



BEMROSE
WILDLIFE MANAGEMENT SERVICES

Site: Lot 191 Ranger Road, Adare.

Date of service: 03/10/2024

2024

**Fauna Management and Consultancy.
Annual Fauna and Habitat Audit Report.
(EPBC Act 1999).
Lockyer Energy Management Pty Ltd.**

Dean Bemrose.

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 Environment Protection and Biodiversity Act 1999.
 Koala observation, general biodiversity and anecdotal field evidence survey.
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1.0

SCOPE OF WORKS: Annual Environment Protection and Biodiversity Conservation (Koala) audit. 2024.

Bemrose Wildlife Management Services (Queensland Government Rehabilitation Permit number WA0050118, Damage Mitigation Permit number WA0049329) has been engaged by Lockyer Energy Management Pty Ltd to report on the ongoing site-specific Annual compliance conditions. This Annual audit did occur on the 03/10/2024.

Performance indicators:

- (a) "Density and abundance of koala food trees is maintained or increased"
- (b) "Threats that have been identified have not spread or increased"

The Department of Environment and Science was notified that the client had legally secured an area of 41.65 hectares of koala habitat. This covenant is displayed on the Lockyer Energy Management Pty Ltd website. This parcel of land ("the offset") is supporting a mobile koala population. Key performance indicators and outcomes during this phase as listed indicate a strong commitment in managing the site. All pertinent Governmental authorities have been communicated with as per the enforced stipulations. The program has been scrutinised and is categorised as within areas of the bioregion that is essential and within a core Koala area mapping zone.

Under the prescribed conditions, the annual audit of the site in reference to the uptake of the site by CREVNT listed Koala (listed as Endangered under the Nature Conservation Act 1992 (Queensland) and listed under the Environment Protection and Biodiversity Conservation Act 1999 (Commonwealth/Federal) legislative frameworks, has been successfully achieved. The audit proposed to implement and complete an onsite Koala observational and anecdotal evidence search of the greater Lockyer Energy Management Pty Ltd offset space and determine if the habitat values have been stabilised, increased, or regressed in habitat values.

Two fauna management staff (1 senior Fauna Management Consultant/Koala Spotter and 1 Fauna Spotter/Koala Spotter) conducted the survey utilising various methodologies including meandering walkthrough, liner and gridline transects. The integrated approach to the survey effort was to maximise the observational opportunities, inclusive of active and inactive breeding places, arboreal and terrestrial forage bout areas, potential home trees, food/shelter/roost areas, opportunistic observations of fauna species, inclusive of CREVNT fauna.

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This report supports the ongoing values of the site and the compliance requirements under the federal legislation (Environmental Protection and Biodiversity Conservation Act 1999). The annual survey is designed to assess the greater offset areas within the scope of works site, with a focus on koala observations (anecdotal evidence searches and direct Koala observations) within the boundaries of the site. A secondary focus was the general biodiversity observational survey. Both primary and secondary goals were achieved supporting the general health of the ecosystems presenting onsite. It was confirmed that the offset area is active with koala/s and is an active, healthy ecosystem.

Outer perimeters of the site (20 meters) were inspected to assess the existent nature corridors and koala highway values interconnecting the properties. Koala anecdotal evidence correlates with the previous survey efforts conducted annually since 2021. Eastern and Western flanks of the offset area present with the highest frequency of Non-Juvenile Koala Habitat Trees (NJKHT) with climbing evidence and scat detection. Several locations, however, did present with a higher quantity and value of evidence (scat, tree climbing indicators) as opposed to the previous survey efforts.

Spot Assessment Technique (S.A.T) was actioned when scat collections of greater to 20 scats was observed at the basal areas of any one tree extending to the outer canopy of the tree, extensions of this techniques were actioned when interlocking canopies existed. This was common, as the majority of NJKHTs within the survey site do have structurally interlocking canopies. Structurally, the general site does present with a high frequency of critical core koala habitat trees. The principle of this methodology is to balance the scats physically observed with direct observations of koalas. Interaction with the habitat values was robust, especially along the Eastern and Western boundaries, extending approximately 50-70 meters toward the midline of the site. This was a general observation. Scats collected ranged in size (less than 1cm to 1.5-2cm) with varying indications of recent (fresh – moisture and smell evident), to historical (desiccated) indications. This observation can indicate a divergence of age of individual animals, inclusive of joeys that are dependent on the mother. A high variance of scat size as recorded does anecdotally indicate this population dynamic. Scat DNA analysis via the University of the Sunshine Coast could possibly provide results leading to a greater understanding of the Adare (Ranger Road) populations as a subgroup or independent colonies. The control group of scats collected during the survey may not be able to present suitable indicators, primarily because they have not been stored in a low temperature (-20°C) container post site recovery on the listed date. What it does present, is the value of and to the biological conservation of an endemic endangered Australian arboreal species at a federal level. The umbrella under the koala offset area does provide a high level of general protection for the habitat values presenting onsite which are also highly valuable general biodiversity values.

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Evidence collected during the observational survey does affirm the critical habitat values that do present within the greater Lockyer Energy Management parcel of land that are inhabited by a population or populations of koala. The koala populations present observational information to indicate mature male and female koala inhabit the area, and potentially support a robust breeding population. Significant scat collections (which can be DNA sequenced) affirms individual species and is a strong indicator of health within the populations.

It is evident that the inhabiting koalas prefer *Corymbia maculata henryii* (Spotted Gum) and *Eucalyptus tereticornis* (Forest Red Gum) as is commonly observed (greatest frequency of scat was collected at the basal and canopy extent of these species). Within the general area, a high structural density of *E. crebra* (Narrow-leaved Ironbark) are present (Eastern portion of the site) and do form part of koala diets. This has been categorically observed within the general greater region (personal observation - Lowood (37km away) koala populations dominant NJKHTs is Ironbark species).

Floristic varieties (NJKHTs) are primarily Narrow-leaved Ironbark, Forest Red Gum, Spotted Gum. The body of the site is predominantly Spotted Gum and Ironbark species.

It is highly likely that koala inhabit these locations regularly in search for suitable leaf for consumption. There was a notable heat difference within the mid-section of the offset, which can also correlate to the preferred areas and NJKHT species. Studies (Ellis et al 2010; Briscoe et al 2014) confirm this hypothesis with koalas potentially searching for specific thermal properties of NJKHTs (shade or offer cooler or warmer temperatures) to assist in thermoregulation. One factor that can influence this is bark type and colour. Hand temperature reading off bark (Ironbark and Spotted Gum) did indicate differences in bark temperature, with Spotted Gum and Forest Red Gum feeling cooler. This could be influential due to seasonal variation characteristics (Winter vs Summer).

Home ranges depend on the dominance of the animal (male/female), and the overall health of the system. They can be as few as one hectare to several hundred hectares. Future and ongoing field studies within the general footprint are scheduled until 2047. This capacity for survey efforts will continue to provide evidence on population dynamics, health of the biodiversity and general ecology, suitable koala habitat and interactions on how koala and in what capacity can they continue to survive. Technological advances do open several pathways in investigation techniques that can be integrated into this greater koala field study campaign.

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It is interesting to note and to be explored in greater detail the interactions of koala individuals emigrating and immigrating into the site and at what frequency.

One healthy (non-presenting with pathogenic complications – e.g. Chlamydia or injury) large koala (gender unknown) was observed approximately 20 meters outside of the site (SW corner on neighbouring land) resting and foraging in an *E. tereticornis*. This animal was observed in proximity to the principal survey site and within a primary food, shelter, rest and home NJKHT. Interestingly, this perimeter of the project correlates directly with a large healthy grove of *E. tereticornis* that is inhabited by koalas.

Anecdotal evidence observations of fauna species endemic to the area include Antechinus, Short-beaked Echidna, Melomys, Wedge-tailed Eagle, Northern Brown Bandicoot, Brush-tailed Possum, Lace Monitor, South-eastern Queensland Bearded Dragon, Eastern Grey Kangaroo, Agile Wallaby. Direct observations recorded were avian species: Silvereye, Red-backed Fairy Wren, Superb Fairy Wren (both species were observed in family flocks), Bar-shouldered Dove, South-eastern Magpie, Torresian Crow,

Wildnet data searches, biodiversity overlays, waterway mapping, Significant Native Vegetation and Waterway and Wetland Vegetation mapping was investigated. No permanent water pathways are present onsite; however, ephemeral water pathways do exist during and post weather events.

2.0

KOALA SPOTTER SCOPE OF WORKS

A Non-Juvenile Koala Habitat Tree is an individual tree that is greater than 300mm diameter at 1.3 meters above ground level and 4 meters above ground level. This has been activated regardless of if the tree is singular or bifurcated. Minor continuous over-lapping potential NJKHT canopy cover was located within a grid transect.

Koala Doe's and Bucks during the month of the scope of works (September 2024) if observed should be forming semi-independence. This is highly variant due to seasonal variation and population dynamics. Should any trace of Chlamydia or Koala retro virus be observed immediate Koala management capture and Veterinarian support be activated. Indicators of koala distress or immobilising pathogen threat or gross inappetence that leads to a koala being located on the terrestrial base does enact a very serious response as the risk of a catastrophic health event can be imminent and Veterinarian assistance is required immediately.

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It is a fundamental role of the Koala Spotter to maintain and traverse linear transects where vegetation removal is scheduled and to stay onsite until vegetation checks had been completed by an accredited Fauna/Koala Spotter. These actions are to determine and enact fauna mitigation strategies to maximise fauna survivorship whilst minimizing potential myopathy concerns. Habitat retention and assessment is a component of this program to maximise potential fauna habitat.

The role of the Fauna/Koala manager (Spotter) for this site, requires onsite management, controlled under the general EPBC Act 1999 and the NC Act 1994. Fauna management actions are comprehensively scheduled in direct correlation to fauna species observed and habitat anecdotal evidence acquired.

3.0

GENERAL SITE OBSERVATIONS – FAUNA AND HABITAT OBSERVATIONS WITHIN THE OFFSET AREA.

One active (not destabilised or collapsing) Wedge-tailed eagle nest was observed (no flights or on nest roosting/brooding) was observed within proximity to the nest or at height over the general nesting grounds. No chicks were observed or audible on the date of survey effort. This can indicate that the eagles may not be in breeding phase and were hunting an unknown distance from the site. Wedge-tailed eagles do inhabit a home range and territory which is actively protected. Anecdotal evidence did indicate the nesting site/roosting sites are active, with feeding bout remains (muscular-skeletal, furs, beaks). Bone identification indicates Northern Brown Bandicoot, Bearded Dragon, avian species). This is a significant site that assists conservation efforts for an animal that can be under threat from habitat loss.

Static watches observed diurnal avian activity throughout the site. No nocturnal search efforts were actioned. No thermal imaging equipment was actioned. High definition bore scope searches was actioned when inspecting terrestrial habitat refugia, and terrestrial termitarium. Recent forage bout activity throughout the site was recorded, with terrestrial termitarium utilised as an insect, and seed forage location. Arboreal and terrestrial animals are known to eat at heights to maximise predator detection. The same locations as recorded during the previous surveys all correlate with the same locations recorded during the 2024 survey, indicating home ranges and territory. No latrine sites were observed. Arboreal and terrestrial termitarium do present with dens, breeding places and shelter locations. Ecological carrying capacity of the general site is robust with no condensed aggregations observed. Open access and egress pathways are present throughout the site, with several dozen game trails observed throughout the site.

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Northern Brown Bandicoot terrestrial forage bouts frequency was very high within the slashed grassed areas (southern forward area of the site), this is common, as the prey sources would be abundant within this area (larvae), beetles etc. Terrestrial refugia observed generally throughout the site was high, providing a significant load of terrestrial breeding places/shelter places.

Target searches actioned on terrestrial stratum – earthen embankments, ephemeral water pathway locations, where locations that potentially presented with small mammal or herpeto-fauna tunnelling or burrows was inspected via probing, bore scope and torch. No activity was observed during this process. No terrestrial place forage sites to indicate Water Rat species was located. One small flock of Brown quail was observed. No RAMSAR avian species was observed, and no international or national avian species as listed within migratory bird agreements was observed. Fauna observations along the fence line transects was limited to a pair of Laughing Kookaburra (Least Concern NC Act 1992 species). No active flights of Kingfisher species were observed around any termitarium. Varanid species do construct breeding places (egg clutch chambers) that are partially resealed by termites, and act as thermal regulation within arboreal and terrestrial termitarium. No indication of varanid inhabitation was recorded.

No CREVNT fauna species (koala) or priority species (Short-beaked Echidna, Platypus, (Powerful Owl, or colonial breeding fauna individual or assemblages was observed- (Striated Pardalote, Spotter Pardalote, Rufous Whistler).

No herpeto-fauna (medium to large) species was observed. The site does have a potential to interact with South-east Queensland Water Dragon, South-east Queensland Bearded Dragon, South-east Queensland Blue Tongue and South-east Queensland Pink-tongue skinks.

No active stick nest breeding places was observed.

No amphibian individuals or assemblages were detected. No frog spawn was observed. Seasonal variation can be a factor in the lack of observed fauna during the inspection. Probing of vegetation did occur throughout the site, however, no amphibians was detected.

No breeding places constructed within earthen embankments (Striated and Spotted Pardalote, Australasian Bee -eater) were located. Specialist equipment (high-powered illuminated bore scope) is a general tool utilised onsite. In response to the site proper, all areas vegetated do present habitat values for various Australian Arboreal and Terrestrial fauna assets, therefore all areas were searched. No active Ring-tail drey/s was observed. As

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present with all sites, opportunistic encounters and interactions with NCA92 LS species (Copper/Striped/Eastern/Garden) skinks was observed during the walkthrough of the site.

No macro bat roosts were encountered, and it is valued at a low probability of encountering an active roost. No microbat roosts were present during the inspection. Preclearance fauna and habitat value inspections will occur during this phase and whilst vegetation clearance commences.

Terrestrial fauna management inspections and observations adopted the random meander (Cropper 1993) in conjunction with grid and linear transect probing of habitat values. Season variation during the inspection phase is leading into Spring – fauna activity behavioural mechanisms during this season is generally graded as newly emerging juvenile herpeto-fauna and general Australian Terrestrial and arboreal vertebrate activity is increasing and breeding activity increases. Activity presents in various forms, inclusive of arboreal and terrestrial forage bouts, high levels of activity occur when floristic varieties are presenting seed, fruit and flower phase, in addition to forage bouts on regrowth or new vegetation foliage or shoots. Examples of such bouts are foliage forage bouts by scansorial Possum and Glider species or nectivorous avian species sourcing flowers. Frugivores (avian/mammalian) do forage whilst trees or vegetation generally is in fruit. Macro bats (Flying Fox) do maximise opportunities to feed on fruits and flower – NJKHTs to *Ficus* species. The listed species did not present with fauna activity. Herpeto-fauna searches and probing – searches for terrestrial snake and skink/lizard species did occur, however, no medium to large specimens was detected. A commonly used and respected fauna management tool is the use of 'Triggs – Tracks, scats and other traces' reference resource. This resource is highly comprehensive indicating species anecdotal evidence indicators.

As we are in a seasonal variation shift, fauna assets (desktop) should be transitioning from breeding cycles. Masked Lapwing and Bush-Stone Curlew are active still, breeding and raising chicks – nil observed with active terrestrial nests or chicks.

Generalist fauna encountered on previous sites are terrestrial and arboreal based herpeto-fauna (snake, lizard, skinks – inclusive of amphibians. Commonly encountered species: Coastal Carpet Python, Common Green Tree snake, Brown Tree Snake, Crown snakes, Coastal Taipan, Eastern Brown snake, Red-bellied Black snake, S.E Qld Yellow faced Whip Snake, Keelback snake.

No flowering, seed, or fruit in high densities was observed.

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It is essential that fauna friendly corridors are maintained to enable Wren/Finch/pardalote species access to habitat dynamics within short distances as distance between habitat values for these Aves is essential for survivorship and fecundity levels to be sustainable.

No CREVNT amphibian species were detected or audible. Tusked Frog call backs will be actioned. Least concern (NCA92') amphibian check and clear searches will be a continuous mechanism activated on this scope or works site.

Trophic levels offer complexities.

Planning mechanisms have been established via the engaged Fauna Consultant that are inclusive of control measures to ensure any observation of fauna (amphibian – specialist handling techniques to be used) is managed correctly.

Adaptation of fauna individuals or assemblages established within the greater envelope of the site is highly probable.

Macro and micro habitats were assessed for vagile fauna that may be encountered during the fauna management program.

Hollows generally form when a suitable tree reaches an age of 60 -80 – 350 years. This is highly dependent on the species of tree. Ironbark species, utilising field experience and knowledge do not develop hollow bearing natural assets as frequently, however, can harbour undetectable hollows and fissures, not observable from ground level, this is due to the greater density of the Ironbark wood, however, can contain degraded inner core areas of the tree forming chambers and or vertical chimney hollows – typically due to health degradation or termitaria influx.

Scribbly Gum species however, phyto-morphologically do develop hollows sooner from within the main trunk system to leading limbs. With job sites that do have Scribbly Gums, or alternate NJKHTs hollows greater than 10 cm diameter, habitat box installations are essential to assist in negating hollow habitat losses, in conjunction with Habitat Box Management Plans. Scribbly Gum trees of significance are located within the EPZ.

It is known via research models and infield experience morphologically Ironbark species have deep furrows (trench like vertical indentations of the bark) that enable termite species to mobiles relatively low impacts to survivorship as the furrows provide direct cover from predation with minimal sunlight penetration. Excavations to arboreal termitaria via Greater Kingfisher species (Kookaburra) are frequently observed. These excavations can be inhabited by Brush-tail Possum and or Lace Monitors. General site instalments regarding

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hollow bearing natural asset when one is removed at least one habitat box applicable to the gauge of the removed habitat hollow should be installed. Salvageable hollows can be re-installed in adherence with a translocation strategy.

Uninhibited line of sight potentials from the basal areas of scheduled trees to the upper canopy stratum levels was common throughout the site.

Concise actions have been afforded by the pro-active involvement of all parties to enact a program that was geared towards the safe outcome of fauna and a no injuries or deaths to any fauna within the scope of works site. Performance outcomes during this phase as listed indicate a strong commitment in managing the site.

It is widely accepted that this strategy is suitable and approved via the Dept of D.E.S.I

High vigilance regarding Koala observations were enforced via Bemrose Wildlife and activated on this site.

Under the Queensland state legislative pieces inclusive of the *Animal Care and Protection Act 2001 (ACP Act)*, *Nature Conservation Act (NC Act)* and subordinate legislation, *Biosecurity Act 2014*, *Environmental Protection Act 1994 (EP Act)*, *Planning Act 2016 (Koala Conservation)* and the *Vegetation Management Act 1999 (VM Act)* (essential habitat) has been assessed as per protocols and in addition to pertinent data that has been forwarded to assess. The Code of Practice – Care of Sick, Injured or Orphaned Protected Animals in Queensland is acknowledged via the Department of Environment and Heritage Protection 2013a.

Fauna aggregation of risk and distribution should not significantly affect; within the greater system/s post vegetation removal. Allogenic succession is a potential within the scope of works general civil program, however, the potential affects have been significantly reduced via the retention of habitat values.

4.0

LEGISLATIVE FRAMEWORK

This report acknowledges the principles and values regarding the Koala-sensitive Design Guideline. A guide to Koala-sensitive design measures for planning and development activities prepared by: Koala Conservation Unit, Department of Environment and Heritage Protection © State of Queensland (Department of Environment and Heritage Protection) 2012. All Koala based guidelines and Policy frameworks were adhered to, inclusive of counts pertaining to Non-Juvenile Koala Habitat Trees that were required to be removed.

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Acknowledgement is accepted, pertaining to the Queensland Animal Care and Protection Act 2001 which provides legislative protection to animals generally, and the relevant Legislature: Queensland Nature Conservation Act 1992, the Queensland Vegetation Management Act 1999, and the Federal Environmental Protection and Biodiversity Conservation Act 1999, inclusive of the legislature piece: Nature Conservation (Koala) Conservation Plan 2017 were referred to.

5.0

CONCLUSIONS

Information collated from the 2024 field survey indicates the site is inhabited by an unknown population of koala. The field evidence collected indicates a greater frequency of inhabitation within the site proper; with evidence supporting the previous survey efforts and general site utilization. Similar ranges of inhabitation and concentrations of evidence indicates strong interaction with the extents of the Eastern and Western portions of the site (as per photographic plates attached). These areas present with a high frequency of koala habitat trees generally. A high level of general habitat characteristic correlate with a highly interactive healthy ecosystem.

Information pertaining to the site and the pro-active influence of the site owners and project managers, and governing authorities has activated for the greater conservation and protection of fauna that inhabits the general scope of works footprint. Entailed within the information was the commitment to habitat preservation and protection where feasible as demonstrated by the offset for the site that sustained the habitat values and increased the habitat values essential for Australian Terrestrial Vertebrates within the variants of ecosystems and ecological functions exhibited during the onsite EPBC Act 1999 endangered species survey (Koala).

The supporting ecosystem values extend through the trophic levels. As the site and the survey effort is to be continued until 2047, it is expected that because the offset area is not to be impacted by future construction or operational works, population dynamics and positive inhabitation by numerous fauna species and assemblages will continue. Breeding places are extensive for terrestrial and arboreal fauna. Interconnectivity to adjacent properties is critical to the core of koala populations in this area. Continued survey efforts can optimise the space for several years, cataloguing koala populations and movements. Advances in technologies, as of now, present exciting opportunities to navigate the complex life cycles of wild koala. Thermal technology, Drone technology and vocalisation call back systems are supportive instruments, mechanisms and methodologies that can be incorporated with great effect. DNA analysis of scat and hair trace is an effective tool in

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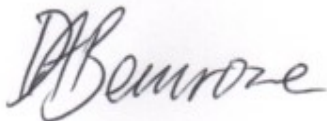
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disseminating population variances. General terrestrial and arboreal field surveys, such as spotlighting surveys are proven direct observation techniques. To establish baseline generalist fauna populations, trapping survey efforts could be incorporated. One of the core elements of significance for this project was the general site increase in frequency of observations in koala anecdotal activity. This emulates a continued positive uptake to the offset by koalas. Thus, a very positive outcome to this annual event and a positive future for the endemic koala population. It is also evident that several koalas inhabit this site as demonstrated by the variances of climbing spoor size. Positive communication has been achieved with great success during the initial inception of the concept to the infield observations. This has availed a highly positive team with demonstrated positive KPI's and milestone achievements. Strong observational techniques were activated to ensure the health and behavioural parameters of fauna management were adhered to.

Kind regards,

Dean Bemrose.



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Senior Koala Spotter and Fauna Consultant.

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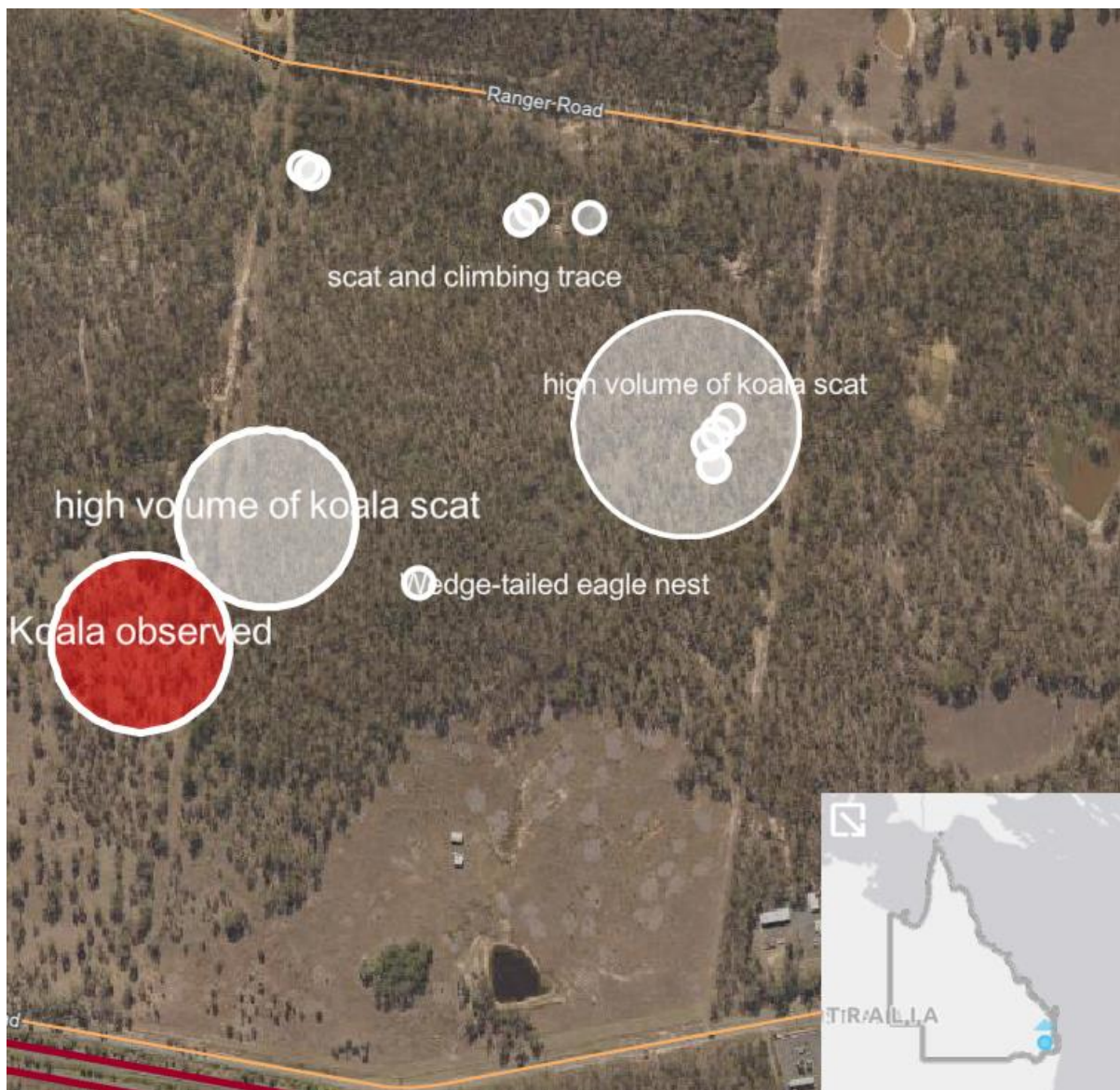
DISCLAIMER

This report has been prepared by Dean Bemrose Trading as Bemrose Wildlife Management Services in accordance with the terms and conditions as detailed in the quotation and agreed to by both parties upon offer and acceptance of an order for services as per that quotation.

The survey results are accurate at the time that the onsite compliance scope of works was completed. However, no responsibility or liability is taken for any actions or works occurring at the site post the completion of the on-site compliance survey or fauna consultancy scope of works. The information as detailed in the report is for the sole use of the contracted parties and not for reproduction, reliance, or supply to any other party without express consent of Bemrose Wildlife Management Services.

To the extent that it can be shown that the survey results and report was not accurate at the time of the on-site survey, this company's liability shall be strictly restricted to re-performance of the on-site survey and supply of an update report. Should you have any queries regarding this report or require additional copies please contact Dean Bemrose at Bemrose Wildlife Management Services.

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Koala located during the survey resting within a *Eucalyptus tereticornis*. The animal was observed 20m offsite on a neighbouring property (SW corner) of the project site.

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Wedge-tailed eagle nest.

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Author: Dean Anthony Bemrose.
Site: Lot 191 Ranger Road, Adare.
Date of service: 03/10/2024
Client: Lockyer Energy Management Pty Ltd.
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Fauna and Habitat compliance.
Environment Protection and Biodiversity Act 1999.
Koala observation, general biodiversity and anecdotal field evidence survey.
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Koala climbing anecdotal evidence. *E. tereticornis*.

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Scat trace – terrestrial termitarium.

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