

## Submission to Greater Flagstone Urban Development Area – Part 1 - Koalas

Submitter: Wildlife Queensland Bayside Branch; written by S. Baltais

### Background

**Fragmentation** is one of the most severe world-wide processes depressing biodiversity (Farina, 2006) and considered the greatest current threat to biodiversity (Malanson, 1999). Certainly the probability of extinction is higher for populations distributed among fragments because reduced interactions change the long-term dynamics relative to those of a non-fragmented landscape (Kupfer, Malanson & Runkle, 1997; Zuidema, Sayer & Dijkman, 1996).

With regard to the koala the loss of habitat and its fragmentation is recognised as the key threatening process that undermines the chances of the koalas' survival, with additional threats from vehicle hits and dog attacks (ANZECC 1998; Melzer et al. 2000). Unabated clearing of koala habitat for development in South East Queensland is placing a great deal of pressure on the survival of the koala (DERM, 2009).

It is important to **UNDERSTAND** that koala habitat is defined by the [Nature Conservation \(Koala\) Conservation Plan 2006](#) as (a) a woodland where koalas currently live; or (b) a partially or completely cleared area that is used by koalas to cross from one woodland where koalas currently live to another woodland where koalas currently live; or (c) a woodland where koalas do not currently live, if the woodland— (i) primarily consists of koala habitat trees; and (ii) is reasonably suitable to sustain koalas. Further, koala habitat tree is defined as a tree of any of the following genera, (a) Angophora; (b) Corymbia; (c) Eucalyptus; (d) Lophostemon; (e) Melaleuca.

It should be **NOTED** that inland koala habitats are likely to become climatically unsuitable due to **climate change** and there is a need to protect and restore the more mesic habitats, which are under threat from urbanisation (Adams-Hosking, 2011).

### Status of koala at Greater Flagstone UDA

The Greater Flagstone UDA supports large areas of koala habitat and many koala habitat trees.

DERM ERE mapping reports the following ecosystems amongst a number, which are koala habitat.

Eucalyptus crebra woodland on sedimentary rocks 12.9-10.7 Sched 2 (Of Concern); *Corymbia citriodora*, *Eucalyptus crebra* open forest on sedimentary rocks 12.9–10. (Sched 3); Open forest complex often with *Eucalyptus acmenoides*, *E. major*, *E. siderophloia* ± *Corymbia citriodora* on sedimentary rocks 12.9–10.17 (Sched 3). Refer to appendix A.

The [Essential Habitat](#) designation of the majority of the proportion of the Greater Flagstone UDA mapped by DERM as Remnant Regional Ecosystem is for Koala, *Phascolarctos cinereus*. Essential habitat is vegetation that supports endangered, vulnerable, rare or near threatened species, DERM is required under the *Vegetation Management Act 1999* to regulate vegetation clearing in such a way as to prevent the loss of biodiversity. Essential Habitat designation relates to areas mapped as Remnant Regional Ecosystem and Regrowth and is 'Mandatory Essential Habitat Factors'. Refer to appendix C or the [ULDA website](#) and [Pg. 18 Biodiversity Report](#).

Koalas in SEQ are currently listed as Vulnerable under the *Nature Conservation (Wildlife) Regulation 2006*. A large number of koala sightings are noted for the Flagstone UDA.

**Unless changes are made to the way urban areas are developed and maintained in SEQ, it is expected that koalas will become restricted to only large habitat patches (Amir, 2010).**

## Threats to the koalas within the Greater Flagstone Urban Development Area (UDA)

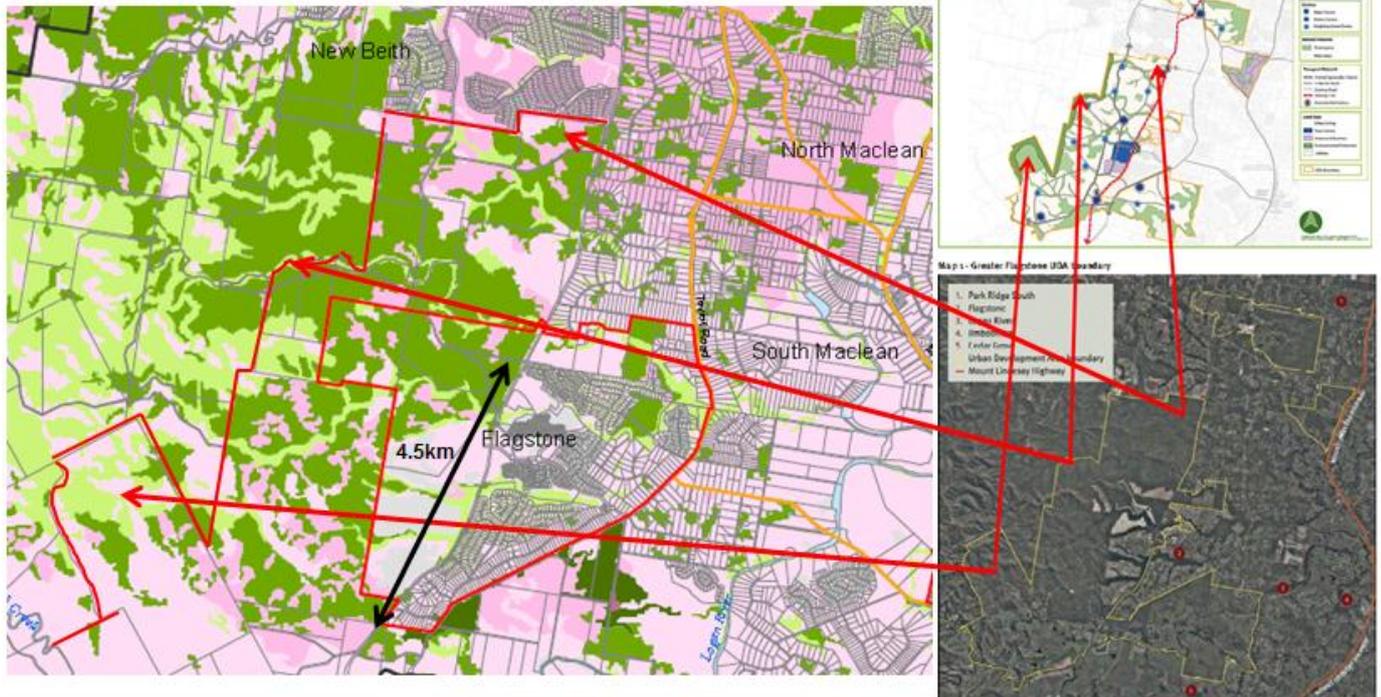
- The [Greater Flagstone UDA](#) will remove and fragment koala habitat (Refer appendix A and C and [DERM mapping](#)) thereby reducing the size of current patches and therefore significantly threaten the survival of the koala in this area. Amir (2010) highlighted that large patches are crucial for the long-term persistence of a viable koala population in an urbanizing landscape.
- The Greater Flagstone UDA (Flagstone UDA) currently supports a rural and non-urban landscape that has provided koalas a safe environment to traverse (Refer appendix A or [ULDA website](#)). Urbanising the subject area will result in the loss of koala habitat and increase the likelihood that koalas will be severely impacted by vehicles and dogs.
- The combination of koala habitat loss, fatalities on roads and dog attacks will significantly exacerbate the loss of koalas. Amir (2010) showed koalas were absent from small patches that were closer to the CBD and where road densities were higher. Clearly, urbanising the subject area represents a serious threat to the koala's long-term survival.
- It will encourage a significant increase in vehicle movements in areas frequented by koalas. This represents a significant and potent threat to the survival of local koalas. Work by Preece (2009) provides graphic evidence of the impacts of roads on koalas. Refer appendix B.
- The Greater Flagstone UDA fails to protect Essential Habitat (see [S. 3.1.6 on Pg. 18 Biodiversity Report](#) and appendix C) and fails to comply with the obligations set out under the *Vegetation Management Act 1999* with respect to regulating vegetation clearing in such a way as to prevent the loss of biodiversity.
- The Flagstone UDA fails to comply with the proposed management intent for a vulnerable species as enunciated under the *Nature Conservation (Wildlife) Regulation 2006* namely S.19(d) & (i).
- The Flagstone UDA fails to address edge effects and suitably buffer koala habitat and riparian corridors from the impacts of edge effects.
- The Flagstone UDA fails to comply with the recommendations made by the [Premier's Koala Taskforce](#) to the Premier in September 2008.
- The Flagstone UDA undermines our ability to meet the [SEQ NRM Plan 2031](#) Regional Priority targets namely, NC 1 - Remnant and woody vegetation, NC 2 - Vegetation fragmentation and connectivity and has compromised in particular **NC 6 – Habitat for priority species**.
- The Flagstone UDA fails to comply with the obligations enunciated in the [SEQ Regional Plan](#) namely those policies under [S.2.2 - Koala conservation](#).

## Recommendations

- The ULDA have shown an incapacity to address koala conservation issues and it readily appears unlikely to do so in the future. Greater Flagstone UDA should be called in by the Minister to ensure koala habitat is protected.
- Recognise sub-regional corridors and habitat for koalas and ensure these corridors are greater than 300m in width as per [NSW Department of Infrastructure, Planning and Natural Resources](#) guidance on corridors.

# Appendix A

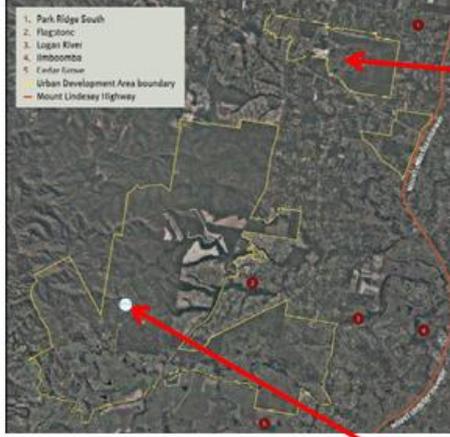
## Koala Habitat and highlighted losses due to UDA



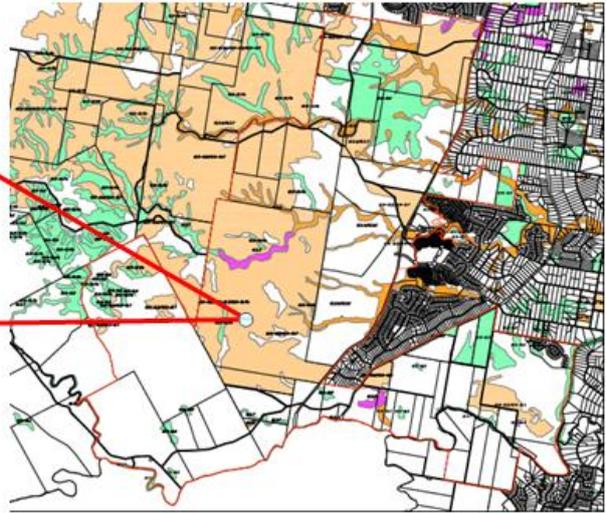
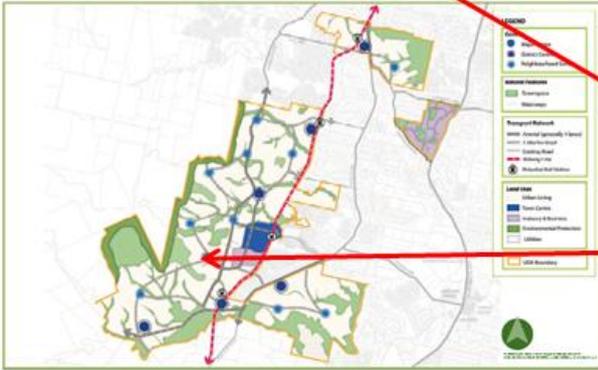
- Map Legend
- Koala Habitat Value Category
- Bushland Habitat**
- High Value Bushland
  - Medium Value Bushland
  - Low Value Bushland
- Suitable for Rehabilitation**
- High Value Rehabilitation
  - Medium Value Rehabilitation
  - Low Value Rehabilitation

Source: [http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/koalas/koala\\_crisis\\_response\\_strategy/documents/spp-values/spp-habitat-values-map24.pdf](http://www.derm.qld.gov.au/wildlife-ecosystems/wildlife/koalas/koala_crisis_response_strategy/documents/spp-values/spp-habitat-values-map24.pdf)

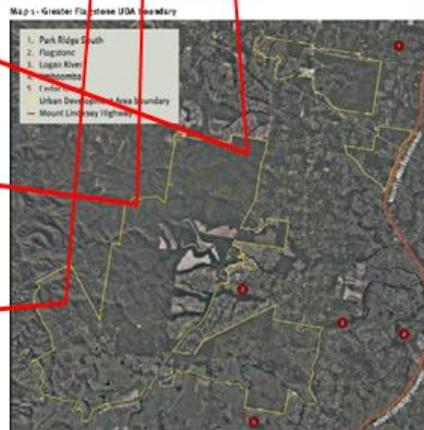
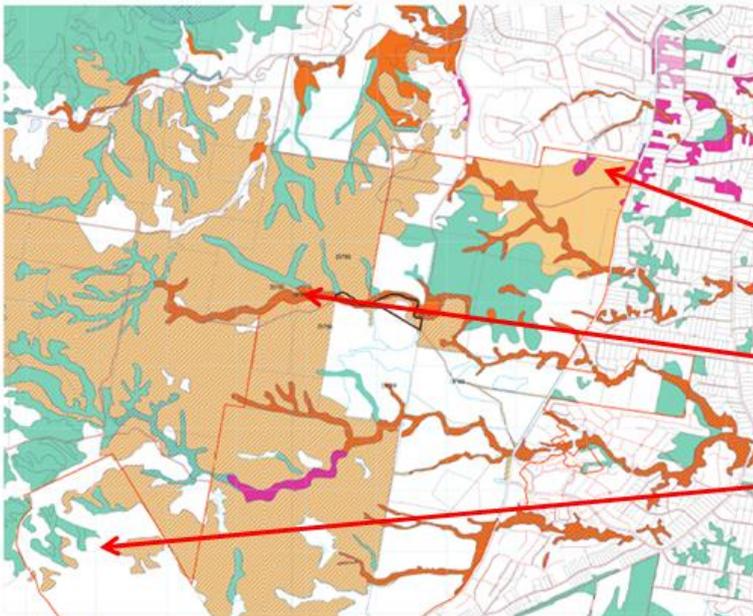
Map 1 - Greater Flagstone UDA boundary



- LEGEND
- Site Boundary
  - ENDANGERED (DOMINANT)
  - ENDANGERED (SUB-DOMINANT)
  - OF CONCERN (DOMINANT)
  - OF CONCERN (SUB-DOMINANT)
  - LEAST CONCERN

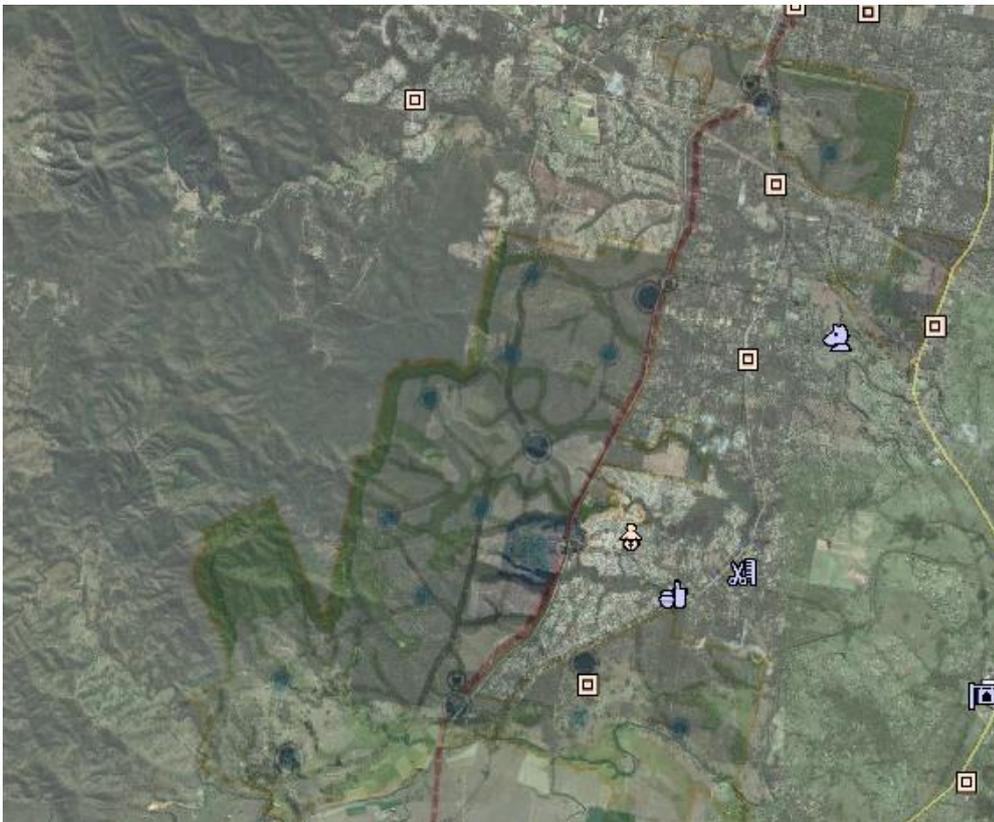
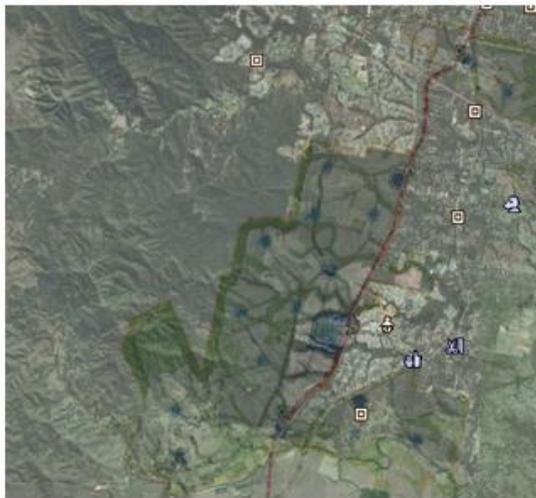
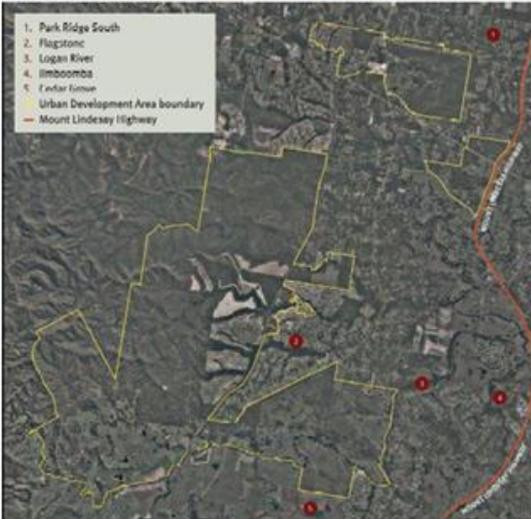


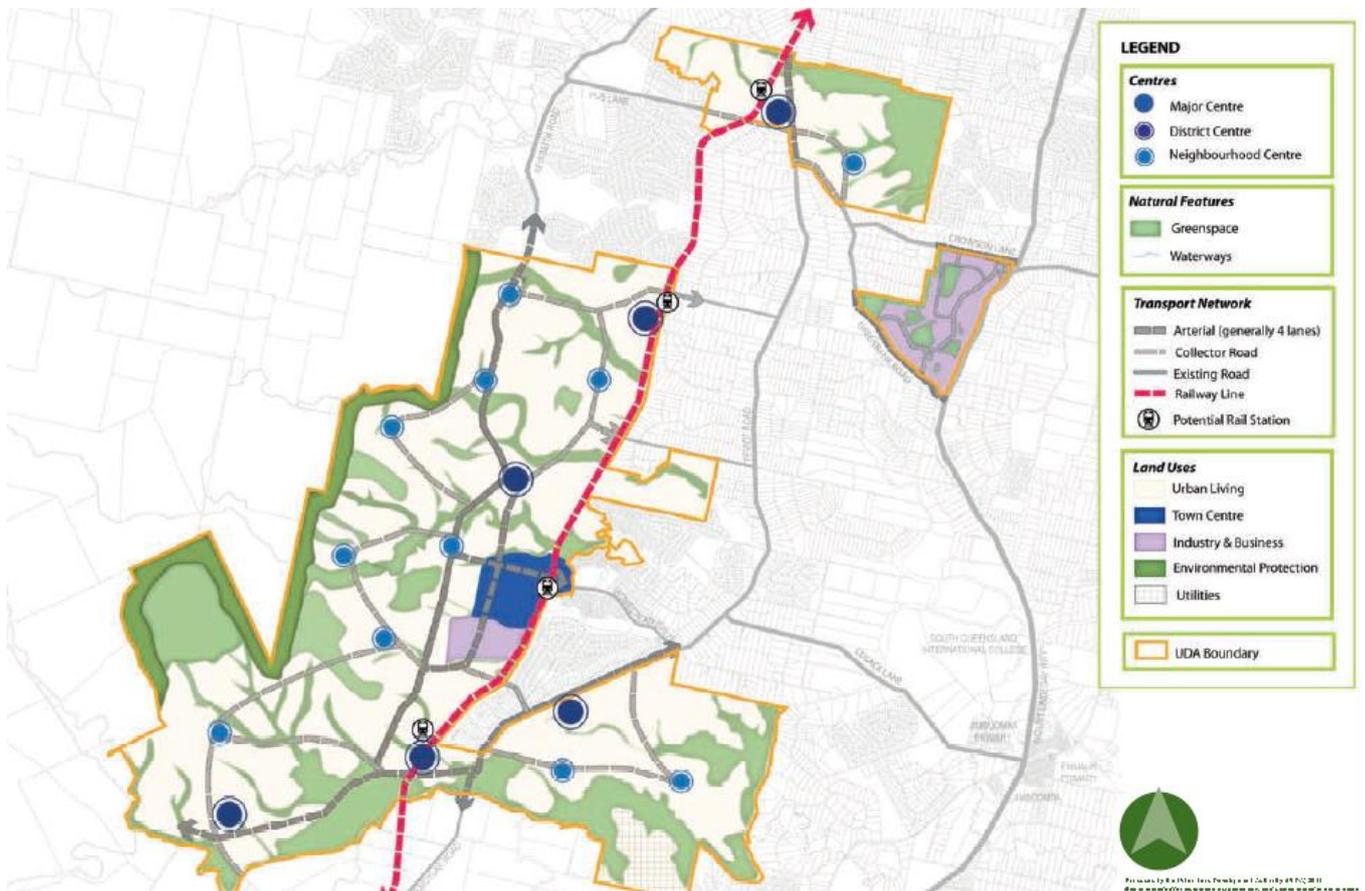
### Essential Habitat



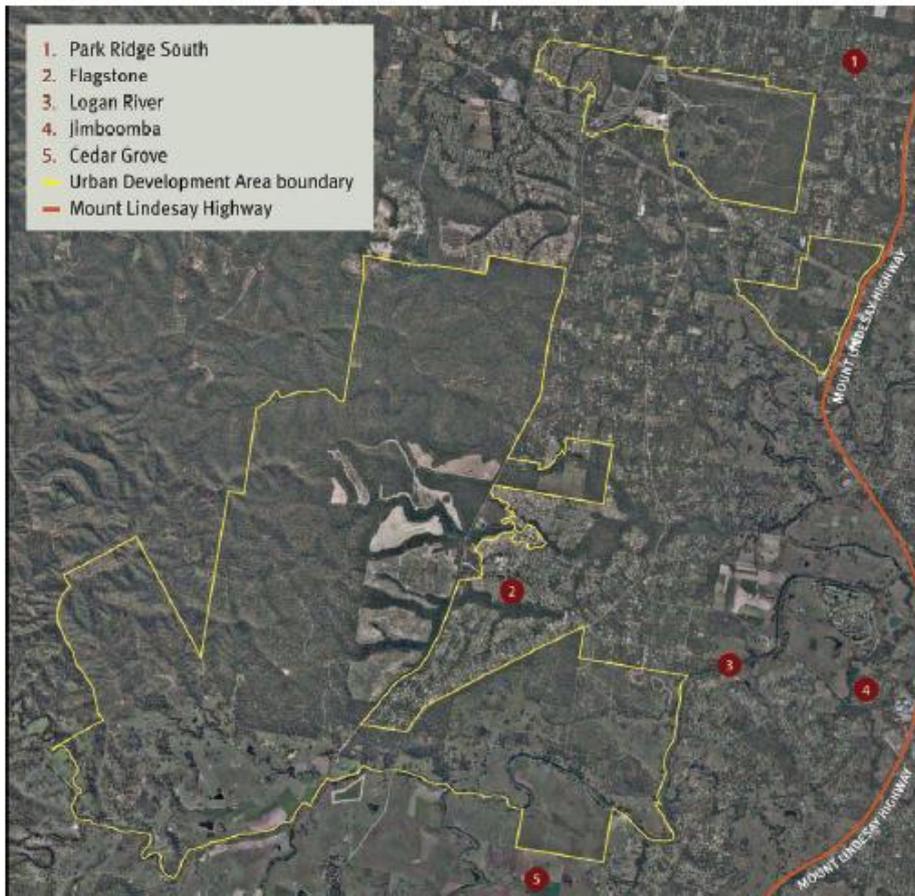
(See page 10 for larger map, effectively all that is mapped orange in colour is essential habitat)

Map 1 - Greater Flagstone UDA boundary





Map 1 - Greater Flagstone UDA boundary



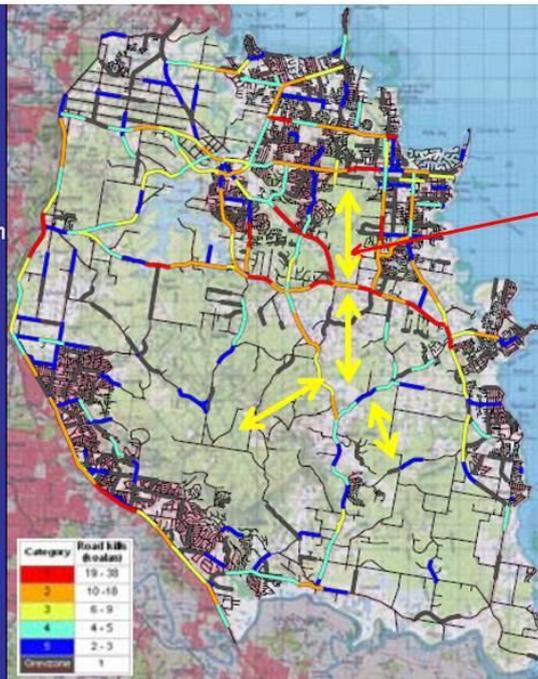
Source: [http://www.ula.qld.gov.au/dbase\\_up/FLA\\_DS\\_FINAL\\_Greater\\_Flagstone\\_UDA\\_PROPOSED\\_Development\\_Scheme\\_small.PDF](http://www.ula.qld.gov.au/dbase_up/FLA_DS_FINAL_Greater_Flagstone_UDA_PROPOSED_Development_Scheme_small.PDF)

## Appendix B

### Road blackzones

*Road segments with higher than expected koala mortality*

- Poisson probability - 1km
- 256 blackzones
- Worst killed 38 koalas
- 21 category-1 (red)
- Freeway 700m 1k/pa



Kinross Rd Splan area

Safe movement

Source: Preece, H (DERM). Localised wildlife extinctions and impacts on the regional population: Lessons from the Koala Coast.

### Mortality on state-controlled roads

*High koala mortality on State-controlled roads threatens koala population viability*

State roads:

- 26% of *all* koala mortality
- 159 koalas per year
- *Single* largest cause of death
- 7 x higher than local roads
- 1240ha/year habitat needed to offset koala mortality alone

eg MR Redland-Bay Road: 201 koala deaths over 8 years

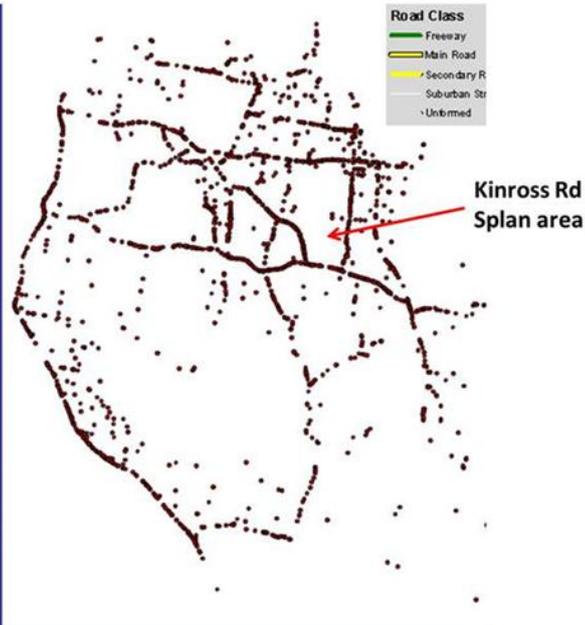


Kinross Rd Splan area

Source: Preece, H (DERM). Localised wildlife extinctions and impacts on the regional population: Lessons from the Koala Coast.

# Road mortality

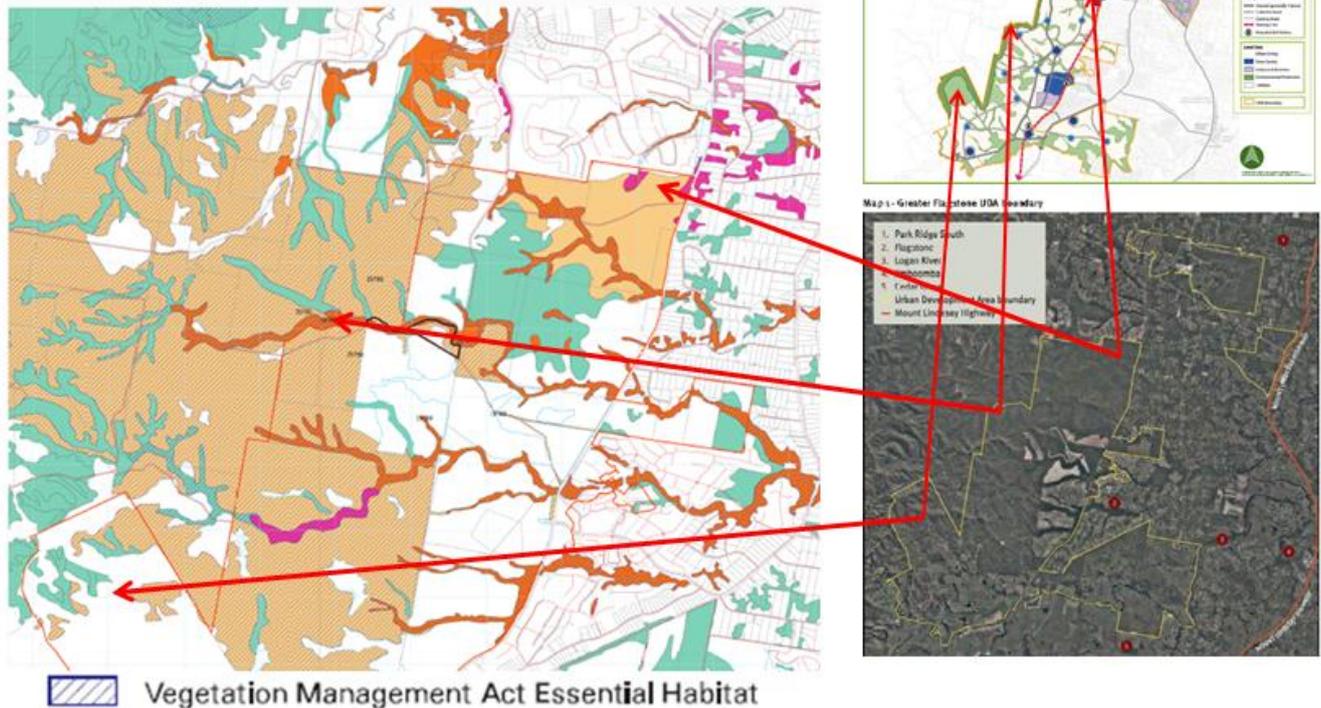
*The pattern of road kill locations traces the arterial or State-controlled roads*



Source: Preece, H (DERM). Localised wildlife extinctions and impacts on the regional population: Lessons from the Koala Coast.

## Appendix C:

### Essential Habitat



(see next page (Pg. 10) for larger map, effectively all that is mapped orange in colour is essential habitat)

#### 3.1.6 Essential Habitat

Essential Habitat is a vegetation ecotype that is considered by DERM to form potential habitat to a species that is listed as; Endangered, Vulnerable or Near Threatened by Schedules 2-5 of the *Nature Conservation (wildlife) Regulation 2006* (NC Reg).

Essential Habitat mapping is provided in conjunction with Regional Ecosystem Maps by DERM. The Essential Habitat designation of the majority of the proportion of the Greater Flagstone UDA mapped as Remnant Regional Ecosystem is for Koala (*Phascolarctos cinereus*) (map code: 29186). Koala is listed as Vulnerable under the NC Reg, for the south-east Queensland bioregion. Essential Habitat designation relates only to areas mapped as Remnant (and Regrowth) Regional Ecosystem, which are 'Mandatory Essential Habitat Factors'.

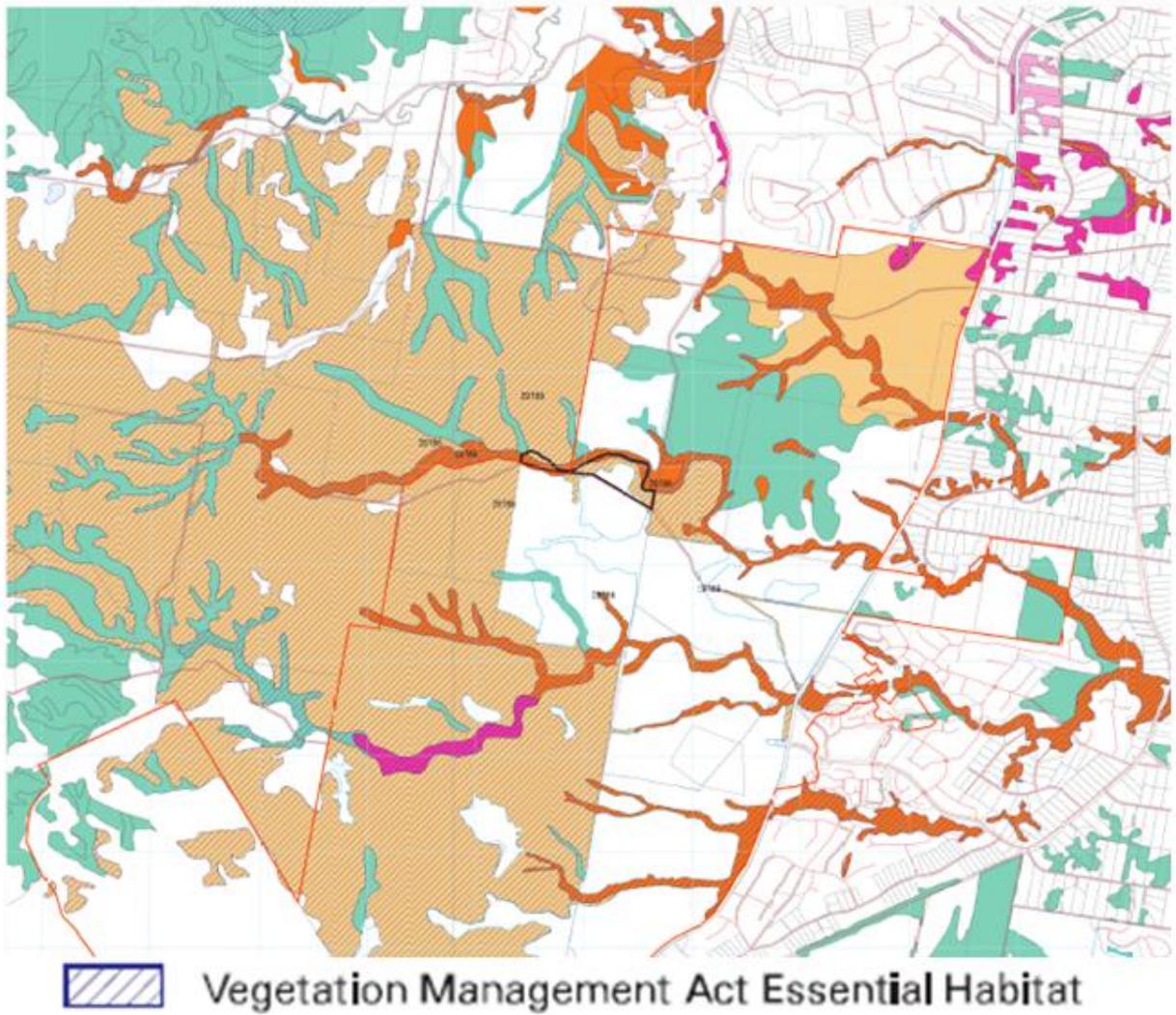
**Table 3.1. Essential Habitat Designation of UDA**

Threatened Species associated with Essential Habitat designation	RE Type (Mandatory Habitat Factor)	Altitude (m) (Habitat Factor)
Koala ( <i>Phascolarctos cinereus</i> )	12.3.3, 12.3.6, 12.3.7, 12.3.11, 12.5.2, 12.5.3, 12.8.14, 12.9-10.4, 12.9-10.7, 12.9-10.17, 12.11.5, 12.11.18, 12.12.12	Sea level to 1000 m

The Essential Habitat mapping tool does not take site-specific habitat factors such as level of disturbance, connectivity, potential suitability for all Threatened species and level of habitat utilisation/habitat variant preference into account as a consequence of its high level nature by design. Accordingly, site-specific groundtruthing of potential Threatened species habitat resources on a given site is an important element of holistic ecological assessment.

Source: [http://www.uda.qld.gov.au/\\_dbase\\_upl/Biodiversity\\_Report.pdf](http://www.uda.qld.gov.au/_dbase_upl/Biodiversity_Report.pdf)

# Essential Habitat



Source: [http://www.ulda.qld.gov.au/dbase\\_upl/Appendix\\_E\\_Pt3.pdf](http://www.ulda.qld.gov.au/dbase_upl/Appendix_E_Pt3.pdf)

## Reference:

- Adams-Hosking, Christine, Grantham, Hedley S., Rhodes, Jonathan R., McAlpine, Clive, and Moss, Patrick T. 2011. Modelling climate-change-induced shifts in the distribution of the koala. *Wildlife Research* **38**:122–130.
- Amir, A 2010. Patch Occupancy and movement patterns of koalas (*Phascolarctos cinereus*) in urban areas of South East Queensland. Honours thesis, October 2010.
- DERM (Department of Environment and Resource Management) 2009. Decline of the Koala Coast Koala Population: Population Status in 2008.
- Farina, A. 2006. Chapter 4 Emerging Processes in the Landscape pp 109 – 128 in *Principles and Methods in Landscape Ecology*, Springer, The Netherlands.
- Kupfer, J.A., Malanson, G.P. & Runkle, J.R. 1997. Factors influencing species composition in canopy gaps: the importance of edge proximity in Hueston Woods. *Ohio. Prof. Geogr.* **49**: 165–178.
- Lee, Kristen E., Seddon, Jennifer M., Corley, Sean W., Ellis, William A. H., Johnston, Stephen D., de Villiers, Deidré L., Preece, Harriet J. and Carrick, Frank N. (2010-12) Genetic variation and structuring in the threatened koala populations of Southeast Queensland. *Conservation Genetics*, **11** **6**: 2091-2103.
- Liverpool John Moores University 2010, Fact Sheet 6, Urban Greenspace and Public Health.
- Malanson, G.P and Cramer, B.E 1999. Landscape heterogeneity, connectivity, and critical landscapes for conservation. *Diversity and Distributions*. **5**: 27–39
- Melzer, A., Carrick, F., Menkhorst, P., Lunney, D., and St. John, B. 2000. Overview, critical assessment, and conservation implications of koala distribution and abundance. *Conservation Biology* **14**: 619-628.
- Preece, H (DERM) 2009. Localised wildlife extinctions and impacts on the regional population: Lessons from the Koala Coast.
- Zuidema, P.A., Sayer, J.A. & Dijkman, W. 1996. Forest fragmentation and biodiversity: the case for intermediate-sized conservation areas. *Environ. Conserv.* **23**: 290–297.