

7.1.2 Fine-scale population structure

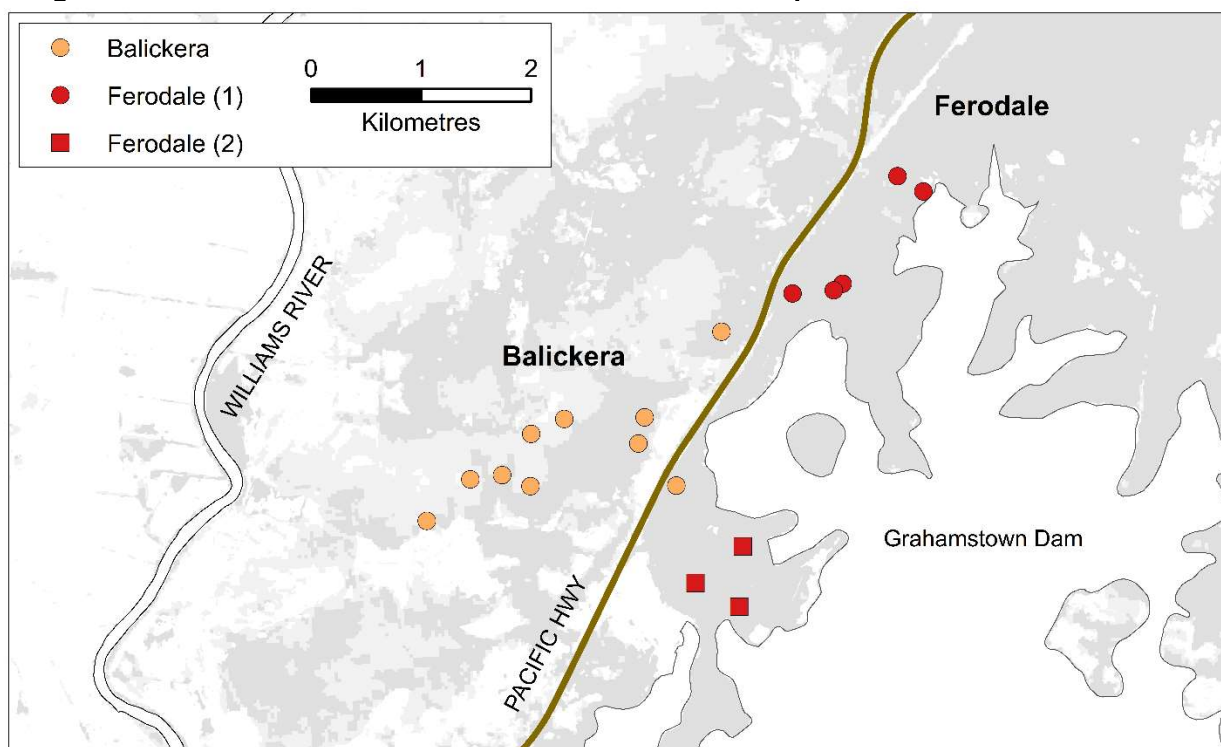
The Pacific Highway appears to be restricting Koala movements between the Balickera and Ferodale sites.

GENELAND was used to investigate [gene flow](#) between Koala individuals sampled in Balickera and in Ferodale, which are separated by the Pacific Highway.

Despite the distance between these two areas being minimal (i.e. 0.7 to 5.5 km), GENELAND indicated that there are three discrete Koala groups in this part of the study area, indicating that gene flow is limited between these geographic areas. It is noted that one individual sampled on the east side of the Pacific Highway in Ferodale, grouped with Koalas sampled in adjoining Balickera west of the highway. It is also noted that sample sizes are small in this study; a more comprehensive understanding of gene flow in this part of the study area would require further sampling.

Figure 5 provides a spatial representation of the genetic differentiation observed between Koalas sampled in Balickera and Ferodale.

Figure 5: Differentiation observed between Koalas sampled in Balickera and Ferodale



Grey shading shows the predicted spatial distribution of Koala habitat using data obtained from the New South Wales Government Department of Planning, Industry and Environment (2019). Habitat suitability is estimated on a scale from 0 to 1, with higher values indicating a greater probability that habitat in a particular location is suitable for koalas. Two categories of Koala habitat suitability are shown on this map, 1) habitat suitability ranging from 0.75–1.0 (dark grey) and 2) habitat suitability ranging from 0.5–0.15. White regions indicate areas where the presence of habitat suitable for Koalas has a probability of less than 0.5.