

# PALING YARDS WIND FARM TELECOMMUNICATIONS

## PURPOSE

Garrad Hassan Pacific Pty Ltd (Garrad Hassan) was engaged by UFWA to assess the electromagnetic interferences arising from the project.

The report notes that if not properly designed, wind farms have the potential to cause interference to analogue television broadcast signals and microwave signals.

However, it is possible to design around these issues. The assessment reviewed and considered the Draft NSW Wind Farm Guidelines (Draft Guidelines) in relation to electromagnetic interference.

## KEY FINDINGS & IMPACTS

From the ACMA database, there are 417 telecommunication towers within a nominal 75 km of the wind farm. The locations of these telecommunication towers are shown in Figure 52.

The assessment identified several point-to-point microwave links with a path over, or near to the site boundary. Of these links, two links (involving six fixed licences in total) were identified as passing through wind turbine locations.

The interference zones around these point-to-point links have been identified and it has been found that five turbines from the project have the potential to cause interference to the links. Refer to Figure 53.

For the first link, operated by Telstra, two turbines may interfere with the link when a rotor diameter of 136 m is considered. However UFWA has indicated that they intend to reduce the rotor diameter of these turbines to 117m, resulting in an unlikely interference with the link.

For the second link, a future NSW RFS P2P link, three turbines may interfere with the link, being turbines P41, P42 and P43. Mitigation options are discussed below.

In relation to point-to-multi-point microwave links, there are no point-to-multipoint base stations listed in the ACMA database within 20km of the site boundary (refer to Figure 54). It is unlikely that stations at this distance will be servicing customers in the vicinity of the site.

Garrad Hassan found that the project is unlikely to unreasonably impact emergency services, meteorological radar, trigonometrical stations, citizens band radio, wireless internet, satellite television, internet or am radio.

A review of the mobile GSM and NextG network coverage found that the general area around the site has marginal network coverage and in some areas, turbines may potentially cause some interference to the signal. In such cases, the installation of an external antenna or moving a short distance until the signal strength improves will help to improve the signal quality.

An examination of the potential impact of the wind farm on radio broadcasting found that FM signals may be susceptible to interference from wind turbines, resulting in hissing and distortion of the signal. This can be mitigated by the installation of a high quality antenna.

An assessment of the potential impact of the project on broadcast towers found that interference to analogue television could potentially occur at between six and sixteen houses, depending on the transmitter. However, Garrad Hassan note that analogue television is being phased out across Australia. The transmissions from most of the analogue transmitters whose signals can be received in the vicinity of the site may have been ceased by the time the wind farm is constructed.



PHOTO Abercrombie Road (south) (Proposed View)

## RESPONSE TO FINDINGS

The electromagnetic interference mitigation measures proposed throughout the report include:

- For any interference with fixed point-to-point links, either the relevant turbines or the communications tower may be slightly relocated, where possible.
- Realigning or relocating the householder's TV antenna.
- The installation of an external antenna or more directional and/or higher gain antenna at the affected household;
- The installation of cable/satellite TV at the affected household;
- Installation of a TV relay station.
- A person with portable device moving a short distance to a new or higher location until the signal strength improves.

Garrad Hassan note that as television interference from wind turbines is readily identifiable, appropriate mitigation measures can be readily taken if required.

In relation to the NSW RFS proposed P2P link, further discussion will be undertaken with RFS to confirm actual interference and whether the P2P tower or interfering turbines should be relocated.

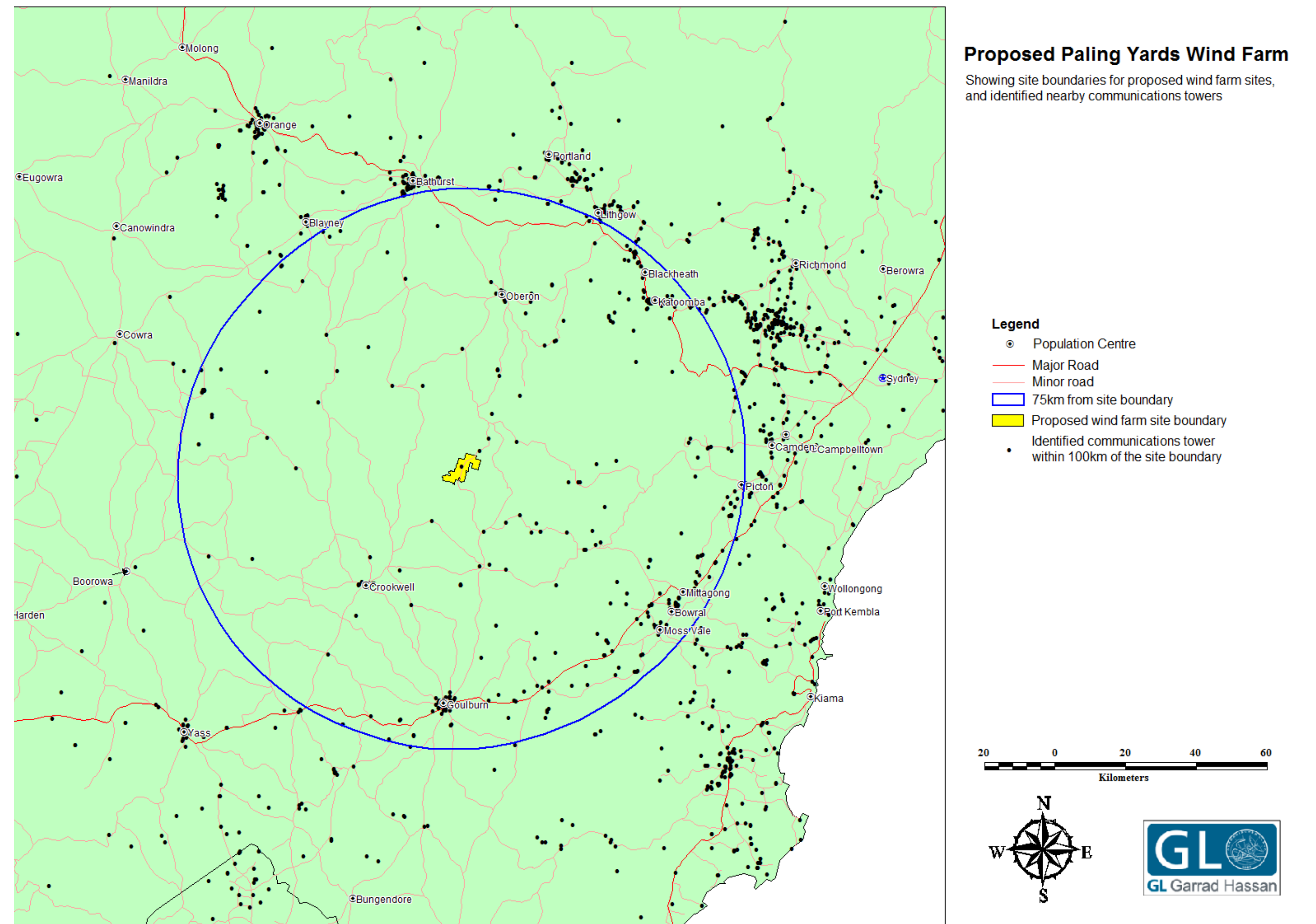


FIGURE 52 Location of identified proximate radio communication sites

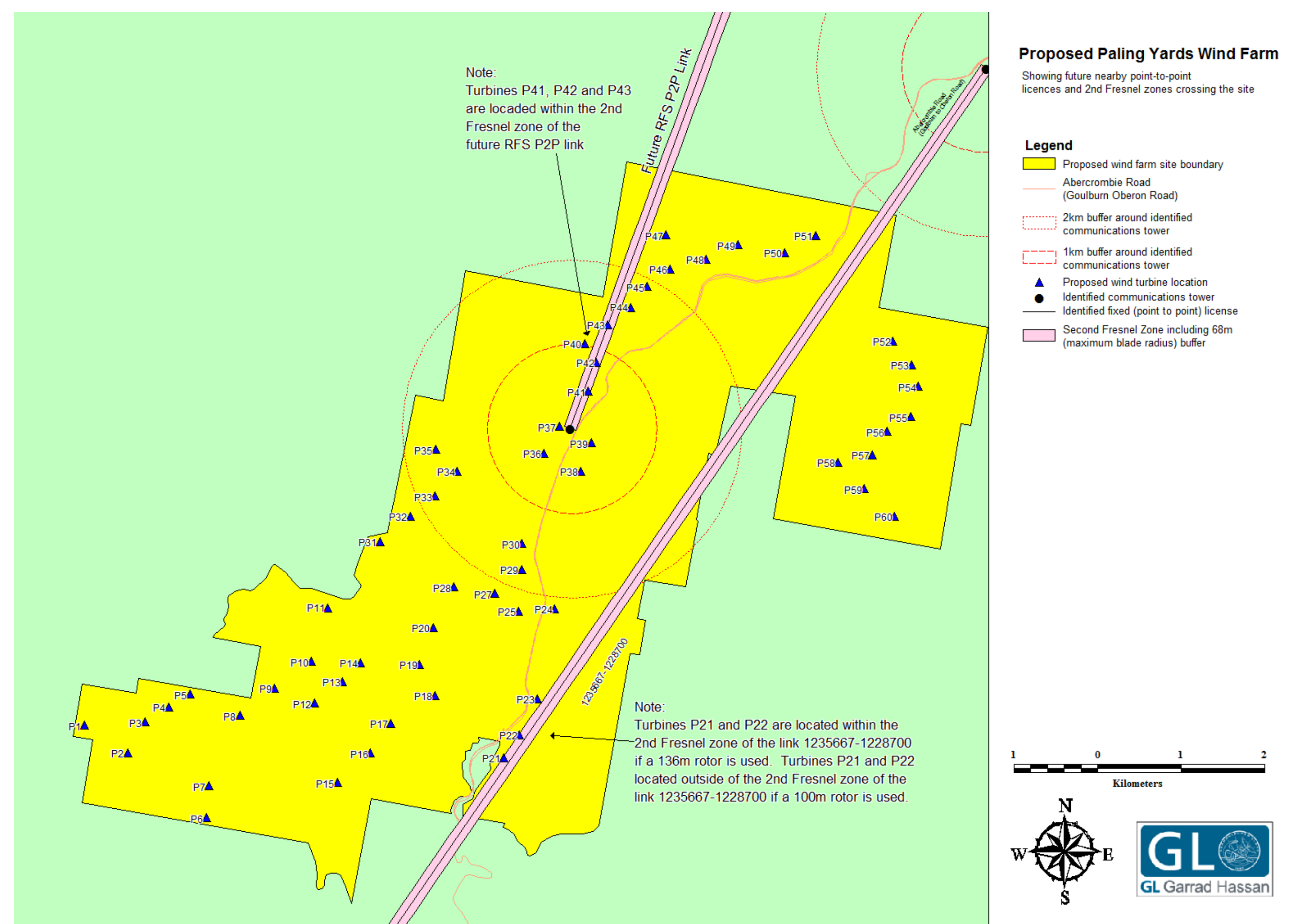


FIGURE 53 Proposed telecommunication vectors and 2nd Fresnel zones plus 58.5 m buffer

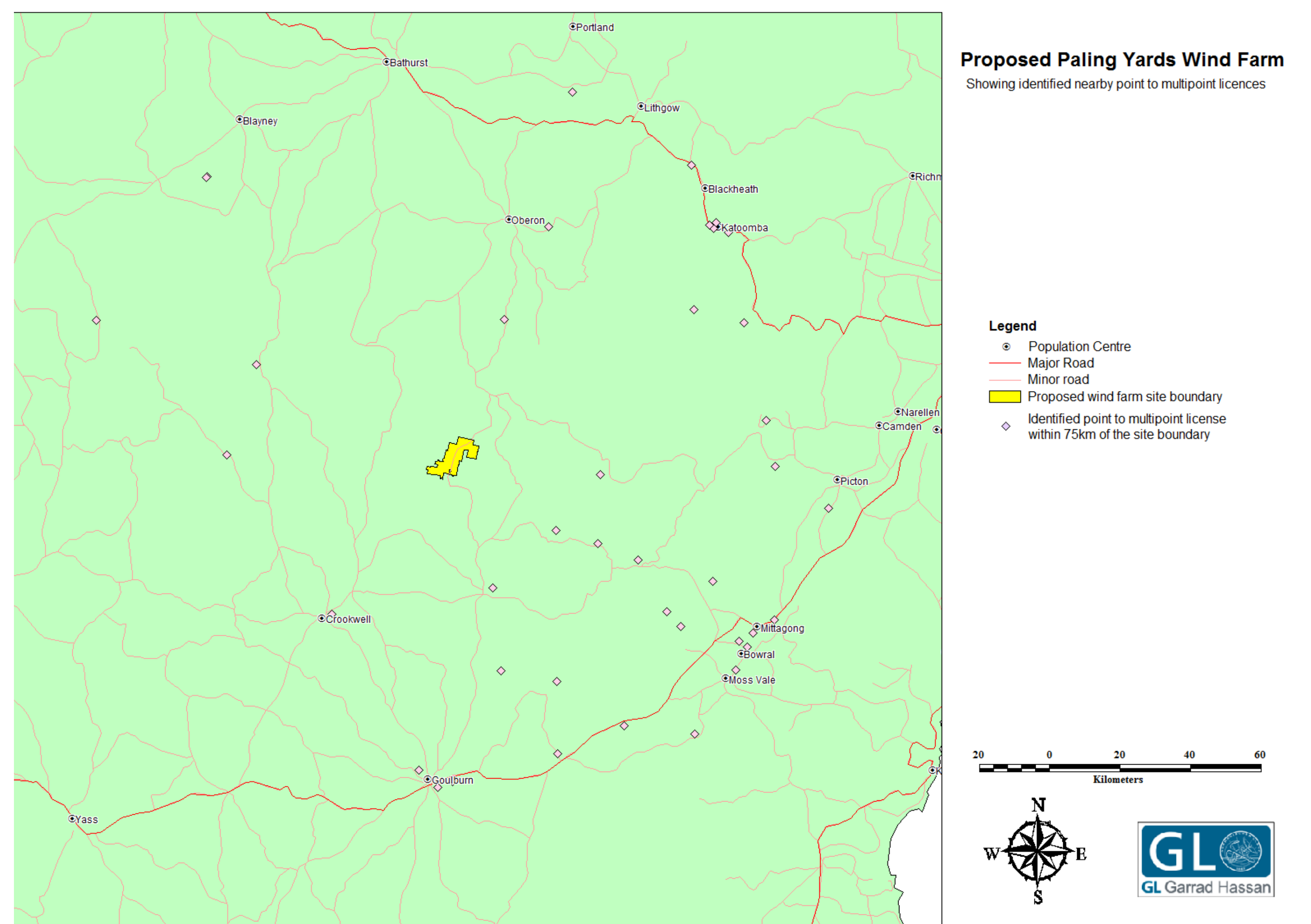


FIGURE 54 Location of point-to-multipoint stations within 75km

**GARRAD HASSAN FOUND THAT THE PROJECT IS UNLIKELY TO UNREASONABLY IMPACT EMERGENCY SERVICES, METEOROLOGICAL RADAR, TRIGONOMETRICAL STATIONS, CITIZENS BAND RADIO, WIRELESS INTERNET, SATELLITE TELEVISION, INTERNET OR AM RADIO.**



PHOTO Hilltop (non associated residential dwelling) (Proposed View)