FAQs

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JANUARY 2015 | **PACIFIC HIGHWAY, WOOLGOOLGA TO BALLINA UPGRADE**

This sheet aims to answer questions asked about Koala Population Viability Analysis currently being carried out for the upgrade in section 10 between the Richmond River at Broadwater and Coolgardie, south of Ballina.

What is Population Viability Analysis (PVA)?

The term PVA refers to Population Viability Analysis – a computer modelling process that enables us to better understand long-term wildlife population trends. It can also be used to examine how wildlife species respond to different management and mitigation measures or scenarios.

There are several PVA programs, including Vortex – which can be used to better understand the impact of the project on the Ballina koala population in section 10, west of Wardell.

How does PVA modelling work?

The PVA process takes into account many combinations of factors the koala population may face over consecutive generations. This includes habitat loss, health and disease, genetics, natural disasters such as fire, human impacts such as road-kills and natural predators. For any given timeframe, the results are averaged and plotted to indicate how the koala population is expected to respond, including the probability of extinction over a defined period.

Before PVA can be carried out, it is important to ensure the baseline data accurately reflect the current status of the koala population being assessed.

What sort of information is required to inform the PVA process?

PVA modelling is informed by the initial population size and data relating to the demographic structure, breeding potential and general health and status of the population being assessed. This data includes ages of individuals, mortality rates, numbers of young born each year, dispersal distances, genetics and the potential for inbreeding. Estimates of the carrying capacity of the habitat and other environmental data, including the frequency of catastrophic events, are also used.

The modelling recognises that baseline data for the population being assessed can and will change from year to year as circumstances change. For example, the number of young born can increase or decrease in response to certain factors. The purpose of a PVA project is to consider these uncertainties and their sensitivity to variation and incorporate them in the calculations.

How much confidence can there be in PVA results?

As with all mathematical processes, the result of PVA reflects the input data quality. The more accurate the baseline data, including assumptions about environmental variability and catastrophic events, the better the modelling result.

Woolgoolga to Ballina upgrade

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Screening a large sample of the local koala population can reduce the variation or uncertainty associated with the data inputs and lead to more confident results from PVA. This is why we are targeting at least 70 individual koalas in the areas in and around section 10 of the Woolgoolga to Ballina upgrade to obtain demographic, environmental and genetic data for the PVA.

Why is PVA required for the Woolgoolga to Ballina upgrade?

The Woolgoolga to Ballina Pacific Highway upgrade has been approved by both the NSW and Federal governments. This approval comes with several strict conditions about the management of threatened species, including the koala.

When Federal Minister for the Environment, Greg Hunt approved the project, he required Roads and Maritime to carry out PVA for a 50-year timeframe to demonstrate *"the long-term viability of the Ballina Koala population, taking into account the impacts resulting from the road upgrade in Section 10."*

The Conditions of Approval also state: *"The Minister will only approve the commencement of Section 10 if the impacts to the Ballina koala population are demonstrated to be acceptable."*

How will the PVA be used?

Once the necessary baseline data on the existing koala population size, structure, status and genetics have been gathered, PVA will be used to examine its long-term viability in section 10, taking into account the impact of the Woolgoolga to Ballina upgrade west of Wardell.

The Woolgoolga to Ballina PVA will consider various scenarios over a 50-year period, including the current and projected conservation status of the koala population inhabiting the area around section 10 with and without the highway upgrade. It will also consider how the population would respond to various management scenarios, the nature and specific details of which will be developed in response to the initial PVA modelling predictions.

Who are the experts undertaking the Woolgoolga to Ballina PVA?

We are working with a team of experienced scientific consultants including EcoSure and BioLink (Dr Steve Phillips), to collect data for the PVA, Professor Les Christidis and Professor Ross Goldingay from Southern Cross University will be undertaking the genetic analysis of the population using tissue samples collected during the fieldwork phase.

Experienced ecologist Dr Rod Kavanagh (Niche Environment and Heritage) will use the data collected to complete the analysis which will then undergo expert peer review.

When will the results be available?

The data collection phase is being carried out between December 2014 and May 2015. Once the data is available, the modelling process will begin. This is expected to take about two months. The results will be analysed by Dr Kavanagh. He will then report the results to the project's independent expert panel, chaired by the NSW Chief Scientist and Engineer Mary O'Kane, before they are released to the community later this year.

PVA modelling for the Woolgoolga to Ballina project has already been undertaken by Dr Phillips, showing the Ballina koala population will face extinction if the highway upgrade goes ahead. How is this different?

The initial PVA for the Ballina koala population carried out by Dr Steve Phillips of BioLink was based on the estimate of koala population size in the area derived from the Ballina Koala Habitat Study. Presuming a relatively healthy population at demographic equilibrium Dr Phillips' PVA incorporated a number of assumptions relating to known rates of natural and incidental koala mortality, similarly derived from studies of other populations. It also presumed the majority of koalas potentially displaced during the construction process associated with Section 10 would not survive.

What it was not able to incorporate were specific details of koala population structure and demography specific to the study area, the genetic variability in the population, koala health and disease status and the extent to which other mortalities due to things such as domestic dog attack and road-strike were affecting the population.

More data is required to increase our knowledge of how these things are influencing koala populations in and around section 10.

Has PVA been used on koalas before?

During the past 15 to 20 years, PVA has been increasingly used to model the long-term responses of koala populations to various impacts including habitat loss, infrastructure developments, wildfire, vehicle-strikes and dog attacks.

In New South Wales, PVA has been used for populations in Port Stephens, Iluka, Hawks Nest and the Tweed Coast, while in Queensland PVA studies have been conducted for populations in the central west and at the Gold Coast.

During this time the technology has advanced, as has the experts' knowledge of koalas and ability to inform the modelling process.

Are there other benefits to the PVA process?

Section 10 of the Woolgoolga to Ballina Pacific Highway upgrade is located near the boundary of Ballina Shire Council. The Council is currently preparing a Comprehensive Koala Plan of Management. We are working with Ballina Shire Council to enable the best possible outcomes for koalas in the area. This includes sharing data used for PVA, associated outcomes and other information related to the area's koala populations.

Where can I get more information on the PVA process?

We are committed to keeping the community informed on the Woolgoolga to Ballina Koala PVA project through our Pacific Highway Monthly Achievement Reports, website updates and regular project updates.