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AWARUA NETWORK PROJECT UPDATE

Dear Customer,

As per our last letter to you on 18 November, we have enclosed and provided details below on some of the topics that people have indicated have high importance.

Why this project is being undertaken, and why we have chosen this route as the most economic option while still future-proofing electricity supply to the Awarua area.

Background information and context to the Awarua Network Project is enclosed.

Why an alternate route such as Racecourse Road/Rockdale Road was not selected.

There were several contributing factors to why Racecourse Road/Rockdale Road was ruled out as an alternative option. While it is possible one or two of these challenges in isolation could have been overcome, the combination of these factors made this option unfeasible.

- There is not enough space in the road reserve along Racecourse Road/Rockdale Road to install the new line. As you can see from the picture below, existing poles are already placed in a footpath, and these poles carry a 33kV line and an 11kV underneath. This is a smaller build, where the poles are only 20cm from the curb. These poles are already prone to damage from close-parking vehicles, and potentially create a hazard for footpath users. The new poles are larger than the existing poles, so this would only exacerbate these issues.

- The other side of Racecourse Road/Rockdale Road is also unsuitable, not only because of the narrow road reserve, but also because there is a cemetery and large amounts of existing vegetation which would need to be removed and/or significantly cut back. This would also result in having powerlines on both sides of the road.
- Racecourse Road/Rockdale Road is a main arterial route, which means it has a very high volume of traffic daily. This includes heavy vehicle traffic and there are few suitable detour routes available. Our work to install the new line would require multiple road closures for extended periods of time, causing significant traffic disruptions which are unlikely to be acceptable to businesses, residents, and the wider Invercargill community. There would be disruption to traffic and residents again whenever maintenance and/or fault repairs need to be carried out during the line's lifetime.
- The technical challenges relating to pole placement, combined with the traffic management system which would be required, means the work would take much longer to complete. Our team and the machinery required would be working in the area for a longer period compared to the amount of time it will take to complete work on the confirmed route. This would also result in longer outages for customers along Racecourse Road/Rockdale Road than those which will be experienced by customers along the confirmed route.

The cost of a direct cable to Awarua, and how this might differ to work undertaken elsewhere in New Zealand where cables have been used.

The cost of the cable, combined with our estimates for the cost of installation for this stage of the project, means installing a 66kV cable would cost approximately $34million. This estimate is informed by a quote for the cable, and installation costs for other underground cables we have completed elsewhere in the network.

The overhead line build for the Awarua Network project will cost $10.9m, which includes the cost of installing the poles. By building the line overhead this also allows us to upgrade the line's capacity in future by adding additional powerlines to the poles we are installing now.

If we undergrounded the line, the minimum cost of $34m, and potentially significantly more, would need to be repeated in 3-4 years when increased capacity is required to provide reliable supply to the Awarua area.

We explain the elements that make installing cable for this project cost prohibitive and technically infeasible below:

- A 66kV cable is a specially manufactured item (it is bespoke). It is not something available to order 'off the shelf' in a particular length to suit our needs.
- The cable must be imported and has 12 months minimum manufacturing time. This means we would not be able to complete works by the time the increased supply is required.
- A 66kV cable weighs approximately 17kg per metre. It is very heavy and difficult to install.
- While cables are more reliable than overhead lines over their full lifespan, they are more prone to failure during their early life. The risk of failure can be exacerbated by handling or jointing errors during installation. This means there is a risk of increased costs for fault repair and/or replacement of the cable.
- When cables do have a fault, it is more difficult to isolate the location of that fault than with an overhead line.
- It costs more and takes longer to complete repairs and maintenance on underground cables than on overhead lines, which can also result in longer outages.

- If we were to underground the Awarua Line, we would need to place six cables in the underground trench to get the same capacity as the overhead line. These cables must be spaced 500mm apart to prevent overheating of the cables and to prevent electromagnetic interference between cables – so that they don't affect one-another's performance. This requires a trench 3.5m wide by 1.8m deep. However, we also intend to add additional capacity to this line in the next 3-4 years, which would mean we would need to dig another trench to fit another six cables. It is not acceptable to use the same trench because of the risk of damaging the existing cables, both at the time of installation and during any maintenance or fault repairs.

At our recent community meeting, and in the media, comparisons have been made to a 66kV cable which was installed in Canterbury. Please note this project is not a fair comparison, given the Canterbury project covered a distance of 7.5km (the Awarua Line is 19.5km), and our trenching and cable requirements are quite different. While we are adding a 66kV line, we also need to underground existing 33kV and 11kV lines, as well as allow for adding additional lines in 3-4 years (when additional capacity is required).
Other suggestions included mitigating overheating risks by encasing cables in concrete. This is no longer considered good practice in our industry because concreting the line makes it difficult to access the cables for maintenance and repairs and creates the risk of 'shearing' - where the concrete itself can cut into the cable in the case of an earthquake or if the concrete is damaged by excavation equipment.

How can we help?
Our staff are available to meet with you one-on-one to discuss your questions, concerns, and feedback.

We will undertake independent electromagnetic field testing at your property before and after the line is installed, upon request.

During construction, we will provide generators to customers along the line route where outages are likely to occur for periods of 8 hours or more. We will contact you individually to let you know when this is likely to happen and to offer to connect you to a generator.

Keeping you informed
The PowerNet team remains committed to keeping you up to date throughout this project.
This includes updates to our website at www.powernet.co.nz/current-projects, emails for those who have indicated they prefer to be contacted via email, and by letter-box drop.

We strongly encourage you to register your email with us at awarualine@powernet.co.nz
This will enable us to send you timely updates, rather than you needing to wait for the information to arrive via post.

Kind regards,

The PowerNet Team