**The Hon. MARK BUTTIGIEG:** This particular project we're talking about—I'm assuming that Transgrid put in a submission post the advent of the renewable energy zones policy by the previous Government. What was the regulatory period where they made the submission for this particular project?

**JIM COX:** What they're doing now is asking us to amend the decision we've made already, I think, for the 2023-28 period—so that's a determination already in place.

**The Hon. MARK BUTTIGIEG:** That 2023-28 period—the application would have preceded the REZ. Therefore they've made an amended determination asking for money for this?

**JIM COX:** They're asking for money for the early stages of HumeLink. Separately, they're also asking for additional money for the projects they're doing under the REZ, but most of those are behind HumeLink. The Central West Orana, I think, is still behind. We're doing our first determination under the New South Wales REZ for the Waratah Super Battery. That's in front of us at the moment.

**The Hon. MARK BUTTIGIEG:** The applicant, be it Transgrid or Ausgrid or whoever the distributor is—it's very much up to them as to the means of the capital investment? In other words, in this case, they've applied for overhauling, presumably on the basis of that cost-benefit analysis that they did under your guidelines.

**JIM COX:** Yes.

**The Hon. MARK BUTTIGIEG:** Let's assume for the moment that they put a submission in to underground it. Is it the AER's view, on probability, that, given the parameters that govern the determination, the feed through to electricity prices and the length of time to construct, given the national energy strategy, would

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have been prohibitive had they made that application? As an addendum to that question, presumably there are preparatory conversations which happen between the applicant and the AER as to the options and likelihood of success.

**JIM COX:** We encourage early discussions between our staff and the proponent's staff.

**The Hon. MARK BUTTIGIEG:** Would those early discussions have indicated along the lines I just articulated?

**JIM COX:** I think we've got to go back to stage one, which is the RIT-T process. Before we can approve money under the contingent project process, we have to be satisfied that the RIT-T process has been satisfactorily undertaken. So were they to come forward with an undergrounding option there, we would have wanted them to have gone through the RIT-T process and shown us that the undergrounding option was the option that produced the greatest net economic benefit in the market. They would have to have gone through that process. If they hadn't gone through that process and they said, "We've just thought again and we now think it should be undergrounded", I think we would be saying to them, "You haven't passed the RIT-T process, and you should go back and do it again." That's where it would get a bit awkward.

**The Hon. MARK BUTTIGIEG:** My question is more about the mindset that led to the submission to be overhead. Presumably what fed into that decision to make that submission was preparatory conversations or pre-emption by the applicant—Transgrid in this case—that the AER is not likely to get this over the line, even if we go through the RIT-T process, because the feed in to higher electricity prices and the delay is going to be a bridge too far.

**JIM COX:** It would have been the judgement of Transgrid. I don't think we tried to influence that judgement. But, yes, they would obviously have looked at the cost, and I think the cost is a real issue, particularly if you bear in mind that it's not just HumeLink. There are all these other transmission projects that are behind. We've got to look at the combined effect of all of those, and that's something that worries us. They would have looked at the cost and they would have looked at the delay and they would have thought, "Well, it's probably not a profitable path to take."

**The Hon. MARK BUTTIGIEG:** Obviously this is very crude and rule of thumb, but if the AER essentially says, "We will allow you to"—I mean, the AER doesn't fund this. It is a provision for the network to claw back a portion of money from the retailers to fund the capital works program. Is that correct?

**JIM COX:** Let's see. Yes, the networks would charge the retailers who, in turn, would charge their customers.

**The Hon. MARK BUTTIGIEG:** Would it be fair to say that there is a fairly consistent ratio of one-to-one flow-through direct to electricity prices? The evidence we heard earlier today from Transgrid was that, ballpark, you're talking about two to three times the cost. Does that mean that the quantum of that increase—the two to three times—would flow directly into electricity prices more or less?

**JIM COX:** It would increase the transmission component of electricity prices which we would recover from consumers, but transmission is a fairly small part of the overall bill.

**The Hon. MARK BUTTIGIEG:** What percentage, roughly, is the transmission component?

**JIM COX:** Sorry, I can't say offhand. Perhaps we can get you some accurate figures on that.

**The Hon. MARK BUTTIGIEG:** Sure.

**JIM COX:** Ballpark—probably 10 per cent, but I could be wrong on that.

**The Hon. MARK BUTTIGIEG:** Let's say we've got an electricity bill of \$5,000 per annum. Of that \$5,000, it is perhaps 10 per cent, which is \$500. Theoretically you could be talking about, of that \$500, a percentage increase of the cost flows directly through to that \$500?

**JIM COX:** Yes, I think that's a fair comment.

**The Hon. PETER PRIMROSE:** I'm looking at the responses that the AER gave in terms of supplementary questions. Paraphrasing greatly in terms of the regulatory investment test, down at the bottom of your first response you say, "We also consider the long-term interests of consumers." Can you tell me what methodology you use to determine that?

**JIM COX:** Yes. "Long term" means more than just the short term, but it does not exclude the short term.

**The Hon. PETER PRIMROSE:** Good point.



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**JIM COX:** The short term is part of the long term. It means that we look at issues of quality, supply, reliability, security, environmental sustainability as well as price. There isn't a formula that brings all those things together but we do have to look at those things. We do think about future consumers as well as current consumers. It's a number of things that we have to pay attention to.

**The Hon. PETER PRIMROSE:** That would also obviously include the actual cost to consumers of electricity?

**JIM COX:** Yes, certainly in their interests.

**The Hon. PETER PRIMROSE:** What weighting would you give that?

**JIM COX:** I wouldn't want to give a numerical rating.

**The Hon. PETER PRIMROSE:** Why?

**JIM COX:** But it is a very important consideration in all our recent decisions.

**The Hon. PETER PRIMROSE:** Is there something written down about this methodology—or is it the vibe?

**JIM COX:** There is probably something from the Australian Energy Market Commission on the meaning of "the long-term interests of consumers" which we can find for you. It's more than "the vibe" but it's not a numerical thing.

**The Hon. PETER PRIMROSE:** Not quite. Okay, thank you.

**The CHAIR:** Mr Cox, thank you for appearing again today. I wondered if you could possibly, in the very little time we have left, elaborate more—you mentioned that the costs may have increased since that RIT-T test was originally done but the benefits may have also increased based on a shift to renewables. Could you talk more about what those benefits are?

**JIM COX:** I'll check with my colleagues to see whether that's doable. We will take it on notice. The answer seems to be probably yes.

**The CHAIR:** That concludes our questions for today. Thank you again for giving evidence and attending the hearing. Committee members may have additional questions for you after the hearing. The Committee has resolved that the answers to these, along with any answers to questions taken on notice today, be returned within three days. The secretariat will contact you in relation to those questions.

**(The witness withdrew.)**

**The Committee adjourned at 17:00.**