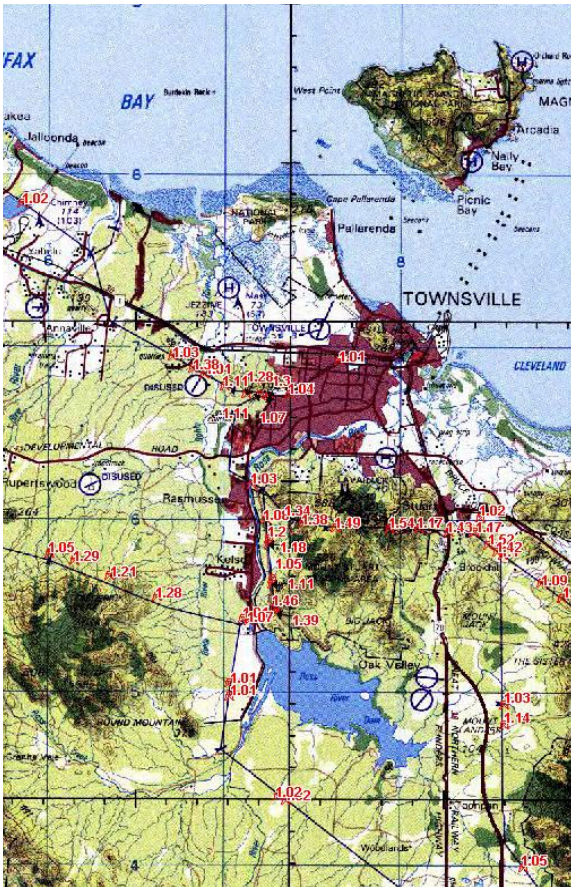
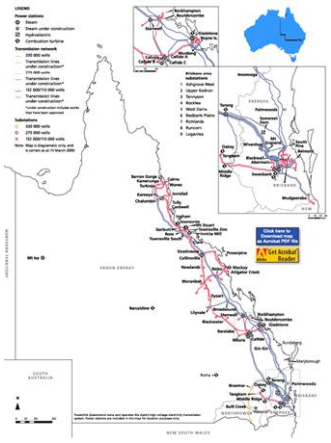
POWER TRANSMISSION LINE WIND RISK ASSESSMENT STUDY





CLIENT:
Powerlink Queensland; 2002.

LOCATION
Whole of Queensland.

SEA PERSONNEL PROVIDED

- Adaption of the SEA thunderstorm and tropical cyclone wind risk models
- Analysis of thunderstorm wind risks for SE Qld
- State-wide transmission tower wind exposure parameters
- Analysis of tropical cyclone wind risks to the Powerlink network across Queensland

ENGINEERS AUSTRALIA
Queensland Division
Engineering Excellence Award 2003

PROJECT DESCRIPTION

Systems Engineering Australia was commissioned by Powerlink Queensland, the owner and operator of the extensive 10,000 km electricity power distribution system across Queensland to undertake a sophisticated wind risk study addressing tropical cyclone and severe thunderstorm wind loadings.

Powerlink had experienced a number of transmission line structural failures over a period of time, mainly thought to be caused by severe thunderstorms and/or tornadoes in SE Queensland. The present study re-examined these risks and also considered tropical cyclone impacts on the distribution network across the whole State. This was done by adapting the SEA wind risk model to consider the accumulated wind risk from “line” elements, such as power line segments. The model accounted for the wind direction in relation to the power line so as to allow for the peak line perpendicular wind loadings.

A feature of the study was the use of GIS mapping techniques to assemble model descriptions of over 28,000 towers from 146 lines. The risk model processed this data into 2,370 separate straight power line segments to accumulate the wind risk across the State.

The results of the wind risk assessment are now being used by Powerlink to consider their exposure to wind risk and to develop long-term mitigation strategies.

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