Inquiry into Australia's koala population

Submission by the Department of Environment and Resource Management on behalf of the Queensland Government

Analysis

The status, health and sustainability of Australia's koala population with particular reference to:

(a) the iconic status of the koala and the history of its management;

The Koala is the faunal emblem of Queensland and holds a special place in the hearts of Queenslanders. Consequently, koala conservation and welfare is held in high public regard. Koalas are also a popular species with international visitors, with 75 per cent of overseas tourists stating that they hoped to see a koala during a visit to Australia (Hundloe and Hamilton 1997). It has been estimated that koala-based industry provided tourism revenue of $1.1 billion in 1996 and 9000 jobs (Hundloe and Hamilton 1997).

Queensland is fortunate to have one of the largest natural populations of koalas in the wild, with the greatest concentration of koalas occurring in the southeast of the state, with 14 recognised population localities throughout the South East Queensland Region at Noosa, Sunshine Coast, Kilcoy, Caboolture, Pine Rivers, North Stradbroke Island, Esk, Koala Coast, Rosewood, Purga, Jimboomba, Coomera, Coombabah, Numinbah. However, although koalas are still considered common in many parts of the state outside of South East Queensland, their populations are declining. Since European settlement, impacts on koala populations have included broad-scale habitat clearing, disease epizootics and the export of koala pelts in the early decades of the twentieth century, all contributing to population decline. In more recent history, particularly in the South East Queensland Region, koala populations have been subject to significant habitat loss and increasing habitat fragmentation to accommodate urban development, and increases in mortality from disease, car strike and dog attack.

Koala Coast

The Koala Coast is located 20 km south-east of Brisbane, Queensland, and covers an area of ~ 375 km^2 (Figure 1). The Koala Coast encompasses portions of three local government authorities: the mainland portion of Redland City, the eastern portion of Logan City and the south-eastern portion of Brisbane City. The Koala Coast is delineated by Manly Road and Lota Creek to the north; the Gateway and Pacific Motorways to the west; Logan River to the south; and Moreton Bay to the east—effectively isolating the resident koala population as a geographically independent group. The size of the population, its recently researched unique genetic differentiation (Lee et al, 2010) and proximity to a capital city contribute to making this population South East Queensland's, and arguably Australia's, most significant natural koala population.

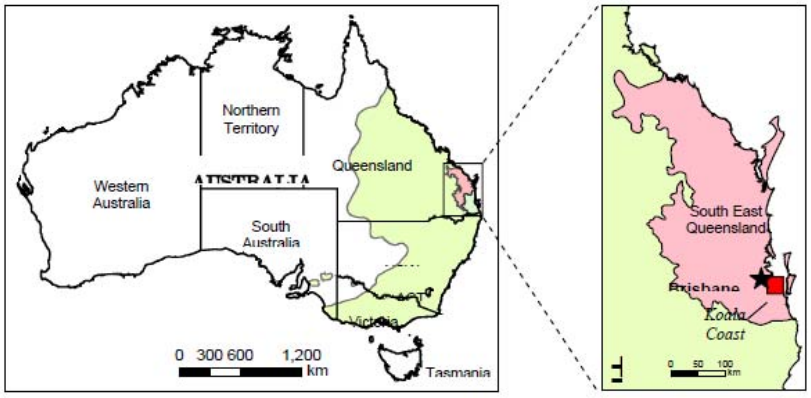

Figure 1. Distribution of koalas in Australia (main box); and location of the Koala Coast study area (inset) showing the South East Queensland (SEQ) planning region and the South East Queensland Bioregion. Distribution based on Martin (1995).

Recognising the status of populations, the koala is listed as vulnerable protected wildlife throughout the south-east Queensland Bioregion, and least concern protected wildlife elsewhere in the State under the *Nature Conservation Act 1992*. The South East Queensland Bioregion includes areas from the NSW border north to Gladstone and west to Toowoomba. The Queensland Species Technical Committee has received two nominations for listing the koala as endangered under the *Nature Conservation Act 1992* for the South East Queensland coastal populations and for the Koala Coast population[1].

The koala is a protected species in Queensland and cannot be taken, used or kept without a permit except in prescribed exceptional circumstances, such as rescue or veterinary care. In addition, the legislation acknowledges the cultural significance of the koala and requires that government agencies consider the management measures necessary to conserve existing koala populations.

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1 Queensland Species Technical Committee assessments are undertaken according to the Guidelines for assigning different classes to a recognisable taxon within a species (see www.derm.qld.gov.au/wildlife-ecosystems/wildlife/threatened_plants_and_animals/guidelines.html). These guiding principles include:

- The STC will, as much as possible, seek to be consistent with the Commonwealth's *Environment Protection and Biodiversity Conservation Act 1999* listing for the species.
- The STC will consider the Queensland population (recognised/published species and sub-species) as a whole unless influenced by available evidence that indicates particular populations of a species.
- If the species also occurs in other parts of Australia, then the overall Australian population is taken into consideration.
- If sub-populations have the ability to interbreed even occasionally, then STC will assess the whole metapopulation together.
- The nomenclature of taxa is detailed in section 5 in the *Nature Conservation (Wildlife) Regulation 2006*.

In 1994 the Queensland Government approved the five-year Koala Coast protection plan, which included a comprehensive research and monitoring component. The first koala state planning policy was put in place and subsequently revised in 1997.

In March 2003 the Queensland Government announced it would draft a state-wide conservation plan for koalas. In January 2005 the *draft Nature Conservation (Koala) Conservation Plan 2005 and Management Program 2005–2015* was released for public comment. In October 2006, the Queensland Government released the Koala Plan after considering more than 500 public submissions as a result of two rounds of public consultation about the plan.

The Koala Plan—the first of its kind—was a strong vehicle for conserving koalas in the wild and drew on other regulatory tools, such as the *Integrated Planning Act 1997* and the *Vegetation Management Act 1999*, to achieve greater protection of koalas than had been afforded in the past.

The preparation of the *South East Queensland Regional Plan 2005–2026* (SEQ Regional Plan) provided an opportunity to incorporate the planning and land use objectives of the Koala Plan within the SEQ Regional Plan. This collaboration ensured that development and land use planning in the SEQ region, a region known to be one of the most significant koala habitats in Australia, was guided in a way to assist koala survival. The SEQ Regional Plan included a koala habitat map and koala conservation policies that aimed to protect identified koala habitat and reduce conflict between development and koalas. Further, the SEQ Regional Plan 'called up' koala conservation criteria for consideration in development assessment.

The operation of the Koala Plan was reviewed in late 2008 in response to results of trend surveys carried out on populations within the Koala Coast and Pine Rivers localities. In the Koala Coast, survey results estimated a dramatic collapse in the population in less than three years—from a population estimate of 4611 koalas in 2005–2006 to just 2,279 in 2008, representing a 51% decline in less than three years and a 64% decline in the 10 years since the original 1996–1999 estimate of 6246 koalas (DERM, 2009). Results of habitat and population surveying in the Pine Rivers area from 2001–2008 also recorded a substantial decrease in koala densities across the Shire. In urban areas, the average percentage decline in observed koala density was in the order of 45% and 15% at bushland sites (GHD, 2008). This, in combination with the reported decline in koala abundance in the Koala Coast, indicated that there is potential for decline of a number of important koala populations across South East Queensland.

The Queensland Government convened a Taskforce of koala scientific and welfare experts, the RSPCA (representing pet owners), as well as representatives from conservation groups, the development industry and local Councils. The group was tasked with looking at further measures to protect the koala in South East Queensland.

Based on the recommendations of the Taskforce, a Koala Crisis Response Strategy was released in December 2008 outlining a range of actions to be taken by the Government to halt the decline of South East Queensland koala populations and achieve a net gain in mature and actively regenerating koala habitat across South East Queensland by 2020.

Significant progress has been made in implementing Response Strategy actions over the past two years, including:

- delivery of comprehensive koala habitat mapping for the South East Queensland Region at a cost of $1M,
- protection from urban development of over 900ha of land in the Koala Coast through amendment to the urban footprint of the SEQ Regional Plan 2009,
- introduction of new planning and development controls in South East Queensland, including a State Planning Policy for Koala Conservation and State Planning Regulatory Provision,
- introduction of an expanded Koala Habitat Offsets Policy, including a 5:1 offset metric, the use of financial contribution offsets, and requirements for inclusion in future local planning instruments,
- a freeze on the clearing and disposal of State owned land in South East Queensland (Dec 2008–May 2010), resulting in the delivery of $more than $10M in environmental offsets funds for the expansion and protection of koala habitat in the region,
- introduction of a Community Infrastructure Policy to manage the impacts of State infrastructure on koalas and their habitat,
- introduction of compulsory acquisition powers for land required for koala habitat protection,
- commencement of a $10M State road retrofit program to address mortality hotspots throughout the region,
- commencement of a $400,000 Disease Research Grant Program, to gather information on potential approaches to manage disease in koala populations, and
- development of a model local law to better manage interactions between koalas and domestic dogs for use by local government.

In June 2010 the Government reaffirmed its commitment to the ongoing implementation of the Response Strategy through a $45.5M, five year commitment for koala habitat protection and rehabilitation and an enhanced koala population survey and monitoring program. This was in addition to $5M committed by the Queensland Government in the previous financial year.

(b) estimates of koala populations and the adequacy of current counting methods;

State surveying of koala populations is concentrated in areas of known threat, predominately in the south-east. Since 1994 the State Government has solely or jointly funded research into the Koala Coast and Pine Rivers populations to estimate numbers and densities. Findings of those population surveys indicate a continued and increasing decline of these populations. Data is not available on other significant populations in the Region or State, though in areas where land use is undergoing similar changes to those occurring in the south-east, it is expected that koala population dynamics will reflect those of the Koala Coast and Pine Rivers. To develop this knowledge, the Queensland Government has committed additional funding to expand its surveying and monitoring capacity (refer section entitled *Enhanced surveying and monitoring* below).

In the absence of this data, it is assumed that these populations will also be subject to declining numbers. A precautionary approach to conservation management in the region has been adopted by the Queensland Government to provide protection of regional populations while estimates can be obtained.

Koala Coast population estimates (DERM, 2009a)
Latest survey results estimated a dramatic collapse in the population in less than three years—from a population estimate of 4611 koalas in 2005–2006 to just 2279 in 2008, representing a 51% decline in less than three years and a 64% decline in the 10 years since the original 1996–1999 estimate of 6246 koalas. The largest declines occurred in bushland areas which showed a 59% reduction in koala numbers compared with a 30% reduction in urban areas.

A 2010 Koala Coast population survey has been completed as part of an enhanced survey and monitoring program and data analysis is underway.

Pine Rivers population density estimates (GHD, 2008)
A joint habitat mapping and survey project undertaken by the (then) Queensland Environmental Protection Agency and Moreton Bay Regional Council found a 45% decrease in koala densities in urban areas of Pine Rivers since 2001, and a 15% decline at bushland sites. Trend data for other areas of the Moreton Bay Region surveyed as part of the project (Redcliffe and Caboolture) was not available.

Enhanced surveying and monitoring
The Queensland Government has committed $2.5M over 5 years (2010–11 to 2014–15) to enhancing knowledge of the status and health of regional koala populations. This commitment is reflected in the *South East Queensland Regional Plan 2009–2031* program 2.2.9 to 'Identify, monitor and report on health and risks to koala populations across the region'.

Surveying and monitoring programs to date concentrated on the Koala Coast and Pine Rivers populations will be expanded to establish baseline koala population estimates more broadly across the South East Queensland Region. This will allow future population trends to be determined using subsequent survey and monitoring.

In the 2010–11 financial year, monitoring of populations in the Koala Coast and Pine Rivers will continue, new surveying will commence at Ipswich—an identified growth corridor in the South East—and at Oakey, a population outside an area of development pressure and changing land use, to build on a longitudinal study running since the 1970s. In addition, a detailed study on the impacts of urban environments on koala populations will also continue (radio tracking of koalas in the Koala Coast) to continue to inform policy and management of koalas in an urban setting. DERM will also examine more closely the impacts of translocation on a koala population to inform future policy decisions on management of koala populations.

Future years (2011–12 to 2014–15) will see the baseline program expanded to provide koala population data for seven of the eastern South East Queensland local government areas (i.e. Redland, Moreton Bay, Ipswich, Logan, Sunshine Coast, Brisbane and Gold Coast).

Survey methodology
Koala surveys are conducted using scientifically sound field survey methodology that has been published in the scientific literature (Dique et al. 2004) and is accepted by the scientific community. The methodology is customised to the specific characteristics of koalas and based on principles for surveying used for other animals, including kangaroos. The methodology is reflected in Policy 4 of the Koala Conservation Plan and is consistent with previous surveys so that results are directly comparably to earlier population abundance estimates.

Survey methodology includes habitat stratification (urban, remnant bushland and bushland strata) and intensive, systematic daytime searches of strip transects. GIS and remote sensing methodologies are also used to assess the koala habitat component of the regional koala abundance estimates. This approach allows for the identification and determination of habitat areas for conservation based on where koalas actually occur rather than identifying distributions of 'preferred' tree species or community reports, as has been promoted in other studies. The statistical error published in *Wildlife Research* for the current methodology was +/-10%.

DERM is considering looking at alternative methods for establishing abundance using secondary indicators and modelling to increase the efficiency of surveying from the current intensive on-ground approach.

(c) knowledge of koala habitat;

Koalas inhabit eucalypt forests and woodland areas of Queensland. They successfully use highly fragmented habitat that have only small remnants of the original vegetation (Gordon 1989; Gordon et al. 1990; White 1999), and use young forest and highly modified vegetation such as grazed, disturbed or thinned forest and regrowth areas. Koalas are found throughout urban and peri-urban areas in South East Queensland and live in some areas, among urbanised areas using remnant food and shelter trees in parkland, backyards and streetscapes.

Recognising the diverse nature of koala habitat, throughout Queensland koala habitat is identified in the Koala Conservation Plan 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 current live or
c) A woodland where koalas do not currently live if the woodland primarily consists of koala habitat trees and is reasonably suitable to sustain koalas.

Koala habitat trees are identified as trees of any of the following genera—

a) Angophora
b) Corymbia
c) Eucalyptus
d) Lophostemon
e) Melaleuca

and recognised as providing both a food and shelter function for the species.

In 2009 in response to a recommendation of the Koala Taskforce and as a key component of the Koala Response Strategy, the Queensland Government commissioned GHD to undertake comprehensive koala habitat mapping in south east Queensland at a cost of $1M. The result was the most comprehensive koala habitat map compiled in Queensland to date—the *South East Queensland Koala Habitat Assessment and Mapping Project, May 2009* (DERM, 2009b). The project scope included the mapping and ranking of koala habitat in South East Queensland ensuring that the resulting map was:

- tenure blind
- drew on existing studies and knowledge, as well as fill knowledge gaps
- established four landscape categories (bushland, suitable for rehabilitation, other areas of value, and non-habitat or generally not suitable, of which the first three are stratified according to the value of the habitat/potential habitat to koalas, and
- based on actual or potential value of areas to koalas and does not account for existing land use or development commitments.

The mapping project was to guide future development planning in South East Queensland and inform a stronger statutory approach to koala conservation.

The mapping methodology included landcover mapping, analysing satellite imagery to identify landcover strata across the region, preliminary habitat value ranking using a habitat model based on existing sighting data and landscape feature relationships to rank habitat across South East Queensland, field verification of preliminary habitat value mapping at approximately 500 sites and a final habitat value assessment, refining based on patch size, connectivity to bushland, as well as results from field verification of preliminary values to produce the final habitat map. The project was overseen by a designated group of recognised specialists in koala s and koala habitat in South East Queensland to ensure the methodology development and product development was based on sound scientific principles.

The approach to deliver this project included a variety of innovative techniques that have not been implemented in previous koala habitat mapping exercises. These included the analysis, valuation and mapping of all potential koala habitat, rather than solely focusing on existing vegetation mapping, the use of a model to rank koala habitat that is based on where koalas actually occur in South East Queensland and the verification of the outputs of the koala habitat ranking model through extensive field surveys throughout South East Queensland.

The resulting South East Queensland Koala Habitat Values Map 2009 (Attachment 1) supports the SEQ Regional Plan Policy 2.2 Koala Conservation, informed the development of a State Planning Policy, State Planning Regulatory Provisions, Koala Habitat Offset Policy, Community Infrastructure Policy and is a significant consideration in koala habitat protection and rehabilitation programs allowing DERM to identify areas suitable for rehabilitation as koala habitat and of high value to koalas.

Essential habitat

Koala habitat is also recognised and protected through the identification and protection of Essential Habitat through the *Vegetation Management Act 1999* (VMA). The VMA regulates the clearing of native vegetation in Queensland and protects the State's biodiversity by conserving native vegetation, and addressing land degradation

problems such as salinity, soil degradation, erosion and declining water quality. Under the framework, the Queensland Government phased out broadscale clearing of remnant vegetation in December 2006. In October 2009, new arrangements were introduced to regulate the clearing of certain types of regrowth vegetation.

The VMA recognises Essential Habitat for protected wildlife, as an area of vegetation shown on the regional ecosystem map or remnant map as remnant vegetation—

(a) that has at least 3 essential habitat factors for the protected wildlife that must include any essential habitat factors that are stated as mandatory for the protected wildlife in the essential habitat database; or
(b) in which the protected wildlife, at any stage of its life cycle, is located.

For the koala, the Essential Habitat map is compiled from a combination of species habitat models and buffered species records. Within the South East Queensland bioregion this includes vegetation communities of open eucalypt forest and woodland that has: a) multiple strata layers containing *Eucalyptus*, *Corymbia*, *Angophora*, *Lophostemon* or *Melaleuca* trees that, at 1.3 metres above the ground, have a diameter both greater and less than 30 centimetres; and b) at least 1 of the following species: *Eucalyptus tereticornis*, *E. fibrosa*, *E. propinqua*, *E. umbra*, *E. grandis*, *E. microcorys*, *E. tindaliae*, *E. resinifera*, *E. populnea*, *E. robusta*, *E. nigra*, *E. racemosa*, *E. crebra*, *E. exserta*, *E. seeana*, *Lophostemon confertus*, *L. suaveolens*, *Melaleuca quinquenervia*.

(d) threats to koala habitat such as logging, land clearing, poor management, attacks from feral and domestic animals, disease, roads and urban development;

The primary threats to koalas in Queensland, being habitat loss, and causes of mortality impacting population viability, being dog attack and car strike, generally arise from the expansion of urban development to accommodate residential and industrial activities. Disease is also a significant factor impacting on the species ability to function and reproduce.

The Queensland Government is addressing these threats through a variety of regulatory and non-regulatory measures.

Habitat loss

Throughout Queensland the *Vegetation Management Act 1999* (VMA) protects native vegetation from the impacts of clearing and protects biodiversity by conserving native vegetation, and addressing land degradation problems such as salinity, soil degradation, erosion and declining water quality. The VMA framework includes the use of environmental offsets where habitat impacts cannot be avoided.

In South East Queensland where koala populations are demonstrated to be most under threat, the following statutory instruments protect and regulate impacts on koala habitat:

<u>Koala Habitat Protection and Rehabilitation Programs</u>

In 2010 the Queensland Government also introduced a range of measures aimed at increasing the amount and quality of koala habitat in South East Queensland. These include:

- Koala Nature Refuges Program—a $4M incentive program to encourage conservation agreements on private land. Funding is linked to the undertaken of rehabilitation activities, and
- Koala Habitat Acquisition and Rehabilitation Program—a $48M program to protect and rehabilitate land in South East Queensland for koala habitat. 135ha were purchased in 2010, including the expansion of Daisy Hill Conservation Park in the Koala Coast by 30%.

<u>South East Queensland Koala Conservation State Planning Regulatory Provisions (SPRP)</u>

- regulates assessable development, which is development that planning schemes or planning legislation has identified as requiring assessment, where that development meets certain triggers.
- targets the areas where koalas are known to be under the most significant risks—the Koala Coast and Pine Rivers—and incorporates the areas previously regulated by the South East Queensland Koala State Planning Regulatory Provisions (February 2010) or the Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006–2026.
- prohibits the clearing of bushland habitat in the priority areas of Koala Coast and Pine Rivers, as well as where it occurs outside the urban footprint. Urban development is also prohibited in conservation, open space, rural and rural-residential zones within the Koala Coast and Pine Rivers areas. This approach aims to bolster habitat for these at-risk populations.
- provides requirements for all development activities to minimise their impact on koalas. Depending upon the development type and koala habitat type, requirements may include:
    - avoiding, minimising or offsetting the clearing of non-juvenile koala habitat trees
    - site design that provides safe koala movement opportunities as appropriate to the development type and habitat connectivity values of the site
    - construction phases that do not increase the risk of death or injury to koalas
    - clearing of native vegetation is undertaken as sequential clearing
    - clearing of koala habitat trees is undertaken in the presence of a koala spotter.

<u>State Planning Policy 2/10: Koala Conservation in South East Queensland (SPP)</u>

- complements the SPRP by informing future local government planning scheme amendments, and land use planning decisions through Structure Plans, Master Plans, Local Area Plans, Community Infrastructure Designations and Biodiversity Development Offset Areas.
- significantly expands the area within south-east Queensland that must incorporate koala conservation and habitat protection outcomes into planning decisions.
- planning decisions made in the South East Queensland Koala Protection Area—the seven eastern local government areas of South East Queensland—must include strategies and measures to respond to potential conflicts between achieving koala conservation objectives and development.
- A key goal of the SPP is to maintain the viability of all major koala populations across the region by increasing the size of their habitat. To achieve this, the SPP requires that planning must:

    - identify koala habitat values within the planning scheme areas using the SEQ Koala Habitat Values Map and additional mapping information
    - protect significant areas of koala habitat value
    - retain and enhance habitat connectivity to maintain koala population viability
    - maximise koala safety and movement through design and layout of development
    - achieve a net gain in bushland habitat through the use of environmental offsets and other mechanisms, incorporating at a minimum requirements of the *Offsets Policy for Net Gain of Koala Habitat in South East Queensland*
    - ensure preferred dominant land uses are consistent with achieving the outcomes of the policy
    - incorporate koala conservation assessment criteria for all relevant codes to ensure development is compatible with desired koala conservation outcomes
    - local governments must provide a koala conservation strategy to demonstrate how the policy outcomes are to be achieved, including complementary, non-statutory management strategies.
- allows the planning Minister to consider Biodiversity Development Offset Areas (BDOAs), a form of tradable development rights, that permit the protection of prime koala habitat through appropriate variations to the urban footprint. BDOAs are an important management tool that can remove development impacts from important koala habitat areas. Under the SPP, the planning Minister can declare a BDOA for koala conservation purposes. This allows development to be transferred from one parcel of land that is under threat from development to another parcel outside the urban footprint. This has the potential to protect important areas of koala habitat and maintain habitat connectivity while still allowing the State Government to meet its commitments to other planning initiatives such as the provision of affordable housing.

While the declaration of a BDOA to allow development outside the urban footprint modifies the effect of the SEQ Regional Plan, development within a BDOA will still be assessed on its merits against relevant State and local planning instruments.

<u>Community Infrastructure Policy</u>

- outlines how State public sector entities will consider koala conservation outcomes in the planning and delivery of government-supported community infrastructure.
- ensures that State activities not regulated through the SPP and SPRP meet the requirements of the SPP and SPRP, including habitat protection and offset measures, ensuring equitable treatment of State and non-State community infrastructure projects.

<u>Offsets Policy</u>

- outlines requirements for offsetting impacts on koala habitat to ensure a net gain for koala habitat is achieved where impacts arise from development assessment decisions under the SPRP, community infrastructure designations under the SPP, Queensland Government supported community infrastructure undertaken in accordance with the State Government Supported Community Infrastructure Koala Conservation Policy.

- also a minimum standard for offset frameworks established in local planning instruments as required by the SPP.
- aims at achieving a net gain in habitat. Where non-juvenile koala habitat trees are removed, development must offset that loss at a ratio of 5:1. Three options for offset liability are provided for by the policy—self delivery, delivery via an offsets broker, or financial contribution. Financial contributions will be collected by the relevant decision maker (either local government or the State) and used to acquit the offset liability.

State Land Disposal and Property Management Decisions

In 2010–11 the Queensland Government Property Management Committee will be considering proposed amendments to existing polices and procedures for the administration of State-owned land to ensure that properties with appropriate koala habitat values can be protected from adverse impacts on habitat when transferred or offered for sale. Proposed protection mechanisms include transferring appropriate land to conservation or land management tenure for management by the Department of Environment and Resource Management for koala habitat protection and enhancement.

Impacts on population viability—Car strike

As part of the Koala Response Strategy the Queensland Government has committed to the use of koala-friendly design for all new main road construction and upgrades and to pilot the retrofitting of koala crossings on existing main roads at mortality hotspots.

The Queensland Department of Transport and Main Roads has commenced a $10M, two year koala crossing retrofit program (2009–10 to 2010–11) for existing roads. This project has a specific aim of reducing vehicle related mortality of koalas within South East Queensland and an extensive monitoring and evaluation program being delivered by Griffith University to monitor the usage and effectiveness of various retrofits.

Koala Safe Fencing and Other Measures Guidelines associated with the SPP and SPRP include road design measures for private development to adopt to minimise the impact of roads and cars on koalas.

Impacts on population viability—Dog attack

The management of domestic dogs in Queensland is undertaken largely by local government local laws and regulations. In 2009 the Queensland Government introduced a model local law for animal management (*Model Local Law No. 2 (Animal Management) 2009*) which provided an avenue for local government to prescribe requirements for koala conservation and keeping of a dog on land within identified koala habitat. The requirements may relate to—

(a) the enclosure in which the dog must be kept between sunset and sunrise; or

(b) tethering the dog between sunset and sunrise to prevent it from attacking a koala; or

(c) fencing that must be in place to separate dogs from koalas on the land or on a part of the land; or

(d) other measures that will be likely to prevent an attack by the dog on a koala between sunset and sunrise.

The provisions include requirements that a person keeping a dog on land in koala habitat must comply with requirements and prescribes penalty units.

It is a requirement under the SPRP that development approvals include koala safe fencing and movement requirements, such as animal fencing, kennelling and covenanting where appropriate to restrict the size of domestic dogs in emerging development areas. The SPRP also seeks to restrict the use of dogs on construction sites so that koalas moving through these areas are protected from dog attack.

Daisy Hill Koala Centre, the only State owned koala specific education and awareness centre in Queensland was established in 1995. Rangers and staff at Daisy Hill undertake regular awareness raising, training and information sessions throughout the region to enhance community knowledge on actions they can take to protect koalas, in particular, from domestic dog attack.

Impacts on population viability—Disease
The susceptibility of koalas to disease is thought to be linked to impacts on the species from habitat fragmentation, decreased gene flow between populations, a decreased ability to adapt to changing environmental pressures and increased inbreeding as populations become small. Infections such as Chlamydiacae are prevalent in most koala populations and resulting chlamydial diseases are widespread in South East Queensland, presenting as blindness, pneumonia, cystitis/nephritis and infertility, reducing individual and population capacity for long term survival.

As part of the Koala Response Strategy, the Queensland Government established the Koala Disease Research Fund to support high quality research into mitigating the effects of disease on wild populations of koalas. The Koala Disease Research Fund has a total value of $400 000. Funding has been allocated through an open competitive funding round and will be considered for projects that can be completed within 12 months. Research priorities include:
Assess and develop appropriate methods to reduce vulnerability of wild populations to disease
Establish the relationship between habitat loss (and other environmental stressors) to disease in koalas
Quantify the impacts of disease on breeding and fecundity rates
Develop tools that result in improved management outcomes

Results of this research are anticipated in 2012.

Impacts on population viability—Myrtle rust
Myrtle rust is a fungal disease affecting plants in the family Myrtaceae, which include all koala food trees. It was first detected in New South Wales in April 2010 and has since spread to Queensland. Spores can be spread by wind, wildlife and human movement. The Myrtle Rust National Management Group has concluded that it is not possible to eradicate myrtle rust from Australia.

The Queensland Government will be investigating this potential threat to determine the scope of its potential impact and to identify how address any impacts through the Koala Response Strategy.

(e) the listing of the koala under the *Environment Protection and Biodiversity Conservation Act 1999*;

The Queensland Government acknowledges the decision making role of the Federal Minister for the Environment in listing of the koala under the *Environment Protection and Biodiversity Conservation Act 1999* (EBPC Act) based on advice received from the Threatened Species Scientific Committee. It is further acknowledged that under this scenario, the Commonwealth Government would likely play a greater role in regulating the koala's threatening processes across its range.

The Queensland Government has introduced planning and development controls in relation to key South East Queensland koala populations. These controls are more sophisticated than those enacted by any other State jurisdiction.

The Queensland Government considers these controls, along with the other elements of the Koala Response Strategy, to be the most appropriate means of conserving these koala populations while also delivering other public objectives, including housing supply and affordability.

Should the Commonwealth Government begin regulating significant impacts on koalas as a result of its listing, the Queensland Government firmly believes that most value would be gained by focusing that regulation on matters that complement Queensland's existing framework, rather than regulating similar things.
A review of the interplay between existing State and proposed Commonwealth regulation in close consultation with the Queensland Government would be appropriate should greater regulation be proposed.

(f) the adequacy of the National Koala Conservation and Management Strategy;

Queensland is an active participant on the National Koala Conservation Strategy Steering Committee and participated in the preparation of the National Koala Conservation and Management Strategy. Queensland is actively responding to actions identified in the Implementation Plan through its Koala Response Strategy, as well as ongoing conservation and management role under the *Nature Conservation Act 1992*.

Queensland supports the ongoing use of the National Koala Conservation and Management Strategy, Implementation Plan and Steering Committee to provide a coordinated, participatory approach to koala conservation in Australia.

A key element to the success of this plan however, is resourcing from the Commonwealth Government to support its implementation. This is fundamental to the effective conservation of koalas at a national level. The Commonwealth Government can address this situation in the short term by providing funding support for the implementation of Queensland's current initiatives to conserve koalas, particularly where these initiatives directly complement the objectives of the National Koala Conservation and Management Strategy (e.g. funding of the Koala Response Strategy actions to protect the Koala Coast and Pine Rivers koala populations in recognition of their national significance).

(g) appropriate future regulation for the protection of koala habitat;

The Queensland Government is taking action to manage land use planning decisions, regulate development decisions, and protect koalas from immediate impacts of

development, such as inappropriate clearing practices. Koala habitat in Queensland is already regulated through a variety of State Acts and subordinate regulation, particularly in South East Queensland. In addition, local government planning schemes under review in the South East Queensland Region where koalas are most under threat must consider koala conservation outcomes articulated in the recently released State Planning Policy for koala conservation in order for those schemes to be endorsed by the State. This approach filters protection and conservation measures, including through regulation, throughout the two tiers of government primarily involved in planning and development decision making.

A monitoring, evaluation and reporting program is under development in consultation with local governments to ascertain the success and progress of local governments in implementing measures relevant to koala habitat protection and other conservation measures.

The local government evaluation program, koala population survey results and information from the DERM program to monitor the rate of progress against the Government's vision for a net increase in mature and actively regenerating koala habitat by 2020 will inform future measures to regulate the protection of koala habitat in Queensland.

(h) interaction of state and federal laws and regulations; and

The primary piece of legislation relating to environmental protection at the national level is the EPBC Act. The primary focus of the EPBC Act is matters of national environmental significance, which includes nationally threatened species. Assessment under the Act is triggered when an action is likely to have a significant impact on a matter of national environmental significance. As such, unless a species is listed under the Act, the Act will not be triggered. The koala is not listed under the EPBC Act.

Some protection for koalas under the provisions of the EPBC Act relates to actions occurring on Commonwealth land (e.g. lands owned by the Department of Defence) or carried out by Commonwealth agencies. Under the provisions of the Act, actions on Commonwealth land or carried out by Commonwealth agencies must consider the potential impacts of the action on the environment, including any environmentally sensitive features. In Queensland, particularly in South East Queensland, activities on Commonwealth land or carried out by Commonwealth agencies should consider the potential impacts on koalas and their habitat prior to development going ahead, and where possible, comply with the relevant State regulations and policy as best practice (for example, avoiding, minimising and offsetting to net benefit the clearing of koala habitat).

The Act also lists Key Threatening Processes, which currently includes land clearance. The Act indicates that a threat abatement plan can be prepared for Key Threatening Processes, but the Threatened Species Scientific Committee has previously recommended that a threat abatement plan is not considered a feasible, effective or efficient way to abate the process of land clearance and that each state and territory should prepare an individual response (Predavec, 2008). Queensland has prepared such a response with the introduction of various legislative and regulatory controls for land clearing (e.g. *Vegetation Management Act 1999*, State Planning Regulatory Provisions 2010).

The EPBC Act also controls the export of animals for education or exhibition purposes. The koala along with platypus, wombats and Tasmanian devils (along with listed threatened species) is a species requiring special 'Ambassador Agreements' on their care, transport, housing at destination and disposal, including any progeny.

The current policy approach to management of State and Commonwealth conservation actions through the National Koala Conservation and Management Strategy goes beyond what is already being done under other general biodiversity frameworks or provides a framework for incorporating current activities into broader national action. Queensland is implementing its State plan in a way that is consistent with the national strategy.

(i) any other related matters.

Koala hospitals
The Queensland Government runs the only State-supported koala rescue, treatment and rehabilitation centre through the Moggill Koala Hospital. The Hospital is staffed 7 days a week, 365 days a year and provides a vital rescue and rehabilitation service for koalas that may otherwise be lost to the wild population.

The Queensland Government also operates a koala ambulance service from the Daisy Hill Koala Centre, which delivers sick, injured and orphaned koalas to Moggill Koala Hospital for treatment.

South East Queensland is also serviced by the Australian Wildlife Hospital located at Beerwah in the Sunshine Coast hinterland, and the Currumbin Sanctuary Wildlife Hospital on the Gold Coast; both carrying out similar services to the State hospital.

Queensland has the most comprehensive dataset relating to koala mortality and causes of all the States where koalas naturally occur—> 40,000 records since 1997 (SEQ application). Statistics of koala hospital presentations, releases and major causes of death are available from the DERM website.

Education and awareness
Daisy Hill Koala Centre is the only State-owned koala specific education and awareness centre and is open every day (except Christmas Day, New Year's Day and Good Friday), from 10am to 4pm. Admission is free.

Rangers and staff at Daisy Hill undertake regular awareness raising, training and information sessions throughout the region to enhance community knowledge on actions they can take to protect koalas and enhance koala habitat in the region.

Other research
DERM is preparing a broader koala research program into the biology, ecology and behaviour of koalas to inform future research directions.

Commonwealth funding
The national significance of the koala means that that the Commonwealth Government needs to be a material partner in conserving them. As such, the Commonwealth

Government should provide funding to state governments to assist in conserving Australia's koala populations.

As mentioned above, Queensland has already committed significant resources, more than any other State, to protecting and enhancing koala habitat and protecting koala populations from threatening processes. Given the national importance of Queensland's key koala populations, the Commonwealth Government should immediately provide funding to further and complement the work already being done by the Queensland Government. For example, Additional resourcing to enhance Queensland's existing disease research program should be considered as a priority, given the results will potentially have application across all of the koala range States.

Since the development of the Koala Response Strategy myrtle rust has also emerged as a potential threat to koalas and the Queensland Government is preparing to investigate the potential impact of this threat. This investigation could require the enhancement of the Koala Response Strategy. This also warrants Commonwealth funding as the spread of myrtle rust potentially has national implications for a range of environmental and commercial interests in addition to national threat it could pose to koala conservation.

The Commonwealth Government should, at least, match the Queensland Government's funding into koala disease research and habitat acquisition in recognition of Queensland's efforts to conserve koalas and in the current absence of any funding being allocated to the National Koala Conservation and Management Strategy to address these issues. The Commonwealth should also support Queensland's leading role in investigating the spread and impact of myrtle rust as part of the effort to address this national issue.

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