

Chapter 3

Threats to koala habitat: urban development, forestry, mining, drought, bushfire and climate change

3.1 Clearly, suitable habitat is critical for the survival of any species. Many submitters identified loss or degradation of koala habitat as the key threat to the species' survival.¹ The Australian Koala Foundation explained the importance of suitable koala habitat:

Stable koala populations can only persist if suitable habitat is available. Natural population densities are directly related to the quality of habitat which is in turn determined by the presence and density of primary and secondary food trees.²

3.2 The *National Koala Conservation and Management Strategy 2009–2014* identified the significance of habitat loss on the koala:

Loss of habitat is the major threat to the koala in Queensland and New South Wales, and is the primary factor responsible for declining populations in those states. This continuing problem, which results mainly from clearing or fragmentation of forest and woodland, must be addressed...

Habitat loss is the most significant cause of koala population declines and reductions in long-term population viability...³

3.3 The strategy further identified that fragmentation and degradation of habitat can result from:

- property development;
- linear infrastructure such as roads, railways and powerlines;
- agricultural development in inland regions;
- some logging regimes; and
- regular fuel reduction burning.⁴

1 See for example Associate Professor Clive McAlpine, Spokesperson, Koala Research Network, *Committee Hansard*, 3 May 2011, p. 2; and Professor Frank Carrick AM, Private capacity, *Committee Hansard*, 1 August 2011, p. 6.

2 Australian Koala Foundation, *Submission 25*, p. 6.

3 Natural Resource Management Ministerial Council, *National Koala Conservation and Management Strategy 2009–2014*, Department of Environment, Heritage and the Arts, Canberra, 2009, p. 19, www.environment.gov.au/biodiversity/publications/koala-strategy/pubs/koala-strategy.pdf (accessed 30 June 2011).

3.4 The committee received much evidence concerning the loss of koala habitat due to urban development and forestry practices. Concerns were also raised over the impact of mining on koala populations west of the Great Dividing Range in Queensland. Additional threats to koala habitat included environmental factors such as drought, bushfires and climate change. Accordingly, this chapter discusses the following issues:

- urban development;
- forestry;
- mining; and
- drought, bushfires and climate change.

3.5 Other threats to koalas, such as disease, dog predation and car strikes are discussed in chapter 4.

Urban development

3.6 Koala habitat encompasses more than one million square kilometres of eastern Australia, occurring in large part in coastal areas.⁵ Much of the koala's natural range is also highly utilised, developed and modified by and for the expanding human population. The species' range includes approximately 300 local government areas (LGAs) and 30 catchment management authorities.⁶ It was recognised by the Koala Action Group that:

The koala had the disadvantage of having preferred habitat and being most numerous in the areas that were highly sought after for human settlement...⁷

3.7 Population growth, particularly in the south east corner of Queensland, is requiring further development and infrastructure projects which have the potential to impact on koala habitat. The Australian Bureau of Statistics indicates that the three most populous local government areas in Australia are located in south east Queensland: Brisbane, Gold Coast and Moreton Bay.⁸ These LGAs also had three of

4 Natural Resource Management Ministerial Council, *National Koala Conservation and Management Strategy 2009–2014*, Department of Environment, Heritage and the Arts, Canberra, 2009, p. 19.

5 Australian Koala Foundation, *Submission 25*, p. 6.

6 Natural Resource Management Ministerial Council, *National Koala Conservation and Management Strategy 2009–2014*, Department of Environment, Heritage and the Arts, Canberra, 2009, p. 18.

7 Koala Action Group Queensland, *Submission 17*, p. 3.

8 Australian Bureau of Statistics (ABS), *3218.0 Regional Population Growth Australia 2009–10*, ABS, Canberra, 31 March 2011, www.abs.gov.au/AUSSTATS/abs@.nsf/Latestproducts/3218.0Main%20Features62009-10?opendocument&tabname=Summary&prodno=3218.0&issue=2009-10&num=&view= (accessed 28 July 2011).

the four largest increases in population in Australia between June 2009 and June 2010.⁹ South east Queensland is also home to one of the largest natural koala populations in the wild and has the greatest densities of koalas in the state.¹⁰

3.8 The *National Koala Conservation and Management Strategy 2009–2014* identified habitat loss and fragmentation in areas of high development as the 'primary threat to koalas', particularly in the south east corner of Queensland.¹¹

Impact of development on koala populations

3.9 Urban development can have a significant impact on koala habitat through the loss of food trees, fragmentation of home ranges and the severance of movement corridors.¹² Development may impact on previously untouched koala habitat occurring on urban fringes or by removing remnant koala food and shelter trees existing in built-up areas.

3.10 The fragmentation and removal of koala habitat may also occur outside of the urban environment with small rural holdings subject to subdivision and associated clearing of trees for roads, fences, stock corridors and powerlines.¹³

3.11 In urban areas koalas have traditionally utilised and moved between parks, suburban bushland, creek areas and gardens to reach food.¹⁴ The University of Queensland Koala Ecology Group identified these urban environments as an important part of koala habitat.¹⁵

3.12 The removal of trees from gardens and the thinning of bushland may fragment this habitat and cause large gaps to open up in previously maintained koala corridors. Individual trees often form part of a longer chain of trees to additional koala habitat further away. According to the Koala Action Group Queensland, the removal of even one tree can break a chain making it difficult for koalas to visit the next link.¹⁶ Similarly, the Humane Society International submitted that:

9 Australian Bureau of Statistics (ABS), *3218.0 Regional Population Growth Australia, 2009–10*, ABS, Canberra, 31 March 2011.

10 Department of Environment and Resource Management, Queensland Government, *Submission 79*, p. 2.

11 Natural Resource Management Ministerial Council, *National Koala Conservation and Management Strategy 2009–2014*, Department of Environment, Heritage and the Arts, Canberra, 2009, p. 23.

12 Wildlife Preservation Society of Queensland, *Submission 15*, p. 5.

13 Mr Robert Summers, *Submission 19*, p. 2.

14 Ms Margaret Hardy, *Submission 3*, p. 1.

15 University of Queensland Koala Ecology Group, *Submission 42*, p. 7.

16 Koala Action Group Queensland, *Submission 17*, p. 4.

Koalas have highly specific habitat requirements and are particularly sensitive to changes and disruptions to their surrounding habitat. Their limited movement capability means that they are unable, or reluctant, to cross gaps in vegetation and move within or among fragmented habitats.¹⁷

3.13 Urban development may also present additional barriers for koalas such as the erection of concrete walls, solid-paling timber fences or Colorbond sheeting for privacy and the reduction of traffic noise.¹⁸ Such barriers to movement limit dispersal routes for koalas and force them into contact with vehicles and dogs.¹⁹

3.14 Additionally, those animals that are displaced by clearing in urban areas may move into nearby parks and reserves already supporting a residential koala population. Koala Action Pine Rivers stated that:

...competition for the remaining resources of food and shelter then takes place stressing the new comers and residential [koala] population alike'.²⁰

3.15 The committee also received evidence from koala shelters of a significant number of displaced animals that are taken into care each year.²¹

3.16 Urban development and associated operational works may also cause direct injuries or death to koalas.²²

3.17 It has been suggested that a loss of habitat may stress koalas and impact on their ability to recover from disease (see Chapter 4: Other threats).

3.18 The Property Council of Australia submitted to the committee that the property industry has in fact created developments that enhance and protect high-value koala habitat.²³ The council put forward the example of Koala Beach, a 365 hectare koala-friendly development on the north coast of New South Wales. To protect the resident koala population, and other important wildlife, a number of development initiatives were created and enforced, including:

- the prohibition of cats and dogs from the estate;
- the inclusion of speed humps near known koala home ranges;

17 Humane Society International, *Submission 26*, p. 3.

18 See: Ms Margaret Hardy, *Submission 3*, p. 1; and Port Stephens Comprehensive Koala Plan of Management Steering Committee, *Submission 38*, pp 5–6.

19 Port Stephens Comprehensive Koala Plan of Management Steering Committee, *Submission 38*, pp 5–6.

20 Koala Action Pine Rivers, *Submission 41*, p. 3.

21 See: Name withheld *Submission 20*, p. 2; and Ms Paulette Oldfield, *Submission 64*, p. 4.

22 Ms Carolyn Beaton, *Submission 32*, p. 2.

23 Property Council of Australia, answer to question on notice, 19 May 2011, p. 1.

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- a requirement that fencing be koala-friendly to allow uninhibited access to the estate;
 - the requirement that no koala food tree be removed for development purposes; and
 - the establishment of a Wildlife and Habitat Management Committee funded from an environment levy paid by rate payers.²⁴

Habitat mapping

3.19 It was suggested by community groups, research organisations and development industry bodies that accurate habitat mapping is required to identify areas of key koala habitat. This mapping would form the basis for planning and management decisions regarding urban development in habitat areas.

3.20 Ms Deborah Tabart, Chief Executive Officer of the Australian Koala Foundation told the committee that:

What I would like to table with this committee is that the vegetation data of Australia is appalling...if you are going to find out where koalas are you have to know where their habitat is, and you can only do that with good vegetation data. I think the Australian government in general has no understanding of how important mapping is and how good mapping needs to be done.²⁵

3.21 The Urban Development Institute of Australia (Queensland) (UDIA) similarly called for comprehensive mapping of habitat to be undertaken:

Mapping process based on thorough scientific analysis be undertaken which identifies a robust network of ecological reserves and corridors which are intended to provide the ecological function/foundation for maintained and improved biodiversity outcomes over future generations.²⁶

3.22 Evidence already exists of tree species preferred by koalas, however much of this information is not aligned with surveying to ensure that all areas of koala habitat have been examined and classified accordingly. The UDIA suggested that more scientific mapping of habitat needs to be undertaken:

This mapping could be comprehensively ground-truthed and allow for updates and amendments over time to address errors or when more detailed ground-truthed data and scientific analysis is available. Such mapping could identify core habitats and corridors as well as supplementary habitats to provide the organising basis for optimising protection, acquisition and rehabilitation efforts, including strategic location of biodiversity offset

24 Property Council of Australia, answer to question on notice, 19 May 2011, p. 1.

25 Ms Deborah Tabart OAM, Chief Executive Officer, Australian Koala Foundation, *Committee Hansard*, 3 May 2011, p. 21.

26 Urban Development Institute of Australia (Queensland), *Submission 52*, p. 3.

rehabilitation programs and planting undertaken for carbon bio-sequestration programs.²⁷

3.23 The committee was informed that ideal mapping would show the abundance and distribution of koala habitat across eastern Australia.²⁸ Friends of the Koala argued that it is important that the size of the habitat is known as well as the degree of connectivity that the area has with other koala habitat.²⁹

3.24 It was suggested by community organisations that any vegetation that could be associated with koalas is recorded.³⁰ For example paddock trees and planted windbreaks that allow koalas to keep off the ground and move across the landscape should be included in mapping.

3.25 The UDIA disagreed with the categorising and mapping of such a broad sweep of the landscape stating that:

...further investigation should be made of the broader landscape matrix to ensure that larger core bushland habitat areas are protected and embellished as a high priority, consistent with landscape ecology principles. This would take precedence over seeking to maintain small and less viable habitat links/patches across the region and adjacent areas, dependent on the broader landscape context and the level of threats to koalas in areas that adjoin connecting habitat.³¹

3.26 The Australian Koala Foundation's Koala Habitat Atlas (KHA) was identified as being one example of published habitat mapping.³² According to the AKF, 335 000 square kilometres of habitat in New South Wales, Queensland and Victoria has been mapped representing just 21 per cent of the koalas range.³³ According to the foundation:

The Koala Habitat Atlas relies on accurate vegetation mapping which clearly identifies the percentages of Primary and Secondary food trees within each distinctive forest or woodland community. This information is not included in any mapping carried out by State or Federal agencies...³⁴

27 Urban Development Institute of Australia (Queensland), *Submission 52*, p. 3.

28 Friends of the Koala, *Submission 58*, pp 2–3.

29 Friends of the Koala, *Submission 58*, pp 2–3.

30 Friends of the Koala, *Submission 58*, pp 2–3.

31 Urban Development Institute of Australia (Queensland), *Submission 52*, p. 3.

32 For an overview of the Koala Habitat Atlas see chapter 2.

33 Australian Koala Foundation, *Submission 25*, p. 7.

34 Australian Koala Foundation, *Submission 25*, p. 7.

3.27 The lack of understanding and mapping of habitat across the koala's range was concerning for many submitters.³⁵

Planning and regulation

3.28 Many submitters voiced their concern that poor development and planning regulation were responsible for the destruction of key koala habitat in urban areas.³⁶ For example, the Australian Koala Foundation stated that the destruction of koala habitat has arisen from a 'lack of understanding and inadequate planning'.³⁷

3.29 The Koala Action Group Queensland was concerned that it is currently too easy for developers to avoid regulations and that state planning policies are easily able to be overridden.³⁸

3.30 The committee received evidence from a submitter, who wished to have their name withheld, regarding the inadequacies of current planning regulation to protect urban koala habitat. The submitter spent two years as a self-represented appellant in the Queensland Environment and Planning Court appealing a decision by the Brisbane City Council to approve a subdivision of one block into twelve blocks. The submitter stated:

Our particular concern with this approval related to the failure by the local (Brisbane City Council) and the Queensland Government (Department of Planning and Infrastructure) to ensure the Developer complied with careful design measures to protect the koalas and their habitat. Brisbane City Council approved the developer's application for subdivision without a detailed ecological assessment and without a detailed vegetation plan. Further measures are necessary within our State and Local planning systems to ensure land clearing approval processes protect the koala and its habitat.³⁹

3.31 The submitter summarised that:

There is no clear accountability or responsibility in our local and state government systems for ensuring systematic and ecologically friendly development happens in suburban areas where koalas, their habitat and wildlife corridors are present...⁴⁰

35 For example see: Koala Research Network, *Submission 29*, p. 4; Australian Koala Foundation, *Submission 25*, p. 8; and Sunshine Coast Environmental Council, *Submission 65*, p. 4.

36 For example see: Ms Margaret Hardy, *Submission 3*, p. 1; Koala Action Group Queensland, *Submission 17*, p. 4; Australian Koala Foundation, *Submission 25*, p. 8; Koala Action Pine Rivers, *Submission 41*, p. 3; Friends of the Koala, *Submission 58*, pp 2–3; and Sunshine Coast Environmental Council, *Submission 65*, p. 4.

37 Australian Koala Foundation, *Submission 25*, p. 10.

38 Kola Action Group Queensland, *Submission 17*, p. 6.

39 Name withheld, *Submission 33*, p. 1.

40 Name withheld, *Submission 33*, p. 2.

3.32 Concerns were also raised over the ability of state koala planning regulation to be overridden by other planning decisions.⁴¹ For example, submitters highlighted the ability for areas identified as Koala Conservation Areas in south-east Queensland under the state koala planning policy to be overridden by other state planning policies identifying key resource areas (such as mining and quarrying).⁴² Additional concerns were raised over the ability of koala habitat areas to be re-zoned for industrial use.⁴³

3.33 Property and development industry peak bodies informed the committee that there is already adequate planning regulation at a state and local level for the protection of the koala and its habitat.⁴⁴

3.34 It was argued by these peak bodies that any additional regulation of planning and development would have the effect of extending development timeframes and impact on the ability of industry to deliver affordable and sustainable communities to Australians.⁴⁵

3.35 The Property Council of Australia informed the committee that any future regulation of planning and development at the Commonwealth level would 'amount to increased overregulation and create inefficiencies in the nation's planning framework'.⁴⁶

3.36 Similarly the UDIA argued that:

Given the significant investment in both time and money in the planning, marketing and delivery (including infrastructure delivery) that the development industry, relevant local governments and State agencies have already invested in many projects across South-East Queensland (and other areas of Australia), any new requirement for an additional layer of environmental assessment at the Commonwealth level would be unreasonable for existing developments which have been identified as necessary to meet the urban development needs of the region...⁴⁷

3.37 If further regulation of koala habitat were to occur the Property Council believed that compensation of land owners and developers would be required:

41 For example see: Koala Action Group Queensland, *Submission 17*, p. 4; Mr Robert Summers, *Submission 19*, p. 2; and Mr Rod McKelvey, *Submission 16*, pp 1–2; Name withheld, *Submission 31*, pp 1–2; Ms Paulette Oldfield, *Submission 64*, p. 1; Fair Go Committee, *Submission 68*, pp 1–3; and Name withheld, *Submission 81*, pp 1–7.

42 For example see: Name withheld, *Submission 31*, pp 1–2; and Name withheld, *Submission 81*, pp 1–7.

43 Fair Go Committee, *Submission 68*, pp 1–3.

44 See: Property Council of Australia, *Submission 39*, p. 5; and Urban Development Industry of Australia (Queensland), *Submission 52*, p. 1.

45 Property Council of Australia, *Submission 39*, p. 5.

46 Property Council of Australia, *Submission 39*, p. 5.

47 Urban Development Industry of Australia (Queensland), *Submission 52*, p. 4.

If further regulation is seen as the appropriate mechanism, it needs to protect and not interfere with existing land use entitlements and development rights, whether or not further development approvals are required. It is unacceptable for existing land use entitlements and development rights to be eroded without just compensation.⁴⁸

3.38 The UDIA supported the call for 'fair and appropriate' compensation, stating:

...if there are existing property rights taken away as a result of the legislation [to protect the koala] there can be no issue from the developer if there is a level of fair and appropriate compensation.⁴⁹

3.39 In contrast to this view, Redland City Council submitted research indicating that the property value that is derived from living next to koala habitat is approximately \$29 600 and the ability to view a koala is valued at another \$3100.⁵⁰

3.40 The Property Council argued that completely halting development in key koala habitat areas is draconian and an ineffectual method of creating sustainable development:

Prohibition has a number of unintended consequences, including land degradation, unintegrated land uses and poorly planned communities. Prohibitions have the effect of sterilising and devaluing large areas of land, with no compensation being made available to land owners for loss of existing rights and entitlements.⁵¹

Habitat offsets

3.41 Habitat offsets occur when parcels of land are purchased, and if required rehabilitated, to ensure that there is no net loss of koala habitat. The use of habitat offsets as a method of continuing development in areas of key koala habitat was a contentious issue with submitters.

3.42 Some wildlife organisations, such as the Wildlife Preservation Society of Queensland, believed that offsets are not a suitable method of conservation.⁵² In areas of high development, habitat offsets were seen to be ineffectual as there is very little suitable habitat remaining to act as an offset.⁵³ The Sunshine Coast Environmental Council stated that in areas of high development, 'the opportunity for "like for like or

48 Property Council of Australia, *Submission 39*, p. 5.

49 Mr Brian Stewart, Chief Executive Officer and General Counsel, Urban Development Industry of Australia (Queensland), *Committee Hansard*, 3 May 2011, p. 45.

50 Redland City Council, *Submission 46*, p. 4.

51 Property Council of Australia, *Submission 39*, p. 5.

52 Wildlife Preservation Society of Queensland, *Submission 15*, p. 8.

53 Wildlife Preservation Society of Queensland, *Submission 15*, p. 8.

better" offset parcels or compensatory habitat decreases'.⁵⁴ Accordingly, this may increase the chance of koala populations becoming locally extinct.⁵⁵

3.43 Concerns were also raised over the possible lag time between the development of the key koala habitat and the maturing of vegetation in a rehabilitated parcel of land used as an offset. The Sunshine Coast Environment Council submitted that:

Offset requirements offer little in the way of habitat values with the abrupt loss of mature trees and reinstatement taking decades. In the interim, the resilience of native fauna such as the koala is sorely tested. Displacement, forced behavioural change and the ability to manage within disturbed and highly modified landscapes puts the koala under incredible stress.⁵⁶

3.44 It was the opinion of some environmental groups that habitat offsets should only be used as a method of last resort.⁵⁷

3.45 The development and property industries stated that habitat offsets are one method of allowing sustainable development.⁵⁸ The UDIA stated that:

Given the importance of connectivity between habitat patches for koala populations, habitat and land acquisition, along with managed connections is paramount to the sustainable conservation of the species. Therefore, any decision-making in relation to the Koala at the Commonwealth level should allow for offsets that include the opportunity for contributions to an initiative such as Ecofund to ensure the best areas of koala habitat and connectivity can be acquired and protected.⁵⁹

3.46 The Property Council of Australia stated that certainty is required in the drafting of habitat offset provisions and that the ratio of cleared land to re-vegetated land 'needs to be commensurate'.⁶⁰

Habitat acquisition and rehabilitation programs

3.47 Closely related to habitat offsets is the topic of habitat acquisition programs. These involve government-funded acquisitions of existing koala habitat without that area being used to offset a new land use.

54 Sunshine Coast Environment Council, *Submission 65*, p. 6.

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57 For example Sunshine Coast Environment Council, *Submission 65*, p. 6.

58 See: Property Council of Australia, *Submission 39*, p. 6; and Urban Development Industry of Australia (Queensland), *Submission 52*, pp 2–4.

59 Urban Development Industry of Australia (Queensland), *Submission 52*, p. 4.

60 Property Council of Australia, *Submission 39*, p. 6.

3.48 One notable koala habitat acquisition program is the Queensland government's *Koala Habitat Acquisition and Rehabilitation Program*—a \$48 million program to protect and rehabilitate land in South East Queensland for koala habitat. In 2010, 135 hectares of koala habitat were purchased including the expansion of Daisy Hill Conservation Park in the Koala Coast by 30 per cent.⁶¹

3.49 Another example is in the Redland City Council area where the council purchases land in urban areas for the protection of koala habitat. The council stated that since 1993 over 800 hectares of land has been purchased, with a recent focus on purchases of koala habitat.⁶² The council is currently achieving over 5 hectares of revegetation of koala habitat, and planting over 8000 koala food trees per annum.⁶³

3.50 Professor Frank Carrick also highlighted for the committee the recent successes in re-establishing koala habitat on rehabilitated mine sites:

We know that 'build it and they will come' actually works, because we have been monitoring what happens with mine site rehabilitation both in Central Queensland and on North Stradbroke Island. The rehabilitated mining areas now have koalas in them...⁶⁴

3.51 Professor Carrick also informed the committee of the habitat restoration work that has been carried out in Gunnedah, NSW:

Gunnedah tells us two things. It tells us that, if you do restore habitat of the koala populations—they have problems with dogs, cars and disease in Gunnedah as well—the sum is positive. More koala babies get born and survive than get chomped by dogs, hit by cars or die from disease if we put the habitat back, as long as we do not push the population to unrecoverable levels where there are just not enough koalas to be able to respond.

Voluntary private agreements

3.52 As well as promoting the direct purchase of koala habitat, the Redland City Council promotes private citizens to sign-up to voluntary koala conservation agreements:

'This has been undertaken through the creation of the Koala Conservation Agreement Program; this is an extension program where residents with properties larger [than] 1000m² get advice and funding to carry out replanting, weeding, construct fauna friendly fences and build dog enclosures.⁶⁵

61 Department of Environment and Resource Management on behalf of the Queensland Government, *Submission 79*, p. 10.

62 Redland City Council, *Submission 46*, p. 3.

63 Redland City Council, *Submission 46*, p. 3.

64 Professor Frank Carrick AM, Private capacity, *Committee Hansard*, 1 August 2011, p. 7.

65 Redland City Council, *Submission 46*, p. 3.

Government-owned land

3.53 The committee received several suggestions about the protection of koala populations on government-owned land (outside publicly-owned forestry areas which is discussed below). For example the Redland City Council submitted:

An immediate action could be the investigation of land parcels owned and managed by all tiers of government to investigate opportunities for the protection and enhancement of habitat. An example of this would be that the Federal Government currently owns 98ha of land in the suburb of Birkdale which contains large areas of koala habitat. Council has written to the relevant departments seeking opportunity for these parcels to be transferred to, or purchased by Council for the protection and management of koala habitat.⁶⁶

3.54 Along similar lines, Professor Carrick suggested that opportunities should be explored with the proposed sale of 'surplus' defence land. Professor Carrick submitted that the Australian Defence Force 'has some of the best biodiversity left in Australia' and that '[t]he Commonwealth must not be allowed to dispose of such assets without assessing and protecting biodiversity (particularly Koala habitat) values.'⁶⁷

Forestry

3.55 The logging of native forests was raised by many submitters as being a significant threatening process for koalas.⁶⁸ The loss of food trees, destruction of home ranges and death or injury from the felling of trees were seen as threats to the survival of forest-dwelling koala populations.

3.56 In particular the committee received examples of the impact of logging on koala populations on the south coast of New South Wales and in the Strzelecki forest in the Gippsland region of Victoria which are discussed below.

3.57 Submitters were also concerned about the apparent lack of monitoring of forestry operations, the planning and approval process for the logging of state forests and the exclusion of forestry activities undertaken in accordance with a Regional Forest Agreement (RFA) from the approvals and enforcement provisions of the *Environment Protection and Biodiversity Conservation Act 1999*.

3.58 This section considers each of these items in turn.

66 Redland City Council, *Submission 46*, p. 4.

67 Professor Frank Carrick AM, *Submission 86*, p. 24.

68 See: Ms Cassandra Primavera, *Submission 10*, p. 1; Mr Lincoln Young, *Submission 11*, p. 1; Ms Vivienne Jones, *Submission 12*, p. 1; Mr Robert Summers, *Submission 19*, p. 2; Name withheld, *Submission 20*, p. 1; Koala Research Network, *Submission 29*, p. 3; Mr Chris Allen, *Submission 35*, p. 18; Friends of the Earth Melbourne, *Submission 50*, p. 1; Dr Vanessa Standing, *Submission 60*, pp 3–4; Conservation Council ACT Region, *Submission 61*, p. 7; Name withheld, *Submission 83*, p. 1; and Dr Bronte Somerset, *Submission 96*, p. 1.

Impacts of forestry on koala habitat

3.59 Many submitters drew the committee's attention to the impact of logging native forests on koala populations which was stated to be degrading koala habitat, including the loss of koala food trees and the disruption caused to their home ranges. For example the Conservation Council ACT Region stated that:

Industrial level logging causes great destruction of forest habitat and it is unlikely that many koalas would survive in logging coupes. The level of logging activity is also likely to have some impact upon any koalas in adjacent unlogged coupes, through noise and human presence.⁶⁹

3.60 In addition to the direct impact of loss of food trees, the logging of koala habitat in native forests may cause fragmentation of koala home ranges and disruptions to migration and breeding corridors.⁷⁰ Other associated impacts of forestry operations may be the loss and compaction of topsoil, the reduction in species diversity and structural complexity, and an increased fire hazard associated with the drying out of the forest floor.⁷¹

3.61 The committee also received evidence of koalas being directly killed by the felling of trees and logging trucks.⁷²

3.62 In its 2010 listing advice to the minister, the Threatened Species Scientific Committee found that the level of impact depended on the type of logging regime:

Koala habitat may also be lost due to logging, however the effect at the population level is a function of the management regime. For example, while clear felling will remove habitat, koalas may persist in selectively-logged forests (Kavanagh et al. 1995; Kavanagh et al. 2007). Thus the level of threat posed by logging is situation-specific and is determined by the appropriateness of the management regime, and adherence to its prescriptions. Koalas have also been recorded to have established home ranges within revegetated eucalypt woodlands.⁷³

69 Conservation Council ACT Region, *Submission 61*, p. 7.

70 Mr Robert Summers, *Submission 19*, p. 2.

71 Mr Chris Allen, *Submission 35*, p. 18.

72 See: Name withheld, *Submission 20*, p. 1; and Australian Koala Foundation, *Submission 25*, p. 10.

73 Threatened Species Scientific Committee, *Advice to the Minister for Environment, Protection, Heritage and the Arts from the Threatened Species Scientific Committee (the Committee) on Amendment to the list of Threatened Species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, September 2010, p. 11, www.environment.gov.au/biodiversity/threatened/species/pubs/koala-listing-advice.pdf (accessed 12 July 2011).

3.63 The *National Koala Conservation and Management Strategy 2009–2014* also recognised the point that 'some logging regimes' cause the degradation of koala habitat.⁷⁴

3.64 The National Association of Forest Industries (NAFI) (now known as the Australian Forest Products Association) responded to the above criticisms by stating that the industry is committed to constructively working with stakeholders 'to improve the health and status of Australia's koala population'.⁷⁵ The forest industry was keen to point out that sustainable forest harvesting practices, such as the renewable harvest and regeneration of forest for timber, should not be confused with habitat loss and fragmentation through land clearing.⁷⁶

3.65 NAFI highlighted that Australia has 147.7 million hectares of native forest with 23 million hectares in conservation reserves and 9.4 million hectares in public forests where timber harvesting may be permitted subject to environmental regulation.⁷⁷ A further 2 million hectares of Australia's native forests are plantation timbers. According to NAFI:

The sustainable harvesting of forests represents less than one per cent annually of the forest estate potentially available for wood production in any one year (in all states and territories) and may enhance the habitat for a range of species through the provision of a diversity of mixed age classes, forest structure and food resources across the landscape.⁷⁸

3.66 The committee was informed that under current forestry guidelines, forests are harvested and replanted in small patches to maintain a mosaic ecosystem.⁷⁹ Areas where it has been identified koalas are inhabiting are retained and corridors between those trees are created.⁸⁰

3.67 NAFI also explained that 'where there is evidence of the presence of koalas in areas nominated for harvest through pre-harvest koala surveys, there are requirements for the setting aside of additional minimum exclusion zones for their individual

74 Natural Resource Management Ministerial Council, *National Koala Conservation and Management Strategy 2009–2014*, Department of Environment, Heritage and the Arts, Canberra, 2009, p. 19.

75 National Association of Forest Industries, *Submission 56*, p. 8.

76 National Association of Forest Industries, *Submission 56*, p. 8.

77 National Association of Forest Industries, *Submission 56*, p. 2.

78 National Association of Forest Industries, *Submission 56*, p. 2.

79 Mr Allan Hansard, Transitional Chief Executive, Australian Forest Products Association, *Committee Hansard*, 19 May 2011, p. 53.

80 Mr Mick Stephens, Manager, Strategic Policy, Australian Forest Products Association, *Committee Hansard*, 19 May 2011, p. 55.

protection.⁸¹ Forests NSW's regional ecologist, Mr Peter Kambouris, explained that the exclusion zone for the Eden region is 50 metres.⁸²

3.68 The peak forestry body told that committee that whilst it is unlikely that timber harvesting is taking place in koala habitat of sufficient quality to be a concern to its long term survival, it is 'not to say that koalas do not occur from time to time in areas scheduled for harvest, given their ability to feed on a range of eucalypt species'.⁸³

3.69 NAFI submitted to the committee that forestry operations may have a positive impact on native forests through fuel reduction, vegetation thinning and related activities such as maintenance of access trails and fire breaks.⁸⁴

3.70 Forests NSW provided published forestry research which details the koala's preference for logged coupes:

On the north coast, koalas are significantly associated with heavily logged areas, with a 22 per cent detection rate, rather than unlogged or selectively logged areas, which have a five per cent detection rate...Studies at Eden showed that koalas preferentially use logged coupes in logged/unlogged mosaics and that koalas were found in the same coupes before and after logging.⁸⁵

3.71 Along a similar vein, NAFI representatives informed the committee of scientific research which was said to demonstrate the koala's preference for young trees, implying that:

Koalas obviously like variability, as do other species, in relation to age of forests. What forestry can do through its practices is create a situation where you have a varied-age forest and therefore koalas can appropriately source younger trees with younger leaves—which we hear from the scientists that they prefer—and also have older trees in the forest to have as

81 Australian Forest Products Association (formerly National Association of Forest Industries), Answer to a question taken on notice, 19 May 2011, p. 4.

82 Mr Peter Kambouris, Regional Ecologist, Southern, Forests NSW, *Committee Hansard*, 1 August 2011, p. 43.

83 Australian Forest Products Association (formerly National Association of Forest Industries), Answer to a question taken on notice, 19 May 2011, p. 4.

84 See: National Association of Forest Industries, *Submission 56*, p. 3; and Australian Forest Products Association (formerly National Association of Forest Industries), Additional information on fuel reduction burning, pp 11–15.

85 Mr James Stirling, Manager, Planning and Environment, Native Forests Operations, Forests NSW, *Committee Hansard*, 1 August 2011, p. 37. See also Forests NSW response to questions on notice at: www.aph.gov.au/senate/committee/ec_ctte/koalas/submissions.htm.

their habitat shelters and things like that. So we are providing a more diverse range of habitat than a single-age forest would.⁸⁶

Logging in specific koala habitats – Mumbulla and Strzelecki

3.72 Concerns over the impact of logging on key koala habitat were highlighted in the example of Mumbulla State Forest on the far south coast of New South Wales. Mr John Hibberd of the Conservation Council ACT Region Inc, told the committee that the Mumbulla State Forest koala population 'is the last vestige of the once great koala populations that ran throughout the Bega Valley' and that '[i]ntensive logging in Mumbulla State Forest is absolutely imminent any day.'⁸⁷

3.73 According to Mr Chris Allen, a NSW government expert on koala conservation and who appeared in a private capacity, the forest is home to a population of approximately 21 to 42 koalas and is the only koala community persisting in the Eden region.⁸⁸ The area that the koalas inhabit is committed to the forest industry under a Regional Forest Agreement with approximately 40 000 cubic metres of saw logs to be felled.⁸⁹ Mr Allen told the committee that 'anything less than a substantial reduction in the extent of logging activity in that area will almost certainly make that [koala] population go extinct'.⁹⁰

3.74 Mr Hibberd told the committee that in his view the reason that the logging of the Mumbulla State Forest was proceeding was because of the:

...interagency conflict that exists between Forests New South Wales and the Office of Environment and Heritage in New South Wales. There is a draft Koala Management Framework that was produced in 2008, I believe, which tried to lay down some prescriptions for how we deal with this particular issue. As I said in my submission, this has now sunk without trace into the bureaucracy. The local community has been totally frozen out of any consultation in this process. We have no idea where those negotiations are at, except that we have heard informally that they continually break down because the environment department and the forestry department cannot agree on an effective koala management strategy for Mumbulla State Forest.⁹¹

86 Mr Allan Hansard, Transitional Chief Executive, Australian Forest Products Association (formerly National Association of Forest Industries), *Committee Hansard*, 19 May 2011, p. 58. Despite undertaking to do so, NAFI did not provide this research to the committee.

87 Mr John Hibberd, Executive Director, Conservation Council ACT Region Inc, *Committee Hansard*, 19 May 2011, p. 30.

88 Mr Chris Allen, *Submission 35*, p. 13.

89 Mr Chris Allen, Private capacity, *Committee Hansard*, 19 May 2011, p. 16.

90 Mr Chris Allen, Private capacity, *Committee Hansard*, 19 May 2011, p. 16.

91 Mr John Hibberd, Executive Director, Conservation Council ACT Region Inc, *Committee Hansard*, 19 May 2011, p. 32.

3.75 Forests NSW's regional ecologist, Mr Peter Kambouris, informed the committee that although there 'are koalas scattered throughout the park and forest estate in that region' in the areas of the Mumbulla State Forest where Forests NSW have conducted preharvest surveys there were no signs of koalas found. Mr Kambouris explain that 'it is because the areas earmarked for logging have been spotted gum, and that does not appear to be a preferred browse species for koala in that vicinity.'⁹²

3.76 The Strzelecki ranges in South Gippsland, Victoria was another area where concerns were raised about forestry activities within or near koala habitat. The Strzelecki koala population is unique to the koalas of Victoria as it is the only grouping that has not been translocated from the depauperate stock of French Island or Phillip Island. The committee heard that a soon to be published study found that Strzelecki koalas exhibit a much higher genetic diversity than other Victorian koalas; one that is comparable to the highest levels of genetic diversity in any koala population reported so far in Australia.⁹³ The present number of Strzelecki koalas is unknown.⁹⁴

3.77 In particular, concerns were raised about the impact of post-harvest replanting and regeneration of Strzelecki forest areas. There were claims that logged koala food trees were not being replanted with the same species.⁹⁵ Friends of the Earth Melbourne claimed that in the Strzelecki Ranges the popular koala food tree Mountain Ash has been logged and replaced with Shining Gum which is not endemic to the region nor a koala food tree leading to a 'massive conversion in the area from koala feed to non-koala feed'.⁹⁶

3.78 Hancock Victorian Plantations manages both the plantation (including both radiata pine and native species plantations) and native forested areas that cover the Strzelecki area. The company's CEO, Miss Linda Sewell, explained the company's approach to managing its impact on koalas within its estate:

It is a proactive approach. In formal terms it comprises five elements: monitoring, operating standards, research, recovery and enhancement. There are a range of initiatives within each of these five elements that have been detailed to the commission previously. We have spent years mapping our estate, and this knowledge has enabled us to identify prime koala

92 Mr Peter Kambouris, Regional Ecologist, Southern, Forests NSW, *Committee Hansard*, 1 August 2011, p. 40.

93 Mr Anthony Amis, Land Use Researcher, Friends of the Earth Melbourne, *Committee Hansard*, 1 August 2011, p. 8.

94 Mr Anthony Amis, Land Use Researcher, Friends of the Earth Melbourne, *Committee Hansard*, 1 August 2011, p. 9.

95 See Ms Vivienne Jones, *Submission 12*, p. 1; and Friends of the Earth Melbourne, *Submission 50*, p. 1.

96 Friends of the Earth Melbourne, *Submission 50*, p. 1; and Mr Anthony Amis, Land Use Researcher, Friends of the Earth Melbourne, *Committee Hansard*, 1 August 2011, p. 10.

habitat, which, together with expert guidance, allows us to manage our operations accordingly. Our research program includes a partnership with Monash University to improve knowledge of the health and genetic diversity of the koala population. We train our field staff and contractors on the company's operating standards for the management and protection of koalas. On the ground, we are working with local groups on a number of cooperative projects that enhance the quality of the koala habitat. That work takes place on both HVP land and on adjacent land.⁹⁷

3.79 The committee questioned Hancock Victorian Plantations on its training program for logging machinery operators. Miss Sewell told the committee that of the company's total staffing numbers of about 100, six employees work specifically on environmental issues, and with machinery operators having 'a level of training in environmental matters'.⁹⁸

3.80 Miss Sewell also detailed the company's 'koalas operating standard' which guides on-the-ground harvesting activities:

We have developed a koala operating standard, which dictates our planning and operations around the areas that are viewed as being koala habitat. For example, we go in and have a look immediately prior to the logging to determine whether there are koalas in that plantation at that particular time. If there are, we withdraw from that area until such time as they have passed through it.⁹⁹

3.81 The importance of migration corridors was also raised by supporters of the Strzelecki koalas. For example, Mr Amis of Friends of the Earth Melbourne told the committee:

It is essential that logging plans incorporate measures to maintain koala gene flow between populations in logging areas...Such measures need to include substantial migration corridors. Previous studies indicate that a variety of landscape features can present barriers to koala gene flow in the Sydney region and therefore that the corridors will need to take into account the presence of roads or housing and contain preferred koala habitat.¹⁰⁰

97 Miss Linda Sewell, Chief Executive Officer, Hancock Victorian Plantations, *Committee Hansard*, 1 August 2011, p. 18.

98 Miss Linda Sewell, Chief Executive Officer, Hancock Victorian Plantations, *Committee Hansard*, 1 August 2011, p. 19.

99 Miss Linda Sewell, Chief Executive Officer, Hancock Victorian Plantations, *Committee Hansard*, 1 August 2011, p. 21. Ms Sewell agreed to table a non-confidential version of the operating standard which can be found at: www.aph.gov.au/senate/committee/ec_ctte/koalas/submissions.htm.

100 Mr Anthony Amis, Land Use Researcher, Friends of the Earth, *Committee Hansard*, 1 August 2011, p. 37.

3.82 Miss Sewell informed the committee that if wildlife corridors exist in forests classified as 'plantations' then those areas are available for commercial use and are not protected.¹⁰¹

Regulation of forestry activities

3.83 Several submitters raised the issue of the approval process for logging in areas of key koala habitat. The industry indicated that forestry operations in Australian forests are well regulated through conservation assessments such as:

- the national forest policy framework established under the 1992 National Forest Policy Statement;
- state level sustainable forest management systems; and
- Regional Forest Assessments which require:
 - the establishment of comprehensive, adequate and representative (CAR) forest reserve systems;
 - pre-harvesting flora and fauna surveys and the creation exclusion zones if evidence of koalas is found in areas intended for harvest;
 - the use of environmental management systems by forest agencies that are certified to international standards; and
 - regulatory codes of practice for the retention of identified habitat (such as tree ferns) in coupe where timber harvesting takes place.¹⁰²

3.84 Forests NSW informed the committee of the regulatory framework it operates under:

Apart from the Forestry Act, the main regulatory framework governing the way Forests NSW manages the public native forests is comprised of the regional forests agreements, the NSW forest agreements and the integrated forestry operations approvals and their embedded threatened species licences...The threatened species licences are designed to protect threatened species and the habitat of threatened species from forestry activities. In relation to koalas, the licences prescribe the way in which Forests NSW must conduct surveys for the detection of koalas, signs of their presence and signs of their preferred habitat. The licences also prescribe the measures that must be put in place to protect them.¹⁰³

101 Miss Linda Sewell, Chief Executive Officer, Hancock Victorian Plantations, *Committee Hansard*, 1 August 2011, p. 20.

102 Australian Forest Products Association (formerly National Association of Forest Industries), Answer to a question taken on notice, 19 May 2011, pp 1–2.

103 Mr James Stirling, Manager, Planning and Environment, Native Forests Operations, Forests, *Committee Hansard*, 1 August 2011, p. 37.

3.85 The listing of the koala under the *Environment Protection and Biodiversity Conservation Act 1999* would have varying implications for the forestry industry depending upon the type of listing. However, in general the listing of the koala would require the preparation of a species recovery plan and a risk assessment. According to the forestry peak body, cost implications of any revised changes for koala species protection would be 'incurred by the forest manager or grower and typically passed on through the industry supply chain as higher costs'.¹⁰⁴

3.86 However, several witnesses pointed out that public state-owned forests, which are managed under Regional Forest Agreements, would not be covered by the protections provided by the EPBC Act, if the koala were to be listed. For example Mr Hibberd of the Conservation Council ACT Region Inc explained that:

The other problem [with the EPBC Act] is that the regional forest agreements are specifically excluded from consideration under the Environment Protection and Biodiversity Conservation Act. This is a real problem as well. The [Integrated Forestry Operations Approvals], which are the key operational regulatory instruments under the regional forest agreements, are not protecting threatened species or ecosystem processes.¹⁰⁵

3.87 Concerns were also raised about the management of koala habitat on private land, where according to the AKF 80 per cent of koalas live.¹⁰⁶ According to the Friends of Gippsland Bush, although logging in state forests and in those managed under a Regional Forest Agreement is required to meet certain codes of practice, forestry on private lands is not subject to such rigorous guidelines:

The timber growing and harvesting operations of private forestry are not subject to the same scrutiny or protection as the operations of public forestry. This has meant that in private forestry, protection of biological values in particular has been left largely to the discretion of the landowner or forest manager.¹⁰⁷

3.88 The Coffs Harbour City Council was concerned about the ability of state governments to grant logging approvals over council approved koala management plans. The council submitted that areas identified as key koala habitat under a Koala Plan of Management (KPoM) were approved for logging by the New South Wales

104 Australian Forest Products Association (formerly National Association of Forest Industries), Answer to a question taken on notice, 19 May 2011, pp 1–2.

105 Mr John Hibberd, Executive Director, Conservation Council ACT Region Inc, *Committee Hansard*, 19 May 2011, p. 33.

106 Ms Deborah Tabart, Chief Executive Officer, Australian Koala Foundation, *Committee Hansard*, 3 May 2011, p. 26.

107 Friends of Gippsland Bush, *Submission 69*, p. 4. See also Humane Society International, *Submission 26*, p. 2. Hancock Plantation Victoria's land management practices are detailed above.

Department of Environment, Climate Change and Water (now the Office of Environment and Heritage).¹⁰⁸

3.89 According to the council, a KPoM was prepared in accordance with the *State Environment Planning Policy (SEPP) 1995 No. 44 – Koala Habitat Protection*. The Management Plan was designed to provide a strategic framework for the conservation and management of koala habitat. The mapping undertaken as part of the KPoM also identified areas meriting protection through the council's Local Environment Policy. The council stated that:

The KPoM identifies and ranks core koala habitat into primary, secondary and tertiary zones on private land in the [Local Government Area] LGA. In many cases, Council is the principle consent authority for development activities. However, almost half the land in the LGA is State Forests or National Parks, and as such, is not under council's jurisdiction. An even greater and ongoing concern has been the granting of logging approvals by the Private Native Forestry (PNF) a division of the Department of Environment, Climate Change and Water (DECCW). Currently DECCW has issued approvals in over 2,277 ha of the 19,000 ha of core koala habitat in the Coffs LGA.¹⁰⁹

3.90 The Coffs Harbour City Council suggested that all core koala habitat identified through Koala Plans of Management should be excluded from existing Forest Operation Plans and proposed changes to the plans should be referred to local governments for assessment.¹¹⁰

Mining

3.91 The committee heard evidence on the impact of mining on koala habitat. In particular, evidence was received from the Darling Downs region of Queensland concerning the impact of open-cut coal mining on the local koala population.¹¹¹

3.92 The New Acland Coal Mine is an open-cut coal mine situated approximately 40 kilometres northwest of Toowoomba. The mine comprises two mining leases granted in 2001 and 2006. A new mining lease application is currently subject to a development approval process. If approved, the current 2278 hectare lease area for the mine's operations would be expanded to 7347 hectares.¹¹² Coal is currently mined, processed and dispatched from the site.

108 Coffs Harbour City Council, *Submission 45*, p. 1.

109 Coffs Harbour City Council, *Submission 45*, p. 1.

110 Coffs Harbour City Council, *Submission 45*, p. 3.

111 See Friends of Felton, *Submission 13*, pp 4–8; Sunshine Coast Environment Council, *Submission 65*, p. 10; Dr Nicola Laws and Glenn Beutel, *Submission 74*, pp 1–41; and New Hope Group, *Submission 91*, pp 1–13.

112 New Hope Group, *Submission 91*, p. 3.

3.93 According to anecdotal evidence provided by the local residents of Acland, the area the mine would occupy is home to approximately 100 koalas.¹¹³ As the koalas on the Darling Downs occur outside the south east Queensland bioregion they are classified as a 'species of least concern'.¹¹⁴ The mine occurs in the area of popular box and forest red gum woodland which according to the Friends of Felton, is important koala habitat.¹¹⁵

3.94 Local residents have raised issues over the impact of the mine on koala habitat including the loss of suitable food trees and the destruction of corridors for movement.¹¹⁶ Also of concern are the associated effects of mining on koalas, such as an increased risk of death from heavy vehicles and an increased risk of disease from stress.¹¹⁷

3.95 New Hope Group, owners of the New Acland Coal Mine, submitted that a rigorous environmental impact assessment process has been conducted at the site, including an Environmental Impact Statement (EIS) to address the requirements of the *Environmental Protection Act 1994* (Qld) and the *Environment Protection and Biodiversity Conservation Act 1999* (Cth).¹¹⁸

3.96 Fauna surveys conducted at the site by New Hope Group indicated that koalas are present, however an exact population count could not be established.¹¹⁹

3.97 New Hope Group has prepared a Conservation Management Plan for the site to protect, rehabilitate and manage vegetation occurring within some operational areas of the mine. There is to be no impact on koala habitat in the northern parts of the mine which support koalas.¹²⁰ The mine's environmental management is also facilitated by two on-site environmental officers.

3.98 To date, the New Acland Coal Mine has not been required to address any major issues of non-compliance in relation to its environmental approvals.¹²¹

Changes to mining approvals and operations

3.99 For the community action group Friends of Felton, the issue of mining and its impact on koala habitat raised a number of questions about the environmental

113 Dr Nicola Laws, Private capacity, *Committee Hansard*, 3 May 2011, p. 61.

114 See Chapter 5: The status of koalas under the law.

115 Friends of Felton, *Submission 13*, pp 6–7.

116 Dr Nicola Laws and Mr Glenn Beutel, *Submission 74*, p. 25.

117 Dr Nicola Laws and Mr Glenn Beutel, *Submission 74*, p. 25.

118 New Hope Group, *Submission 91*, p. 1.

119 New Hope Group, *Submission 91*, p. 5.

120 New Hope Group, *Submission 91*, p. 2.

121 New Hope Group, *Submission 91*, p. 2.

approval process for such projects.¹²² Environmental impact statements were seen to be ineffectual at accurately assessing the importance of habitat areas. In particular the ability for the proponent to employ consultants to conduct the EIS was not seen as transparent and thorough.¹²³

3.100 The Sunshine Coast Environment Council highlighted the ability of certain industrial projects to be exempt from state environmental law:

Mining and state significant projects, which are increasingly being applied to residential and commercial development, are largely exempt from State law. The environmental costs of a project and the impact on native fauna are only really tested against Federal law.¹²⁴

3.101 In the example of mining in the Darling Downs, the Friends of Felton argued that even Commonwealth legislation provides inadequate protection for koalas:

Currently, the EPBC Act 1999 provides no mechanisms for the impacts of mining on the koala to be considered because the species is not listed as threatened and often, as in the case of Felton, nor are the vegetation communities.¹²⁵

3.102 It was suggested that changes to the status of the koala at a national level, or in Queensland in areas outside of the south east bioregion, would ensure viable koala populations and habitat are better protected from mining.¹²⁶

3.103 Evaluating and approving mining applications in isolation was seen to be problematic for ensuring the overall protection of koalas and their habitat. According to the Friends of Felton:

...to our knowledge, none of the planning legislation adequately addresses the issue of incremental loss of habitat due to the cumulative impact of multiple development approvals. Unless there is adequate protection for habitat areas (and critical linkages between these across the landscape) from such development activity, clearing of remnant vegetation for mining within the district could reach a point where it threatens the survival of koala populations on the eastern Downs...¹²⁷

3.104 Dr Nicola Laws, a resident of Acland, also called for annual koala audits to be conducted by independent experts in key koala habitat areas where mining is taking place.¹²⁸ According to Dr Laws, this would show proof of habitat protection and

122 Mr Ian Whan, Committee member, Friends of Felton, *Committee Hansard*, 3 May 2011, p. 59.

123 Mr Ian Whan, Committee member, Friends of Felton, *Committee Hansard*, 3 May 2011, p. 59.

124 Sunshine Coast Environmental Council, *Submission 65*, p. 10.

125 Friends of Felton, *Submission 13*, p. 3.

126 Dr Nicola Laws, Private capacity, *Committee Hansard*, 3 May 2011, p. 59.

127 Friends of Felton, *Submission 13*, p. 3.

128 Dr Nicola Laws, Private capacity, *Committee Hansard*, 3 May 2011, p. 60.

revegetation programs. It was also suggested that a koala levy on mining companies could be established to fund these measures and penalties could be applied when numbers fall below an agreed level.¹²⁹

3.105 It was also raised by the Friends of Felton that responsibility for conducting koala surveys in proposed development areas should lie with the government and not left to local community groups or consultancy firms.¹³⁰

Drought, bushfires and climate change

3.106 Natural stochastic events such as droughts and bushfires pose an additional threat to koala populations. These events can impact koalas both directly (through animal mortality) and indirectly (by destroying habitat or reducing it to remnant patches).¹³¹

Bushfire

3.107 Several submitters recalled their personal stories of the devastating Black Saturday fires in 2009. For example, Ms Vicki Hams, a volunteer at the Southern Ash Wildlife Shelter in Victoria, recounted her experience:

The shelter received 101 koalas during the [Black Saturday] bushfires (including the now iconic “Sam” the koala). The koalas suffered varying degrees of burns. One of the most moving stories was a young female joey found in the hunched over burned body of her mother. The mother had wrapped her arms around the joey and hunched over her thus sacrificing her life to save her joey. (The joey had minor burns and was successfully released 12 months later). This is the character of these wonderful animals.¹³²

3.108 Ms Vivienne Jones relayed the damage she had witnessed to koala habitat in the South Gippsland region:

A huge number of koalas were killed in the Strzelecki Ranges during the Black Saturday fires. When driving through the Calignee area you can see just how much of their habitat has been wiped out.¹³³

3.109 The TSSC noted that the overall impact of the Black Saturday fires was large:

129 Dr Nicola Laws, Private capacity, *Committee Hansard*, 3 May 2011, p. 60.

130 Mr David Allworth, Researcher, Biodiversity, Friends of Felton, *Committee Hansard*, 3 May 2011, p. 61.

131 National Resource Management Ministerial Council, *National Koala Conservation and Management Strategy 2009–2014*, December 2009, p. 20.

132 Ms Vicki Hams, *Submission 20*, p. 1.

133 Ms Vivienne Jones, *Submission 12*, p. 1.

The mortality of koalas resulting from these fires has not been quantified, but loss of habitat was extensive and koalas are particularly exposed to injury in crown fires that occur in these intense bushfires.¹³⁴

3.110 Mr Chris Allen also raised the related issue of fuel reduction burning:

Fuel reduction burning is considered to be [a] threat to Koalas in the NSW Koala Recovery Plan (DECCW 2008). Fire applied in dense regrowth areas is likely to be more of a threat [than wildfires] because of the difficulty in keeping flame height low in these areas.

With governments requiring an increase in the extent of fuel reduction burning, the associated risks to Koalas are likely to increase.¹³⁵ (Chris Allen, p. 18).

3.111 The ACT Conservation Council also touched on this issue:

Wildfire has always been a major threat to koalas due to their slow movement response to such a threat. Changing climate in the region is likely to lead to more frequent severe fire events with subsequent impacts on koala populations. Agencies need to incorporate the location of koala population cells into fire management planning so as to be capable of mounting a strategic defense of known activity areas in the event that they are threatened by wildfire (Phillips 2007)...Phillips (2007) has recommended that fire management practices including the use of low intensity burns for the purposes of hazard reduction should not be undertaken within areas of known koala activity.¹³⁶

Drought

3.112 Droughts can also have a devastating impact on koala populations. The Conservation Council ACT Region submitted that:

Drought is clearly a factor in the growth or decline of koala populations, as it can substantially affect the level of foliar nutrients available. However, it is a factor over which we have no control, unlike many of the other potential threats. The only way the potential effects of drought can be effectively mitigated is to provide suitable landscape-scale movement corridors for koalas consisting of a range of tree species with high foliar nutrient leaves.¹³⁷

134 Threatened Species Scientific Committee, *Advice to the Minister for Environment, Protection, Heritage and the Arts from the Threatened Species Scientific Committee (the Committee) on Amendment to the list of Threatened Species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, September 2010, p. 17.

135 Mr Chris Allen, *Submission 35*, p. 18.

136 Conservation Council ACT Region Inc, *Submission 61*, p. 7.

137 Conservation Council ACT Region Inc, *Submission 61*, p. 9.

3.113 Although the impacts of drought on koala populations are considered by the TSSC to be 'reversible',¹³⁸ their immediate impact can result in dramatic population declines. This impact is most vividly demonstrated by the recent population collapse in central Queensland. Professor McAlpine told the committee that:

The koala populations in the Mulga Lands region, centred on Charleville [Queensland], are estimated to have declined from 50,000 to 60,000 in 1996 to 10,000 to 12,000 in 2009. Work by Dr Alistair Meltzer and Dr Bill Ellis in [Springsure] in central Queensland and Oakey on the eastern Darling Downs also show a substantial decline in the population due to drought and drought induced dieback.

The trees became stressed during the drought and they lost their foliage and the health of the canopy, which affected the nutritional value of those leaves. The evidence that Alistair Melzer has found in Springsure showed that that was an important factor there. Those populations at Springsure have also experienced a fairly substantial crash due to the drought.¹³⁹

3.114 Dr Bill Ellis elaborated on the situation in the areas surrounding Springsure and Oakey:

...what happened [in Springsure in central Queensland] was that the koalas did retreat to the riverine communities but the drought was so bad and the amount of water that was available got so low that most of the riverine trees died as well. The collapse in that population has just been dramatic. A similar picture is out at Oakey as well. The only way you can get the really good long-term data on those sites is to look at them pretty intensively as opposed to looking over the whole of the state less intensively. That is where we found these fine-scale, cascade effects. When the riverine communities supplying the best habitat and supporting the highest populations suffer, they really suffer. The trees there cannot survive through the real extended droughts. That was a really good study population that just totally crashed.¹⁴⁰

Climate change

3.115 Climate change is forecast to increase the frequency and intensity of both bushfires and droughts, as well as other climatic extremes. In this regard the TSSC has stated that:

Climate change is a potential threat to the koala, as it is expected to lead to increased temperatures, changes to rainfall, increasing frequency and

138 Threatened Species Scientific Committee, answer to question on notice, 1 August 2011 (received 10 August 2011), p. 3.

139 Associate Professor Clive McAlpine, Spokesperson, Koala Research Network, *Committee Hansard*, 3 May 2011, p. 4.

140 Dr Bill Ellis Koala Specialist, Koala Research Network, *Committee Hansard*, 3 May 2011, p. 4.

intensity of droughts and increased fire risk over much of the koala's range.¹⁴¹

3.116 In addition to the climatic variability expected from climate change, elevated carbon dioxide levels may alter leaf chemistry resulting in decreased nutritional value for koalas:

Increasing atmospheric CO₂ will have effects independent of climate change *per se*. When eucalypts are grown under elevated CO₂ the ratios of carbon to nitrogen in the foliage increase such that concentrations of carbon-based anti-herbivore compounds like tannins increase while nitrogen (protein) decreases. It has recently been shown that the balance between tannins and proteins determines protein digestibility and that subtle differences may have profound effects for reproductive success of eucalypt folivores...Koala population dynamics could be negatively impacted by the changes in leaf chemistry induced by elevated CO₂. It is not yet possible to assess forest nutritional quality over much of the koala's range, and thus to quantify the effect described above.¹⁴²

Committee comment

3.117 The committee received evidence of the range of potential threats to koala habitat including urban development, forestry and mining.

3.118 The committee agrees that the loss, degradation and fragmentation of koala habitat is the most significant cause of koala population declines and reductions in long-term population viability. This is not to diminish other threats, such as disease, drought, dog predation and car strikes, which when combined with habitat loss, place even greater pressure on the species. Addressing habitat loss, degradation and fragmentation is particularly critical to koala populations in Queensland and New South Wales.

3.119 It is imperative that developers, forestry operators and mining companies act as responsible stewards of the land they occupy and manage. This must involve effective engagement and consultation with local communities, thorough training of staff, minimisation of any negative impacts on koala populations and habitats, and promotion of positive impact which support the wellbeing of the koala.

141 Threatened Species Scientific Committee, *Advice to the Minister for Environment, Protection, Heritage and the Arts from the Threatened Species Scientific Committee (the Committee) on Amendment to the list of Threatened Species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, September 2010, p. 15. Citations have been removed. See also Associate Professor Clive McAlpine, Spokesperson, Koala Research Network, *Committee Hansard*, 3 May 2011, p. 2.

142 Threatened Species Scientific Committee, *Advice to the Minister for Environment, Protection, Heritage and the Arts from the Threatened Species Scientific Committee (the Committee) on Amendment to the list of Threatened Species under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*, September 2010, p. 17.

3.120 The committee recognises that protecting koala habitat also provides protection benefits to a range of other plant and animal species that share such areas.

3.121 The committee notes that policy responsibility for many of the activities that pose a potential threat to koala habitat, for example urban development and forestry, are primarily matters for state and local government.

Habitat mapping

3.122 However, there are areas where Commonwealth involvement and leadership is needed. There are various initiatives already underway which strive to map the koala's habitat. The AKF's Koala Habitat Atlas covers approximately 21 per cent of the koala's national range, while the mapping activities listed under the National Koala Management and Conservation Strategy cover a small number of specific locations.

3.123 In the committee's view there is a much greater need for a national approach to habitat mapping. The committee recommends that the Commonwealth undertake national koala habitat mapping, designed to support the committee's recommendations (contained in chapter 2) aimed at addressing the deficiencies in koala population data and genetic information.

3.124 Initially, koala habitat mapping would concentrate on identified priority conservation areas as well as areas where there is a lack of robust population and habitat data (such as those listed in the TSSC's answers to questions on notice).

3.125 A national koala habitat mapping program would also allow information on the impact of elevated CO₂ levels on leaf nutrients and the resulting changes to koala habitat to be monitored. The committee makes a recommendation in relation to changes in leaf chemistry at Recommendation 10 of this report at paragraph 4.43.

3.126 Such an initiative would clearly require the cooperation and active involvement of state governments as well as koala advocacy groups such as the AKF.

Recommendation 6

3.127 The committee recommends that the Australian Government undertake habitat mapping across the koala's national range, including the identification of priority areas of koala conservation, with a view to listing important habitat under the provisions of the *Environment Protection Biodiversity Conservation Act 1999*.

3.128 In this regard the committee notes that if Parliament supports a related aspect of the recently released *Australian Government response to the report of the Independent Review of the Environment Protection and Biodiversity Conservation Act*

1999, the identification of critical koala habitat would be required under the EPBC Act, if the koala was listed as a threatened species.¹⁴³

Recommendation 7

3.129 The committee recommends that the habitat maps be used to identify and protect important habitat in known koala ranges.

Commonwealth land

3.130 The committee heard that there are parcels of Commonwealth land which comprise significant areas of koala habitat. The Commonwealth could show leadership in protecting the koala by actively managing its land holdings, such as parts of the defence estate, which contain koala habitat.

Recommendation 8

3.131 The committee recommends that the Australian Government review its land holdings which contain koala habitat and consider biodiversity, and specifically koala populations, in the management and sale of Commonwealth land.

Private land

3.132 Much of the koala's habitat lies within privately owned land. The National Koala Management and Conservation Strategy lists a number of state-based programs designed to promote habitat protection on private land, however there are no such Commonwealth activities.

Picture 3.1—An Acland koala, Queensland



Source: Dr Nicola Laws and Mr Glenn Beutel, *Submission 74*, p. 3. Reproduced with the permission of Dr Nicola Laws and Mr Glenn Beutel.

143 The government response to *the Independent Review of the Environment Protection and Biodiversity Conservation Act 1999* accepted the review's recommendation to 'require the identification of critical habitat for listed threatened species at the time of listing' (p. 31).

3.133 In this regard, the committee believes that the Commonwealth should actively explore ways to support private land holders to protect koala populations. For example supporting conservation covenants over existing habitat, establishing connectivity corridors between areas of existing habitat, and the revegetation of former habitat or the rehabilitation of degraded landscapes.

Recommendation 9

3.134 The committee recommends that the Australian Government actively consider options for recognition and funding for private land holders for the conservation of koala habitat.