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Our Ref: Yarrabilba Koala Monitoring Program_Year 3 Study Team Review.docx

5 January 2022

Graeme Knox
Development Manager, Residential
Lend Lease Communities
(by email to Graeme.Knox@lendlease.com)

Dear Graeme,

RE: Yarrabilba EPBC 2013/6791 – Koala Monitoring Program Review

Background

The protection, rehabilitation and expansion of habitat for koalas on the site is subject to an approval (with conditions) made under the Commonwealth EPBC Act – EPBC 2013/6791 Approval dated 13 November 2014.

Condition 6 of the EPBC 2013/6791 Approval required the protection and management of 195ha of land to offset the impact of clearing 55 hectares of *habitat critical to the survival of the koala.* The offset areas form part of a wider network of dedicated open space which is to be protected and rehabilitated in accordance with the Koala Management Plan (Austecology 2012) and Fauna Corridor Infrastructure Master Plan (Natura 2012)[1].

An Offset Management Plan (OMP) was prepared in response to Condition 7 of the EPBC 2013/6791 Approval. The majority of the OMP focuses on strategies for the protection and rehabilitation of koala habitat values (see Austecology 2015)[2].

Condition 1b of the EPBC 2013/6791 Approval refers back to commitments provided in the approved Koala Management Plan in respect to the *Development of a Koala & Habitat Monitoring Program (KHMP).*

[1] Natura (2012). Fauna Corridor Infrastructure Master Plan. A report prepared by Natura Consulting for Lend Lease.
[2] Austecology (2015). Offset Management Plan EPBC 2013/6791 Yarrabilba PDA Lend Lease Communities (Yarrabilba) Pty Ltd ABN 69 103 578 436. A report prepared Austecology for Lend Lease Communities.

The subsequent Koala Monitoring Program[3] was been developed collaboratively between Austecology, University of Queensland's Koala Ecology Group, and Professor Frank Carrick to ensure it provides a robust, scientific, research program to comply with Condition 1b of the EPBC 2013/6791 Approval.

The aims of the Koala Monitoring Program cover detailed investigations into the ecology, health, and population characteristics of koalas on the site. The KMP comprises:

- Implementation of three field investigation streams, being:
  - The capture of koalas for the purpose of health assessments and to tag and / or attach monitoring collars in order to assess home range, dispersal into and out of the site, and habitat use.
  - Fieldwork to radio track koalas in order to monitor health condition and collect information on tree species usage – the latter providing potential data to inform habitat rehabilitation strategies.
  - A systematic survey of koala abundance and distribution on the site.
- Provision of laboratory analyses throughout the monitoring program in order assess koala health, and genetic diversity of koalas on the site.
- A reporting stream for all aspects of the above and a peer review report at the conclusion of works for each 12-month period.

The Koala Monitoring Program has been implemented from January 2018, with completion of Stage 3 – Year 3 being extended to June 30 2021 due to implementation challenges related to the Covid-19 pandemic.

A series of reports provide information on each aspect of the Koala Monitoring Program for each of the preceding years, and includes annual peer reviews provided by Professor Frank Carrick AM. It is understood that this documentation is uploaded to the Lendlease website in accord with requirements of the EPBC 2013/6791 Approval.

As envisaged within the Koala Monitoring Program, the works program would be subject to review which coincided with the 3-year anniversary of the program (originally late-2020, now mid 2021).

[3] Austecology (2017). Koala Monitoring Program Yarrabilba UDA. Report prepared by Lindsay Agnew (Austecology) and Bill Ellis (University of Queensland's Koala Ecology Group).

Program Review

All aspects of the Koala Monitoring Program implementation were initially reviewed by key project team members, i.e.:

- Professor Frank Carrick AM;
- Lindsay Agnew, Principal Biologist, Austecology;
- Dr Bill Ellis, Research Fellow, University of Queensland; and
- Dr Sean Fitzgibbon, Wildlife Researcher, University of Queensland.

Key Koala Monitoring Program documents were reviewed, and included:

- Koala Monitoring Program – Yarrabilba UDA – (Lindsay Agnew, Austecology; and Bill Ellis, Koala Ecology Group, UQ, 2017);
- Summary of 2018 Koala Monitoring and Site-wide Survey Events - Yarrabilba (Austecology, 2018);
- Year 1 Koala Health Assessments and Movement Data Summaries - (Austecology, 2019);
- Annual Report on Koala Health and Movements (Koala Ecology Group, UQ, 2019);
- Year 2 Koala Population Survey Program (Austecology, 2019);
- Year 2 Koala Monthly Monitoring and Tracking Report (Austecology 2019);
- Review of Yarrabilba Koala Monitoring Program – Year 1 (Professor Frank N Carrick, 2019);
- Koala Genetic Analysis: Yarrabilba Study Site (Lyndal Hulse and Sean Fitzgibbon, UQ, 2020);
- Annual Report on Koala Health and Movements (Koala Ecology Group, UQ, 2020);
- Review of Yarrabilba Koala Monitoring Program – Year 2 (Professor Frank N Carrick, 2020);
- Year 3 Koala Population Survey Program (Austecology, 2020);
- Year 3 Koala Monthly Monitoring and Tracking Report (Austecology 2020); and
- Annual Report on Koala Health and Movements (Koala Ecology Group, UQ, 2021).

Based on individual reviews of the above, all key project team members then participated in a review workshop undertaken on 8 February 2021.

Key Observations and Recommendations

- Valuable data have been acquired which provide important benchmarks in evaluating the impacts of this substantial development on the Koalas present on and proximate to the site.
- The main value of the KMP 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.
- The accumulation of movement data is essential to assess temporal variability in home ranges and movement patterns and thus provide the baseline for identifying potential responses of the site's Koalas to further development activities on the site.
- The current spatial focus of the capture / collaring works should be maintained, and augmented by additional efforts to collar koalas within the fauna corridor which extends to the south-west of the existing centre of capture / collaring works. It is recommended that replication of the previous methodology – use of four tracking collars in conjunction with two transmission base stations - will adequately support the work proposed.
- Transition to the latest version of the LX collars and transmission base stations will provide greater tracking functionality over the previous system employed during Years 1 to 3.
- During the latter part of 2019, light-weight (3g) ear-tag transmitters were progressively introduced, primarily as a back-up tracking device in case of collar loss. During 2020, these ear tag transmitters were also fitted to young koalas that are too small to carry a standard collar (late-stage back young that are still residing with their mother but will likely soon disperse). This addition to the program has been highly successful, and has increased the number of koalas able to be monitored. Whilst not providing the functionality of the LX system, the ear-tag transmitters provide a low-cost addition to monitoring site occurrence of young koalas. Thus, this methodology is recommended for the continuance of the KMP.
- The monthly program of fieldwork to radio-track collared Koalas remains an important component of the KMP in regard to monitoring koala health and welfare. Additional data from opportunistic sightings of other koalas (either previously tagged though not wearing radio collars, or so-called 'cleanskin' koalas) is providing a significant body of observations to augment tracking data.
- Site-wide koalas surveys (commencing February / March and six months later in August) are providing valuable context to koala radio-tracking sub-program, an important baseline

for identifying key koala habitat and occurrence, and during the August event, increasing the program capacity to monitor breeding success[4].

- Methodologies developed provide a sound scientific approach consistent with best practice guidelines and methods used within the region. It is considered essential that continuation of this sub-program be implemented consistent with previous methodologies to ensure comparability of results over time.
- The genetic analysis of koalas contains valuable data and, in particular, provides a baseline against which any genetic changes that might be observed in the future can be calibrated. It is highly recommended that tissue samples of captured Koalas continue through the final stages of the KMP, with a genetic analysis report being prepared during the 5th and final year of the KMP.
- Chlamydial infection assessments[5] of captured Koalas are considered vital. This is important for three reasons: a) Chlamydia is a sexually-transmitted bacteria, so it can spread quickly through a population (especially where there are many individuals in a relatively small area); b) There is some evidence to suggest that koalas living in stressful environments are more susceptible to disease expression if they are infected with Chlamydia; and c) The success of treatment efforts are greatly increased if infections are detected early (i.e. before there are serious pathological consequences such as reproductive cysts and bladder wall thickening).
- In 2020, the program delivered an increased provision of at least two tests per collared Koala during the year (ideally at least six months apart), in addition to swab-testing additional koalas as the opportunities arise. During the concluding stages of the KMP, we strongly recommend the continuation laboratory assessments of the chlamydial infection status of captured koalas, and whether this changes during the year. This will provide a clearer and more up-to-date picture of the health of koalas at the site, especially as urban development progresses.

Yours faithfully,

Lindsay Agnew,
Director

austecology

On behalf of Professor Frank Carrick AM, Dr Bill Ellis, and Dr Sean Fitzgibbon.

[4] The survey timing in August is important, because koala joeys are then still dependent and large enough to be detected by observers.
[5] Testing requires the collection of eye and urogenital swabs while the koala is anaesthetised.