Appendix D

ACRE Model

The ACRE Model – A Route Selection Tool

This is a guidance note only. The specific process to be followed for any project must be determined on a case-by-case basis.

Locating a transmission line

This practice note has been developed to assist in the identification and selection of routes for new or replacement transmission lines or other related assets. It establishes an integrated and consistent approach for the route selection process and contains key steps to be worked through for the selection of a final route. These steps are required to satisfy the requirements of the Resource Management Act 1991(RMA) and provide a robust and consistent method for locating transmission lines.

What is the ACRE Model?

Transpower has adapted an approach used internationally to identify and secure the most suitable route for transmission lines for implementation in New Zealand. The approach is called the ACRE model; the acronym standing for:

Area
Corridor
Route
Easement

The ACRE model is a decision-making tool that involves progressively detailed investigation and filtering of information to identify, select and confirm a final route for transmission lines. It also ensures that information from the relevant disciplines (engineering, environmental planning and property) is integrated and coordinated in order to achieve the most appropriate outcome.

The process starts with the broadest feasible area and systematically and progressively narrows the area of interest down to a single preferred route through increasingly detailed information collection and analysis of potential effects at each stage. The process is generically depicted on the next page.

The ACRE process systematically documents key considerations in the selection of a route. It takes into account local constraints and conditions to identify issues that will affect the successful completion of a project.

The consideration by local authorities of large projects, particularly those requiring designations, will include whether there has been an adequate consideration of the alternatives during the selection of a particular route. The ACRE process described in this practice note meets the information, analytical and consultation requirements of the RMA and therefore has relevance for smaller scale projects also. However, aspects, such as extent of consultation and the level of detail and analysis, need to be tailored to the scale and/or complexity of the particular project. For example, the assessment of a new transmission line route through a rural residential area affecting many parcels of land, will require a greater level of analysis and detail than the relocation of a section of an existing line on a single property in a rural area.

Application of the ACRE process results in a more defensible route than other route selection methods. The route can then be further evaluated and tested through assessment of environmental effects required as part of the resource consent process (and/or other planning approvals). It can assist also in obtaining landowner agreements for new lines.

The process requires high level risks to the project to be highlighted in the outcome reporting at the end of each section of work. These risks can then be managed appropriately and further investigated and reported separately if required. The severity of the risks may influence decision-making.

When should the ACRE Model be used?

The ACRE model should be used for the following situations:

- Proposed transmission lines and structures not located within a designation secured for that purpose
- Proposed lines and structures located within the beds of lakes and rivers and the coastal marine area
- Relocation of existing transmission lines and structures
- Proposed structures located in sensitive areas.

Activities not addressed by the ACRE process are:

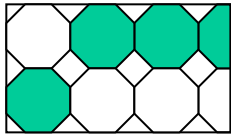
- Low impact activities
- Upgrading of existing assets not involving the relocation of lines

Prior to the ACRE process being started, the question of “electrical need” must have been clearly investigated and the preferred technical solution (a transmission line) clearly established. In addition, a high level scoping of the scale and complexity of the project, the establishment of a project team and of a project plan will need to have been addressed and resolved. The project plan should identify relevant Transpower policies on matters such as consultation and communication, and specify clear accountabilities, outcomes and time frames.

Key Stages in the ACRE Approach

STAGE

AREA

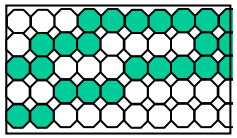


Identify study area for investigation → Identify relevant aspects to include in investigation → Develop Assessment and evaluation criterion → Collect and categorise information → Analyse information → Identify area of least constraints for further study

Broad assessment to select area

STAGE

CORRIDOR

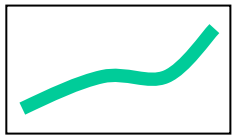


Identify possible corridors within selected area → Collect more detailed information → Desktop analysis of information using assessment and evaluation criteria → Comparison of corridors → Identify key stakeholders → Select preferred corridor

Desktop assessment to select a preferred corridor

STAGE

ROUTE

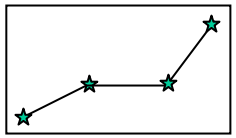


Identify possible routes within corridor → Collect detailed route information → Address information gaps or outstanding issues → Consult key stakeholders and affected parties following public announcement → Compare routes through rigorous application of assessment and evaluation criterion → Select preferred route

Detailed assessment to select a preferred route

STAGE

EASEMENT



Discuss route centreline with directly affected parties → Collect site specific information → Select locations for key structures → Identify the preferred centre line

Site specific assessment to select centreline

STAGE

DOCUMENT-ATION → Recording of information and preparation of statutory documentation and AEE

Area

The Area investigation considers information at the broad level and can include many corridors.

The Area stage involves defining the broadest possible physical study area within which a transmission line (as the preferred technical solution to meet a specified “electrical need”) could be located. The preferred technical solution will largely dictate the extent of the study area. This stage focuses on eliminating at a macro level those parts of the study area (or sub-areas) that are considered either technically, environmentally, or from a property perspective, to be constrained, in order to narrow down further study to potential corridors.

This stage of the ACRE model is largely a desk-top information collection exercise during which generally available information is mapped on a comparable basis and sub-areas are selected which represent the “areas of least constraint”. The outcome of the Area stage is the identification of broad possible corridors, which could potentially contain a transmission line, and which can then be refined for further study. Thus the success of this stage depends on identifying the broad parameters which will assist in excluding unsuitable sub-areas, while highlighting other sub-areas where there are the least constraints to line corridors.

Key steps

Identify the study area of investigation

Identify relevant aspects to include in the investigation

Develop assessment and evaluation criterion

Collect and categorise information

Analyse information

Identify sub-areas or corridors for further study

An open mind is required to ensure that all possible (and not just probable) options are accommodated.

The following aspects need to be taken into account in the identification of the area:

- the location of key existing infrastructure supporting the asset;
- the limit of reasonable deviation from the straight line;
- the presence of likely engineering constraints or difficulties; and
- the presence of sensitive areas.

The following factors may be relevant:

- Land tenure/property information
- Existing landform
- Cultural/Tangata Whenua
- Existing/proposed land use
- Social environment
- Engineering constraints
- Landscape/visual
- Heritage features
- Tourism/recreation areas
- Terrestrial ecology
- District/regional plans
- Civil aviation operations

During this stage, detailed information on these factors is not assessed or relative weightings of features determined, but rather these general factors are mapped to identify sub-areas or corridors where a route is more likely to be located. This process identifies sub-areas that represent severe constraints and eliminates them from further consideration.

The key parties generally involved in this stage are engineers, environmental planners and property advisers. For larger projects, the identification of preliminary information on key features may benefit from the involvement of technical specialists (e.g. ecologists).

Outcome

The outcome of the Area stage is the identification of corridors of least constraints (that could contain a transmission line) to be further investigated and highlights the features that require further assessment. Although this stage may eliminate some features from further consideration, it should be expected that throughout this whole process, previously unidentified features may arise that require investigation. This is likely to be particularly the case in the later stages, as a result of consultation with groups or individuals who hold specialist or localised knowledge. Decisions and justifications are recorded for future reference. High level risks are recorded for further action, or not, as is appropriate.

Corridor

The Corridor analysis is more refined and involves the selection of a preferred corridor

The Corridor stage involves further, more detailed desk-top information gathering, filtering and analysis of the preliminary corridors identified at the Area stage. The aim is to reduce the area of interest from a number of broad corridors to one preferred corridor that may contain several possible routes. Some desk-top information may need to be verified “in the field” from publicly accessible places, e.g. roads.

At this stage the criteria from the Area assessment are applied with a greater degree of rigor and further criteria become relevant in the determination of preferred corridor. It is essential that the Corridor stage be undertaken thoroughly, carefully and as objectively as possible. Once a corridor is eliminated, it should not have to be revisited. The justification for eliminating a corridor should be documented for later reference.

Key Steps

Confirm possible corridors within sub-areas

Collect more detailed information

Desktop analysis of information using assessment and evaluation criterion

Compare corridors

Select preferred corridor

To evaluate and compare corridors, the Corridor stage requires the collection and analysis of more detailed information for the relevant features identified at the Area stage and any other features identified by this level of information gathering. The Corridor stage involves the formulation of assessment and evaluation criterion to consider and rank the constraints identified during the Area stage and the more detailed information collected at this stage. The information collected should enable the identification of areas and issues of local importance, or more generic aspects and considerations that could influence the overall choice of a preferred corridor. From this information not only will any fatal flaws or “show-stoppers” be identified, but also degrees of difficulty and risks in achieving a viable transmission route within the preferred corridor will be identified.

The following aspects need to be taken into account:

- refining the possible corridors through the collection of further information
- any need to verify desk-top information “in the field” by viewing from publicly accessible places
- formulation of assessment and evaluation criteria to consider and rank constraints
- systematically comparing the corridors through analysis of the range of variables that influence possible line routes
- choosing the preferred corridor by evaluating information from analysis.
- mapping constraints and identifying possible corridors

More detailed information should be gathered for the features identified in the Area stage. For example this may include:

- Desk top identification of historic/archaeological sites (e.g. NZHPT records)
- Desktop identification of possible ecological constraint/exclusion areas (e.g. floodplains and wetland areas)
- Assessment of land use patterns/zoning (e.g. ridgeline protection areas)
- Identification of key stakeholders.

This information can be mapped to identify the corridor which has the least constraints for the location of the proposed line. The width of the corridor will vary depending on the scale of the project and the location of sensitive areas along the length of the transmission line. The results of this work should confirm the suitability of the corridor and a number of potentially suitable routes within the corridor should be identified. The reasons for eliminating a previously identified corridor should be documented.

Outcome

The outcome of the Corridor investigation is the identification of a single preferred corridor that is able to contain several possible routes. Decisions and justifications are recorded for future reference. High level risks are recorded for further action, or not, as is appropriate.

Route

The definition of a Route involves limiting the area being studied to the location of the asset through preliminary field investigations from areas of public access, analysis of information and evaluation of options.

The Route stage involves undertaking a detailed analysis of the preferred corridor to identify a single preferred route. The route analysis takes a more localised focus. In the case of a large or potentially significant project, the Route stage of the ACRE process may be split into two stages. In the first stage the potential routes are confirmed. This involves further analysis of information, "field" investigations from areas of public access only, such as roads and vantage points, consultation with targeted key stakeholders and confirmation of possible routes within the Corridor. During the second stage, following a public announcement by Transpower of the proposed project, consultation on the potential routes is continued with other stakeholders and potentially affected landowners. The feedback and further analysis is used to refine the route and then confirm a preferred route. This second stage may also involve preliminary engineering site inspection works and concept design to test the preferred route and identify any operational or design constraints. Where access to private land is required to gain further information, Transpower **must** first give approval for any approaches to be made to landowners for access to their properties.

Key steps

Identify or confirm potential routes

Collect detailed route information

Address information gaps or outstanding issues

Consult targeted key stakeholders

Following public announcement, consult other affected parties and stakeholders

Compare routes through rigorous application of assessment and evaluation criterion

Select preferred route

The short- listed routes should be compared through analysis of the range of variables that influence the final line location.

During the Route stage, a more detailed information is mapped and otherwise recorded and evaluated, building up a complex picture of the factors influencing the choice of the final route.

The following aspects need to be taken into account:

- Mapping local conditions, identifying, confirming and refining potential routes through the collection of further local information
- Consulting stakeholders and affected parties on the likely route/routes
- Systematically comparing the routes through analysis of the range of variables that influence potential line routes
- Choosing the preferred route and evaluating information from the analysis.

Detailed information and analysis is undertaken at this stage. For example this may include:

- Confirm specific locations of archaeological and heritage sites within the various corridor options.
- Identifying the main landscape character units within the preferred corridor and assess the visual quality and absorption capacity of each.
- Confirm location and sensitivity of ecological features

At this stage any information gaps or outstanding issues regarding the accuracy of existing data used in earlier assessments need to be addressed.

Outcome

This stage concludes with the identification of a preferred route to proceed to the Easement stage. Decisions and justifications are recorded for future reference. High level risks are recorded for further action, or not, as is appropriate.

Easement

The Easement selection process involves selecting the centreline of the transmission line to form the easement.

The Easement stage is the final stage in the ACRE process. It involves the refining of all the information collected to determine the position of the centre-line, the tower locations and extent of the easement as outlined below.

The centre-line is the mid-point of the final easement that will run the length of the transmission line.

Easements are site-specific and are negotiated by the property experts. At this stage, site-specific information is gathered about any factors that could affect the final alignment of the transmission line (such as geotechnical investigations). Line design will need further development and refinement.

Transpower may need to secure Land Entry Agreements from landowners to allow access to properties for environmental and engineering investigations, such as surveying, assessing and positioning access tracks, and assessing environmental effects.

Key steps

Discussions with affected parties

Collect site specific information

Select locations for key structures

Identify the preferred centreline

Discussions/negotiations with individual landowners will be required to confirm the locations of structures and the easement centre line. Discussions with landowners should be recorded for future reference. These discussions will form the basis of an easement agreement (i.e. a right held by Transpower to make specific, limited use of land owned by another person to construct, operate, maintain and, within prescribed limits, upgrade a power line over the land).

This stage provides Transpower with the information required to identify the most appropriate method to secure a suitable property interest in the affected properties. This could be achieved through the negotiation of easements or, where Transpower considers it appropriate, through the purchase of property.

The following aspects need to be taken into account:

- Selecting locations for specific structures based on operational requirements and local conditions that influence possible locations
- Consulting landowners on the likely easement location and site specific issues that need to be considered, such as farm management matters
- Identifying the easement centreline to form the basis of easement agreements
- Identifying and mapping the preferred easement

Issues that may influence the final location of the centre line could include the location of appropriate access for ongoing maintenance, fencing, cadastral boundaries and the location of existing services (e.g. Gas).

The key parties generally involved in this stage are property group/advisers, landowners, planners and engineers. It is important that Transpower's Property Group is actively involved in the easement process and any associated discussions.

Outcome

The outcome of the Easement stage is the identification and confirmation of an easement centreline. High level risks are recorded for further action, or not, as is appropriate.

Documentation

The Documentation phase involves the systematic recording of information collected and analysed for the purpose of gaining the necessary project approvals.

The Documentation stage is the final stage in the ACRE process. It involves the recording of information collected and analysed for the purpose of gaining the necessary project approvals and for future reference.

Once the centre-line and easement requirements are confirmed, Transpower will prepare any statutory documentation required to secure the necessary approvals for the project. This documentation could include a Notice of Requirement (to designate the land required for the transmission line) and/or resource consent applications and special approvals, where required (e.g. Department of Conservation Concessions).

The confirmation of the easement centreline enables all the relevant information on environmental effects gathered as part of the ACRE process, and of measures taken to avoid, remedy or mitigate those effects, to be documented. This information forms the basis for the Assessment of Environmental Effects (AEE) report that is required to accompany a notice of requirement for a designation, or a resource consent application. It is important that Transpower's Environment and Property Group is actively involved in the easement process and any associated discussions.