



110kV Electricity Line Route and Site Locations

Waipa Networks is planning to build a new 110kV electricity line that would connect to Transpower's existing national electricity grid system substations at Te Awamutu and Hangatiki.

The proposed new line, comprising a line and an upgrade of existing termination infrastructure at both ends, will be built to reinforce the electricity supply to Te Awamutu and surrounding areas.

This fact sheet outlines the approach and method used to consider and select the line route for the proposed new 110kV Line.

Waipa Networks is consulting landowners and other key stakeholders on the preliminary design and, following consultation, plans to lodge RMA applications for the transmission line project.

Consideration of Alternatives

Approach and Methodology

The alternative routes for the new line are in the process of being considered, using the following steps:

- Identification and ranking of the possible line route alternatives at a broad, regional level (Regional Alternatives) and then the elimination of the unfeasible alternatives.
- Mapping the study area for the preferred regional alternative, within which electricity line could be located (see Study Area).
- Identification, mapping and evaluation of the protected or important land / water areas and corridors (Constraints) the routes should avoid within the Study Area.
- Identification, mapping and ranking of the possible and probable routes within the Study Area and the elimination of the unfeasible route sections .
- Identification and ranking of the preferred routes.
- Negotiations with landowners whose land is likely to be directly affected by the new line; either because structures or overhead lines will be located on, or cross over, their land.
- Consultation with authorities, statutory landowners, adjacent landowners, affected parties and interested parties regarding the preferred routes.
- Changes to the new line in response to the negotiations and consultation.
- Definition of the 110kV electricity line.
- Preparation of the RMA applications.

Each of these steps involves consideration of line design alternatives. The viability of the line requires that the routes and design are balanced to achieve an optimal outcome.

Regional Alternatives

- There is no second 110kV line currently feeding the Te Awamutu Area. The existing line from Karapiro substation is unreliable and an alternative supply is needed to avoid future power outages.
- Waipa Networks has considered alternatives within the broader region. Specifically, possible line corridors connecting the proposed substations at Karapiro, Cambridge and Hangatiki:
- Connecting the new line to the existing Te Awamutu and Hangatiki substations has been assessed as the most viable, taking into consideration property, environmental and engineering considerations.
- Connecting to the Cambridge substation was considered to be infeasible for reasons including the adverse environmental effects associated with the additional line length and substation infrastructure requirements, and the number and nature of properties that would be affected.
- Connecting to Karapiro substation was considered to be infeasible for several reasons including lack of diversity and security of supply and the engineering issues associated with existing transmission constraints in the region.

Study Area

A detailed assessment of the selected Regional Alternatives was undertaken to map a Study Area in which the new line could practicably be located.

Protected, sensitive and important land and water areas were mapped in the Study Area. These areas are referred to as Constraints. Over 200 Constraints were mapped, which fell into the following broad categories:

- Legal land and water restrictions.
- District and Regional Plan restrictions.
- Land and property.



- Sensitive and significant natural and human environments.
- Infrastructure and human land uses.
- Crown land.
- Physical features, geotechnical conditions and natural hazards (e.g. flood areas, mountains and soil classifications).

Location of Transmission System

A number of 110kV electricity line alternatives have been identified within the Study Area. These alternatives are being assessed for their suitability and viability taking into account:

- Protected, sensitive and important land and water areas (Constraints)
- RMA requirements
- Environmental effects
- Effects on landowners
- Numbers of affected dwellings and buildings
- Suitability of soil types for new line poles.
- Route length, pole numbers, pole heights and line angle ('dog legs')
- Overall visual impact
- Capital, operating and maintenance costs

A process for comparing each proposed line route alternative is underway to identify a preferred line route (Preferred Transmission Route). It is important the Preferred Transmission Route is the most optimal alternative in terms of maximising the positives and minimising the negatives as much as possible.

Negotiations and Consultation

Negotiations are taking place with landowners whose properties are traversed by the conductors ('wires') or occupied by support structures along the Preferred Transmission Route.

Consultation is also occurring with the landowners and stakeholders who may be subjected to environmental effects and other parties interested in the Preferred Transmission Route.

Changes to the Pole Locations

In response to the feedback from the negotiations and consultation, changes to parts of the preferred Transmission System are under consideration (using the approach and methods outlined above).

Defining the Transmission System for RMA Applications

The routes, sites and design of the new line to be included in the RMA applications will be defined once negotiations and consultation have sufficiently progressed and all the viable changes to the Preferred Transmission Route have been confirmed.

The RMA applications will contain detailed descriptions of the completed consideration and selection processes, and the outcomes of these processes.

***For further information
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