Review of Yarrabilba Koala Monitoring Program – Year 1

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February 2019

Purpose of this Report

To provide an overview of conduct and outcomes of Year 1 of the on-going Yarrabilba Koala Monitoring Program being undertaken by ***Austecology*** for Lend Lease Communities (Yarrabilba) Pty Ltd.

Context

As part of the approval of Yarrabilba Priority Development Area under the Commonwealth *Environment Protection and Biodiversity Conservation Act* as a 'Controlled Action', it is required that a Koala monitoring program be prepared and implemented as recommended in the 2012 Koala Management Plan for the site by ***Austecology.*** The relevant section of Condition 1b the EPBC 2013/6791 Approval requires:

Development of a Koala & Habitat Monitoring Program (KHMP). A key component of developing the KHMP is the design and implementation of a 5-year koala habitat monitoring program to establish basic ecological benchmarks and to monitor initial responses of the site's Koalas to development/implementation of management strategies. At conclusion, a comprehensive review will be implemented to determine successes and/or implementation of adaptive management requirements.

A Koala Monitoring Program was prepared and subsequently accepted by the Commonwealth and committed to by Lend Lease. The plan focuses on strategies to monitor use of the site by Koalas, such as movement patterns and home range sizes.

Aims

These include:

A. Examination of Koala home ranges and habitat use across the site, with a key focus on the Fauna Corridor and EPBCA Offset Areas.

B. Gaining an understanding of the health of Koalas at the site, especially the level of chlamydial infection which can be a major contributor to population decline if not managed appropriately.

C. Assessment of the diet of koalas at the site, to inform habitat restoration efforts and the identification of core habitat areas.

D. Conducting an assessment of the genetic diversity and health of Koalas at the site using collected tissue samples.

E. Build on our understanding of the general ecology of Koalas on the site, such as their reproductive output and population demographics.

Methods

a. *Koala Capture / Monitoring* - Fieldwork which primarily focuses on the capture of Koalas for the purpose of undertaking health assessments and to tag and/or attach monitoring collars.

b. *Koala Monitoring* - Fieldwork to track Koalas in order to assess condition and collect information on tree species preferences.

c. *Koala Population Surveys* - Fieldwork to provide a systematic survey of Koala abundance and distribution on the site.

Results

a) Five (5) Koala *Capture / Monitoring Events* have been undertaken - October 2017, March 2018, June 2018, August 2018 and October 2018.

b) Fourteen (14) Monthly *Koala Monitoring Events* have been carried out since November 2017 (to December 2018). There have been additional events which have investigated issues such as the fate of Koalas / collars when “lack of activity” alerts are shown on the LX system website interface. During these additional observations, other collared Koalas were tracked for completeness.

c) There have been five (5) instances of Koalas shedding radio-collars, but on the other hand there has been no Koala morbidity or mortality related to the monitoring activities. One Koala, Kobe, was removed from the site to the Australia Zoo Wildlife Hospital due to exhibiting clinical signs of *chlamydiosis*, but unfortunately she died at the hospital and so was lost to the program.

d) Site-wide ground surveys (*Population Survey Events)* were undertaken in March and August 2018.

e) There have been twenty one (21) monitoring activities since the Yarrabilba Koala Monitoring Program (YKMP) commenced.

A substantial amount of data on various aspects of how Koalas are presently using the site has now been collected and I am advised that these data are now undergoing analysis for presentation in an 'end of year' report. I anticipate that this should be able to provide useful information on home ranges (size, overlap, etc.) and some general appreciation of Koala health on the site.

Discussion

Ideally the YKMP should have been started prior to the commencement of development activities, but I understand the sort of constraints that precluded this. Thus the initial studies must serve to establish a baseline against which to appraise the effectiveness of the various mitigation measures that have been put in place to minimise impacts on Koalas. Proper monitoring of the actual effects of developments (particularly residential developments) on the environment generally and Koalas in particular are comparatively uncommon, so the YKMP is to be commended and should be very much worthwhile.

The use of radio tracking (notably with GPS enabled transmitters) is generating sufficient data to permit determination of home range parameters and can be expected to have sufficient power to detect changes in such parameters that might be associated with the development.

I understand that in responding to issues arising through Year 1, it is proposed for Year 2 to increase the frequency of detailed health checks of captured Koalas to six-monthly (rather than annual), as well as deployment of light weight ear-tag transmitters as a backup to the GPS radio-collars. This is an important 'failsafe' measure to overcome problems caused by "collar drop"; these light weight devices will also enable the tracking of movements of joeys (which cannot be fitted with GPS collars) in the latter part of the year. These program revisions are supportable.

Some of the other objectives of the YKMP (e.g. genetic consequences, dietary changes) might also be difficult to achieve without higher intensity sampling. Whilst some novel approaches to increase efficiency of some of these studies seem attractive, it would be very unwise to embark upon such studies without adequate site-specific validation / calibration against conventional (established) methods, e.g. standardised pair-wise references between saliva and scat samples of individuals to test the adequacy of using scat material alone as a basis for genetic assessments of the population in future.

The main value of the YKMP is that it is longitudinal and prospective. It is, therefore, critically important that the various methodologies established at the outset are maintained consistently for the course of the Program, with any modifications carried out in a 'double blind' manner in parallel with original methods, so as to preserve comparability of the findings. I would be happy to provide specific advice on any proposals to 'update' aspects of the YKMP.

It is also important for the validity of the study as a mechanism to enhance survival and wellbeing of the Yarrabilba Koalas overall, that guidelines be agreed concerning removal of study animals from the local population.

Conclusions

In my estimation the YKMP is an important response to managing Koalas affected by a major development (I believe about 2,200 Ha in extent with a duration of 30 to 35 years) in Southeast Queensland, so as to minimise potential adverse outcomes.

The scope and approach of the YKMP appear to me to be generally appropriate.

I understand that the analysis of data gathered in the first year of the program's operation should be available in the near future. This should be useful and important in guiding the ongoing YKMP.