



Queensland Koala Expert Panel

A new direction for the conservation of koalas in Queensland

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Preliminary Information

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The Koala Expert Panel acknowledge the cultural and spiritual significance of the koala to First Australians.

Acknowledgements

The Panel would like to extend a big thank you to the wide range of people who contributed their time to inform and assist in making the recommendations in this report possible. The Panel consulted widely with individuals from the general public, government departments, local governments, NGOs, industry, community groups, and researchers and we thank them for their time. Community Elders who hold the koala to be culturally significant also provided meaningful consultation to formulate some of these recommendations. We thank them for their time and contribution. Finally we thank Catherine George, Beth Clouston, Grant Mogridge, Audrey Pershouse and EHP for secretariat support. It is our hope that our recommendation in this report make a major contribution to successfully turning around the declines in koala populations in SEQ and the rest of Queensland so that future generations can enjoy them in the way that we do today.

September 2017

#31318

Summary and Key Recommendations

The koala is one of the world’s most iconic and well known species. Yet, koalas are increasingly threatened in Queensland primarily due to the loss of habitat and associated threats such as disease and climate change.

In South East Queensland, there is clear evidence of catastrophic declines in some koala populations. This indicates a need for urgent policy change if these declines are to be reversed and the long-term persistence of the koala is to be secured.

Over the past 12 months, the Koala Expert Panel (the Panel) has reviewed the effectiveness of the State Government’s approach to koala conservation in South East Queensland and consulted with a large number of people from the community, governments, NGOs, and industry to gain an understanding of the issues and identify solutions. Based on this work, the Panel has formed a view of the most effective and realistic ways forward to ensure a reversal of the decline in koalas in South East Queensland and ensure their long-term persistence.

In this report, we detail the outcomes of this work in terms of six broad recommendations to the State Government on changes in policy to address the ongoing decline in koalas in South East Queensland (Table 1). Consistent with the Panel’s Terms of Reference these recommendations are made specifically to the State Government, rather than more broadly to all stakeholders involved in koala conservation in South East Queensland. However, we recognise that there are many stakeholders involved in koala conservation in South East Queensland and that the State Government activities are only part of the solution.

At the core of our recommendations is the urgent need for a more coordinated and strategic approach to koala conservation in South East Queensland. This requires mechanisms to coordinate different measures to reduce threats so that, combined, they are effective at reversing declines in koala populations. It also requires coordination among different stakeholders, including the State Government, local governments, NGOs, community groups, researchers and industry. To achieve this the Panel has recommended that the State identify broad-scale priority areas for koalas across rural

and urban landscapes in South East Queensland that will focus coordinated threat reduction measures and the creation of a Koala Advisory Council that will play an important coordination role among different stakeholders (Recommendation 1). This recommendation forms the overarching framework within which the Panel’s other recommendations sit.

Given the rate of koala habitat loss in South East Queensland in the face of ongoing urban development and increasing numbers of people living in the region, it is clear that urgent interventions are required to more effectively limit impacts of development and land clearing on koala habitat.

The Panel therefore provides specific recommendations about mechanisms by which koala habitat can be better protected, primarily through the planning framework (Recommendation 2). These recommendations focus on broadening the scope for development assessment related to koala impacts and tightening development assessment requirements.

The Panel also recommends that habitat protection is coordinated with targeted investment in habitat restoration and threat reduction measures (Recommendations 3 and 4). Coordination and the recognition of the different conservation requirements of koalas in different parts of South East Queensland are critical considerations for these strategies to be effective.

The Panel has also recommended that the State Government place a much greater focus on engagement and development of partnerships with other stakeholders (Recommendation 5). This is crucial for ensuring long lasting and meaningful progress toward the protection of koalas in South East Queensland.

Finally, the Panel identified a number of limitations in the existing mapping of koala habitat, monitoring and evaluation, and research. Therefore, this report also contains key recommendations for the implementation of effective mapping, monitoring and research, with a specific pathway through the Koala Advisory Council, for re-evaluating policy and planning as new information becomes available (Recommendation 6).

Table 1.
Key recommendations

No.	Objective	Recommendation
1	A Strategic and Coordinated Approach to Koala Conservation	Develop a mechanism for implementing a strategic action plan for koalas that ensures coordination across multiple levels of government, community, NGOs and industry to achieve the long-term recovery and persistence of koalas in SEQ.
2	Koala Habitat is Protected	Simplify and strengthen the planning framework to ensure the effective and consistent long-term protection of koala habitat across SEQ and resource incentive and partnership mechanisms to protect koala habitat on private land.
3	Strategic and Landscape-scale Koala Habitat Restoration	Develop and adequately resource regulatory, incentive and partnership mechanisms to achieve strategic koala habitat restoration at landscape scales in SEQ, particularly in identified priority areas.
4	Coordinated Threat Reduction and Koala Population Management	Resource and implement a new coordinated threat reduction and koala population management strategy that complements habitat protection and restoration activities, particularly in identified priority areas.
5	Strong Community Partnerships and Engagement	Develop and implement a strategy for partnership development and engagement with the broader community, utilising an approach that is sensitive to the nature and views of local communities.
6	Targeted Mapping, Monitoring, Research, and Reporting	Develop targeted and high quality koala habitat mapping, threat mapping, monitoring and research programs that aim to: (1) identify key koala ecological values and threats, (2) measure changes in koala ecological values and threats over time, as well as understand the drivers of those changes, (3) inform policy and management decision-making, and (4) communicate trends and outcomes transparently and publically to enhance engagement.



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Abbreviations

Item	Definition
DAF	Department of Agriculture and Fisheries
DILGP	Department of Infrastructure, Local Government and Planning
DTMR	Department of Transport and Main Roads
EHP	Department of Environment and Heritage Protection
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999 (Cth)
KAC	Koala Advisory Council
LGA	Local Government Area
MEDQ	Minister for Economic Development Queensland
NC Act	Nature Conservation Act 1992 (Qld)
NGO	Non-Government Organisations
NPSR	Department of National Parks, Sport and Racing
Offsets Act	Environmental Offsets Act 2014 (Qld)
Offsets Policy	Queensland Environmental Offsets Policy Version 1.4
Planning Act	Planning Act 2016 (Qld)
Planning Regulation	Planning Regulation 2017 (Qld)
SDAP	State Development Assessment Provisions
SEQ	The area of South East Queensland to which the SEQ RP applies
SEQRP	South East Queensland Regional Plan—ShapingSEQ (August 2017)
SPP	State Planning Policy
SPRP	South East Queensland Koala Conservation State Planning Regulatory Provisions (now repealed and replaced by Schedule 11 of the Planning Regulation)
State Koala Conservation Plan	The Koala Conservation Plan prepared under the NC Act
The Panel	Queensland Koala Expert Panel
ToR	Terms of Reference (for the Panel)
VMA	Vegetation Management Act 1999 (Qld)



Introduction

Context to the Panel's Work

The Panel (see Appendix 1 for a list of Panel members) was established in July 2016 (with the Terms of Reference approved on 29th August 2016) to provide the Queensland Government with recommendations on the most appropriate and realistic actions to address the decline in koala populations in South East Queensland.

In accordance with their ToR (see Appendix 2), the Panel released an interim report after 6 months (Koala Expert Panel 2017). This is now followed by this final report that contains:

- specific recommendations for koala policy and management
- evaluation of the potential options and risk assessment
- future direction for research, monitoring and evaluation
- broader koala policy direction to be applied across Queensland.

Terms of Reference for the Panel

The ToR (see Appendix 2) were developed in consultation between EHP and the Panel to outline the work and purpose of the Panel, respective roles, and timeframes. The ToR were approved by the Minister for Environment and Heritage Protection and Minister for National Parks and the Great Barrier Reef on 29th August 2016.

The ToR specifically defined the expectations of the Panel and timeframes for the interim and final reports.

An addendum to the ToR was approved in January 2017 requiring the Panel to provide advice on recommendations on planning instruments, including the consultation drafts of the State Planning Policy (SPP) and *ShapingSEQ* (SEQRP) which were not available when the original ToR was approved.

Current Status of the Koala in SEQ

The koala was listed as vulnerable to extinction across its full range in Queensland under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) in 2012 and under the Queensland *Nature Conservation Act 1992* (NC Act) in 2015.

From 2005 to 2015, the koala was listed under the NC Act as vulnerable in southern areas of the State only. The reclassification of the koala to vulnerable across its entire range was a result of improved knowledge of the species' status in Queensland, and to align with its listing under the EPBC Act. This, and State monitoring data providing evidence of continued declines in key peri-urban populations around Brisbane, led to conservation effort being heavily focused on eight coastal local government areas from Noosa to the Gold Coast.

An independent review of that data, and more recent knowledge (Rhodes et al. 2015) revealed that, despite protection measures to date, the decline in peri-urban koala populations in the Koala Coast and Pine Rivers areas showed no evidence of slowing, and that the rate may even be increasing. This continuing decline is related to ongoing habitat loss in SEQ resulting from increasing urbanisation, other threats, such as dog attacks, and road mortality associated with development, as well as disease.

Although koalas may be able to withstand some level of low density urban development, Rhodes et al. (2015) suggest that ongoing urban development, and densification, are incompatible with viable koala populations and that current strategies to mitigate these effects have not been successful. Further, despite these insights for peri-urban areas of SEQ, little is currently known about the status of koalas in western and more rural areas of SEQ.

Expert Panel Activities Post Interim Report

Since the release of the Panel's interim report in March 2017, the Panel has: (1) finalised the community consultation program, (2) engaged in an expert elicitation process to evaluate the likely outcomes and risks of a range of alternative koala management responses, (3) provided recommendations on the SPP and SEQRP and (4) conducted fortnightly meetings to ensure continued liaison with State departments (EHP, DILGP, NPSR, DTMR, DAF).

Consultation

Over the life of the Panel, community engagement involved open written public submissions, invited face-to-face consultation, and finally, engaging with selected experts to test strategy options in an expert elicitation process (see Appendix 3 for overview of consultation participants).

An analysis of the public submissions and face-to-face discussions can be found in the Interim Report (Koala Expert Panel 2017).

Expert elicitation process

Expert elicitation involves engaging experts to provide their view on the value of specific quantities (Burgman 2015). In the context of this expert elicitation the aim was to elicit views of koala population trends under different management interventions and the likelihood that these different interventions could be implemented. The Panel commissioned the elicitation process to assist with the evaluation and risk analysis of potential conservation strategies. The specific objectives of the process were to:

- gather estimates of the expected changes in densities over the next 20 years (approximately three koala generations) under each strategy
- gather estimates of the likelihood that each strategy could be implemented within five years
- obtain input into potential policy or management actions capable of meeting each strategy's objectives and the barriers to achieving them.

The elicitation focussed on estimates for three different landscape types: (1) urban, (2) peri-urban, and (3) rural landscapes within SEQ.

Twenty-five experts covering a range of backgrounds, including ecology, planning and policy were invited to the expert elicitation process. Each participant was required to complete a pre-elicitation questionnaire and attend a workshop conducted on 4 April 2017 where they were given the chance to explain their responses and, following discussion, the opportunity to modify their responses. This process is based on the IDEA framework for expert elicitation that aims to minimise bias (Burgman 2015).

The management strategies considered for the elicitation included:

- Protect all existing koala habitat
- Protect all existing high quality koala habitat
- Compensate for all losses of koala habitat with habitat restoration
- Reduce vehicle-related koala mortalities by 50%
- Reduce domestic and wild dog-related koala mortalities by 50%
- Reduce disease-related koala mortalities by 50%.

Advice on SPP and SEQRP

The Panel provided advice to EHP and DILGP on the SPP and SEQRP prior to their finalisation. These recommendations can be found in Appendix 4.

Meetings

Fortnightly meetings with EHP and the Panel continued after the release of the interim report. These meetings were used to discuss the Panel's work and to seek clarification and further information from EHP. Other stakeholders and consultation participants attended these meetings from time to time to discuss koala conservation in relation to their areas of expertise.



Principles and Conceptual Model Underpinning the Panel's Recommendations

Principles

In developing their recommendations the Panel identified a number of core principles from which their final recommendations arise. These principles are founded on the outcomes of the extensive consultation, expert elicitation, and review undertaken by the Panel. These key principles include:

- a. Koalas are culturally important for First Australians and are also an iconic species of national and international importance. This status should be explicitly acknowledged.
- b. Both protection of koala habitat and reduction of threats that directly, or indirectly, impact koala populations are crucial for ensuring the long-term persistence of koalas in SEQ.
- c. Effective solutions to koala recovery in SEQ must be holistic and multi-faceted as there is unlikely to be a single action that is capable, on its own, of conserving koala populations in SEQ. For example, although protecting habitat is crucial, it is unlikely to be a sufficient solution on its own.
- d. Ensuring long-term koala persistence will require a strategic, coordinated and collaborative approach across multiple levels of government, industry, NGOs, and the community.
- e. Direct conflicts between koala conservation goals and other societal goals (e.g., urban development) are real and should be explicitly considered. In particular, the expected rapid increase in the number of people living in SEQ over the next 20 years is a critical factor.
- f. Koala populations in rural and urban areas are both important. Rural koala populations are central to the conservation of koalas in SEQ because they occur across broad areas, and there is a good chance of achieving long-term reductions in threats with effective management. Recovering koala populations in many existing urban and peri-urban landscapes is more challenging. However, the Panel's consultation provides clear evidence of strong community support for ensuring the conservation of koala populations in urban and peri-urban landscapes, as well as in rural landscapes.
- g. Community partnerships and engagement need to be important components of any strategy to conserve koalas in SEQ if it is to be successful.
- h. Monitoring and evaluation needs to be a core component of an effective koala conservation strategy and should aim to evaluate progress towards conservation targets, evaluate the performance of management/policy, and transparently communicate progress towards objectives.
- i. Based on the ToR (Appendix 2), the Panel's recommendations should be specific recommendations to the Queensland Government, rather than stakeholders in general.

Conceptual Model

The Panel's recommendations are also underpinned by a conceptual model that captures the key drivers of koala decline, and existing policy and management activities designed to reduce impacts on koalas (Figure 1).

Our conceptual model focusses primarily on Queensland Government initiatives, but also identifies some key local government and community initiatives, where appropriate. This conceptual model recognises that koala habitat and koala population dynamics interact to determine the persistence of koalas, but that koala populations ultimately depend on there being sufficient koala habitat of high enough quality for their persistence.

There are a range of threats that impact on koala habitat, causing habitat loss and degradation, but also a range of threats that impact on koala populations directly, such as through direct mortality. Hence, threats to habitat and threats impacting koala populations directly are both important, and in many areas of SEQ (particularly urban areas) the long-term persistence of koalas depends on reducing both types of threat.

Existing State initiatives to reduce threats are dominated by mechanisms to limit habitat loss and habitat degradation through the planning framework. However, the Panel's review indicated that far fewer initiatives are focussed on reducing threats that directly impact on koala populations, such as vehicle collisions and dog attacks. This is despite these being recognised as key factors driving koala declines in SEQ.

The work of koala carers, and the koala hospitals, helps to mitigate the impact of some of these threats, but ultimately tends to address the symptoms, rather than the underlying drivers of the threat.

Our conceptual model, although not meant to be exhaustive, aims to highlight the complex nature of the koala conservation challenge in SEQ, both in terms of the interactions among threats and the interactions among policy and management initiatives.

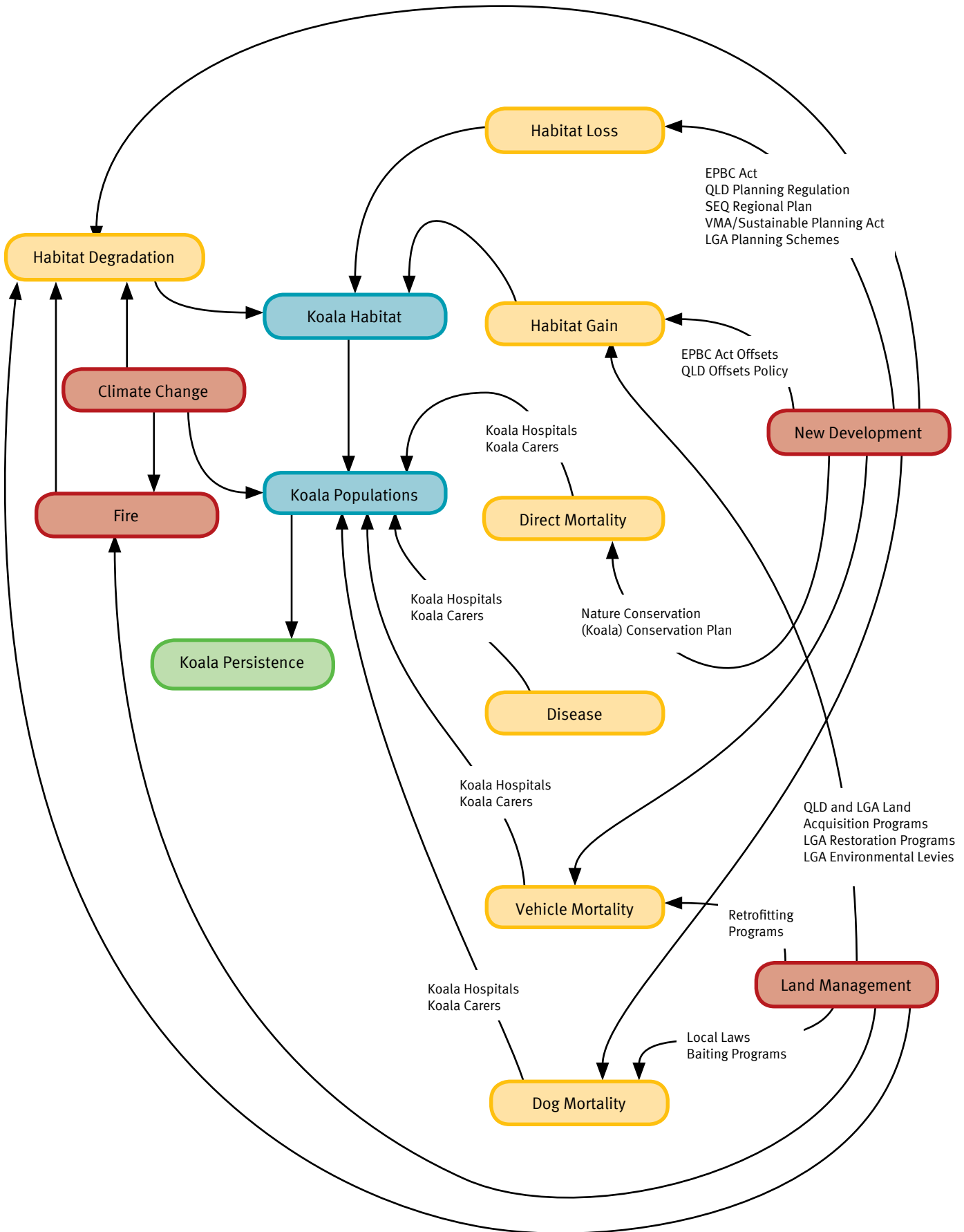


Figure 1.

Conceptualisation of the links between threats (yellow), koala populations and koala habitat (blue), and koala persistence (green). Drivers of threats (red) and key regulation and conservation initiatives in SEQ, which influence the effect of threats on koala habitat and populations, are also shown. Here ‘New Development’ refers to impacts that arise from new urban and infrastructure development as well as land clearing for other purposes.

Recommendations for SEQ

1. A Strategic and Coordinated Approach to Koala Conservation

1.1 Recommendation

Develop a mechanism for implementing a strategic action plan for koalas that ensures coordination across multiple levels of government, community, NGOs and industry to achieve the long-term recovery and persistence of koalas in SEQ.

1.2 Recommended actions

- a. Develop an implementation strategy for koala conservation in SEQ that adopts the recommendations made in this report and that will:
 - i) identify clear, realistic, measurable and time-based targets for koala habitat and population trajectories that will ensure the long-term persistence of koalas in SEQ
 - ii) identify a network of connected priority areas for koalas that strategically focusses State Government initiatives for habitat protection and restoration, threat reduction programs, community partnerships, and recovery actions for koalas across SEQ. These areas should be sufficiently large and well enough connected to ensure the long-term persistence of koala populations across their range in SEQ (priority areas of 100,000s of hectares in size are likely to be necessary to achieve this). In particular, these regions should be focal points for the effective preservation and restoration of koala habitat, coordinated investment in reducing cumulative threats to koalas, and strategies for community partnerships. The activities in these priority areas should complement koala conservation activities in adjacent areas and encompass both rural and urban koala populations
 - iii) identify the activities that will be undertaken where, when and by whom, as well as identify a clear implementation and resourcing strategy that will ensure these activities are undertaken
 - iv) identify a monitoring and evaluation strategy that measures progress towards targets and that incorporates a mechanism for amending the strategy based on new information
 - v) ensure the 'SEQ revised Koala Conservation Strategy' discussed in the SEQRP 2017 (p 159) is updated to address the recommendations in this report.
- b. Establish a Koala Advisory Council (KAC) to coordinate the implementation of the koala conservation strategy. The KAC should consist of representatives from relevant State government departments, local governments, community, NGOs and industry. The purpose of the KAC would be to:
 - i) provide advice to government on the implementation of the koala conservation strategy, including resourcing requirements
 - ii) fulfil a coordination role by providing communication and collaboration pathways among state government departments, local governments, community, NGOs and industry
 - iii) ensure transparency and accountability in decision-making with respect to koala conservation
 - iv) evaluate the outcomes of the monitoring and evaluation program and recommend appropriate changes in policy that arise from this.



1.3 Justification and Explanation

The Panel's review and consultation identified three important overarching issues that are characteristic of the current koala conservation problem in SEQ. These are: (1) the presence of strong conflicts between koala conservation and some other societal objectives, (2) the complex interaction between multiple threats that impact cumulatively on koalas, and (3) the importance of coordination across governments, other organisations, and the community (Koala Expert Panel 2017). These have important implications for how ensuring koala conservation in SEQ should be approached. The Panel's view is that these imply that the best overall approach will be one that is strategic and coordinated across efforts to reduce different threats and among different stakeholders.

Conflicts and a strategic approach

In SEQ there are strong conflicts between the requirements of koalas and their habitat, and the achievement of some other social objectives that threaten koalas and their habitat as an unintended consequence (this includes urban development and habitat clearing for agriculture). This has manifested itself in the ongoing loss of koala habitat, which is particularly prevalent in the urban footprint (over 10% of bushland koala habitat in the urban footprint was lost between 2008 and 2015 (Koala Expert Panel 2017)).

The conflict between urban development and koalas was also raised as one of the most prevalent issues during the Panel's consultation, but the Panel found that habitat loss in agricultural landscapes is also significant (Koala Expert Panel 2017).

These pressures are unlikely to disappear in the foreseeable future given the expected rapid rate of human population increase in the region; there are likely to be an additional 2 million residents in SEQ by 2041 (Queensland Government 2017).

Planning strategies that aim for compact and high density urban development, with a focus on in-fill, and biodiversity friendly development must be employed to reduce impacts on koalas. However, the Panel acknowledge that entirely halting all impacts of future urban development and land use change on koalas, although this would clearly be the best outcome for koalas, is unrealistic given the development goals for the region.

Against this background, the Panel believes that a targeted and strategic approach that aims to maximise the likelihood of the long-term persistence of the species in SEQ is critical. One way to achieve this is through the strategic prioritisation of areas for additional investment in habitat protection, restoration, management (including threat reduction), and coordination. This approach would also allow for cumulative impacts (e.g., from urban development or land clearing) to be explicitly addressed. The alternative, which is spreading additional resources thinly across SEQ, risks achieving limited impact on the long-term persistence of koalas in SEQ if this results in few koala populations being invested in sufficiently to reverse declines.

Priority areas for focused additional koala conservation effort should be identified based on:

- a. the ability of the areas to support koala populations in the long-term with appropriate management
- b. the feasibility of implementing appropriate management that will ensure koala recovery and long-term recovery
- c. the ability of the areas to represent koala populations across different land uses (e.g., within and outside the urban footprint) and across different areas of SEQ
- d. the societal importance placed on koalas in the area.

The koala habitat and threats mapping currently being developed by EHP (Koala Expert Panel 2017) should be used to inform the process of identifying these areas.

To ensure the long-term persistence of koalas in SEQ, these focus regions will need to be substantial in size (i.e., 100,000s of ha in size) and, given the clear view expressed by participants in the consultation that both rural and urban koalas are important, should incorporate both urban and rural landscapes.

The Panel has not made specific recommendation on where these priority areas should be as that is a significant piece of work that the Panel was not resourced to undertake. However, areas of known important rural and urban koala populations in Redland City Council, Logan City Council, Moreton Bay Regional Council, Lockyer Regional Council, Somerset Regional Council, Noosa Shire Council, Gold Coast City Council, Ipswich City Council, Sunshine Coast Regional Council, and North Stradbroke Island should be considered within the set of candidate areas when this prioritisation is undertaken.

Although this approach would form a vehicle for targeting conservation effort at a regional scale, one risk is that it could lead to a decline in effort outside of priority areas. The State should therefore coordinate the parallel implementation of a strategy (potentially in partnership with local governments) to also identify and protect locally important koala populations. Minimising impacts in these key areas will be critical to ensure the maintenance of connectivity across SEQ and the broader viability of koala populations and habitat.

Multiple threats and a holistic response

There is strong evidence that koala populations in SEQ are declining due to multiple threatening processes and that these act cumulatively on koala populations to drive declines, both through impacts on habitat, and direct impacts on koalas (Figure 1, Dique et al. 2003, McAlpine et al. 2006, Rhodes et al. 2011, Craig et al. 2014, de Oliveira et al. 2014). Further, the expert-elicited evaluation of threat management options that the Panel commissioned also highlighted that addressing individual threats alone is unlikely to recover koala populations across urban, peri-urban and rural landscapes (Figure 2). This is also supported by other studies (Rhodes et al. 2011). Therefore, the need for a more holistic strategy that simultaneously manages multiple threats, including habitat loss, vehicle collisions, dog attacks, and disease, is critical.

Participants in the consultation process identified issues with planning regulations as the most import factor driving declines in koalas through loss of habitat. The Panel agree that better protection of habitat through the planning regulation is crucial. However, fixing the planning regulation only addresses a single threat, i.e. the impact of future development on habitat loss and degradation (Koala Expert Panel 2017). It is therefore unlikely, on its own, to be a successful strategy, as it does not deal with the impact of other threats such as dog attacks, vehicle collisions, disease, and fire management, that are cumulatively driving declines in many populations, nor does it deal with recovery of populations through activities such as habitat restoration (except potentially, although only partially, through the Offsets Policy).

The Panel believes that the only way to address this is to have a more holistic strategy that focusses on planning regulation, reduction in threats, and koala/habitat recovery, and that these activities need to be coordinated to ensure that multiple threats are addressed simultaneously where necessary. This should be integrated into the overall strategic approach.

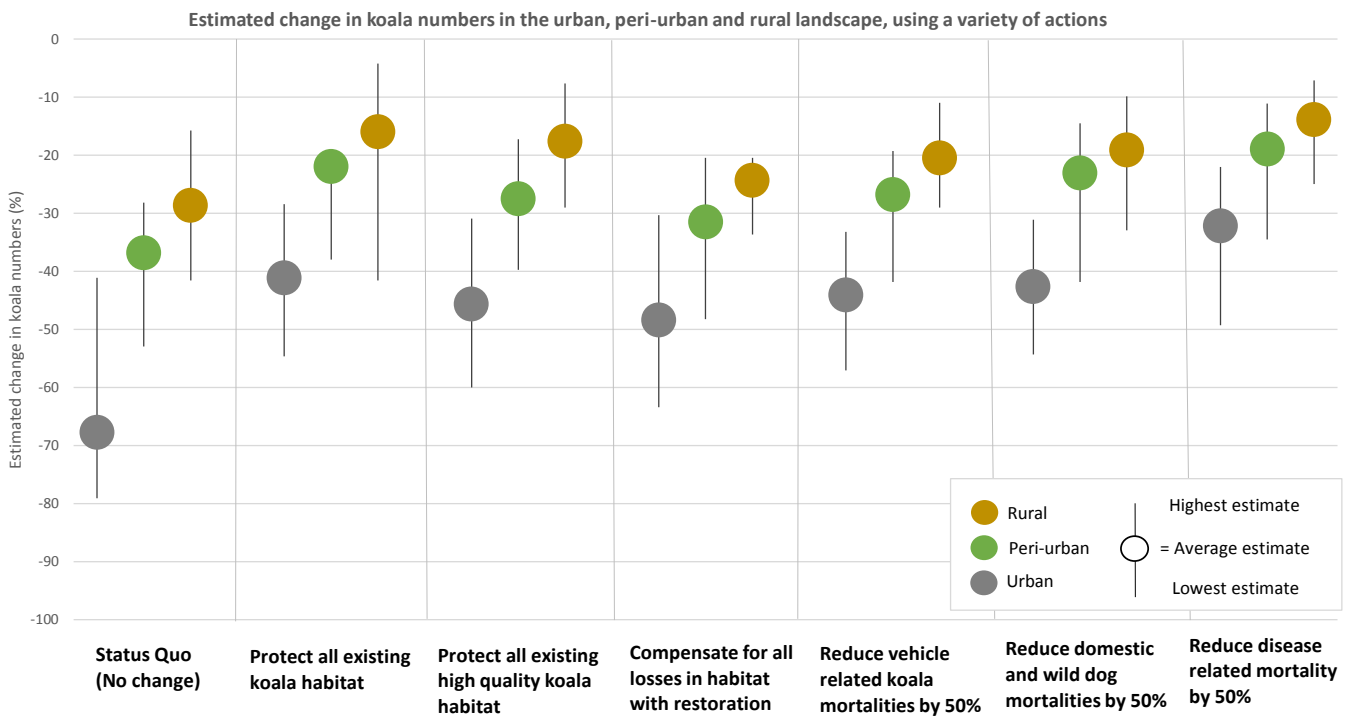


Figure 2.

Expert-elicited estimates of declines in koala density (% change) over the next 20 years under different threat reduction strategies applied individually in typical urban, peri-urban and rural landscapes.

A mechanism to achieve coordination

The Panel’s consultation provided many important insights into the problem of the coordination of koala conservation activities across State departments, local governments, NGOs, industry and the community.

Typical examples included the lack of coordination in the selection of sites for offsets and other management activities that would maximise outcomes for koalas, and the lack of coordination of data collection, but a lack of coordination generally seems to be pervasive (Koala Expert Panel 2017).

The Panel believe that better coordination of activities is critical for the implementation of a successful koala conservation strategy, and requires a governance structure to achieve this. As such, the Panel recommend the formation of a Koala Advisory Council (KAC) to coordinate implementation of a new koala strategy, with the aim of facilitating coordination among State Government departments, local governments, NGOs, industry, and community organisations engaged in its implementation.

There are precedents for this type of council for other matters of state significance, such as the Queensland Ministerial Freight Council and the Biosecurity Queensland Ministerial Advisory Council.

The Panel envisions that the KAC would provide advice to the State Government on the implementation of a coordinated koala conservation strategy for SEQ, provide a vehicle for collaboration and communication among key stakeholders, and provide a mechanism for updating advice based on the outcomes of monitoring and new research.

The Panel acknowledges that it may be unusual to have an advisory council for a single species, but believes that the special status of the koala warrants such an approach. Ultimately this could form a model for a broader advisory council for the management of priority threatened species in Queensland in the long term.

2. Koala Habitat is Protected

2.1 Recommendation

Simplify and strengthen the planning framework to ensure the effective and consistent long-term protection of koala habitat across SEQ and resource incentive and partnership mechanisms to protect koala habitat on private land.

2.2 Recommended actions

- a. The State Government to assume responsibility for the assessment of koala-related planning and development issues to ensure consistency of approach across SEQ. State responsibility in the context of the planning framework should ensure:
 - i) clear policy direction in the SPP and the SEQRP, about the importance of the koala as an iconic species for SEQ. The Panel's comments on this aspect have already been implemented in the 2017 versions of these instruments, but some further fine-tuning may be required, depending on the final approach taken by the State
 - ii) that the Planning Regulation identifies the State as either the assessment manager or referral agency for all koala-related assessable development, as it is for certain other environmental issues. The State's policy framework should then reflect this position. Ensuring sufficient resourcing to fulfil this role will be crucial
 - iii) the development of standard conditions for development impacting on koalas, in the same way that EHP has developed standard conditions for certain types of development impacting on other environmental values. Depending on the scope of the standard conditions, the State should consider whether it is necessary to amend the Planning Act to ensure that koala-related conditions cannot be challenged on reasonableness/relevance grounds, as it has done in the past for offsets and certain infrastructure conditions
 - iv) that SDAPs contain a specific koala-related assessment code, so as to ensure uniformity. This code could address both matters relating to the construction of works and, where appropriate, the ongoing use of land after works are complete
 - v) that when undertaking development, the State should, even if it is otherwise exempt from development assessment, ensure that the standards placed on State development are not less onerous than those placed on private sector proponents.
- b. Reduce the number and complexity of exemptions from development assessment and put in place a transparent system of conditional approval across different habitat classes and land uses. Two prominent examples of important exemptions that impact on koala habitat are:
 - i) Schedule 21 Part 2 item 2 of the Planning Regulation, exempts large amounts of development by providing that clearing of certain vegetation for urban purposes in urban areas is not assessable development under the Planning Act and cannot be made assessable development by a planning scheme
 - ii) Schedule 21 Part 1 item 1 of the Planning Regulation has the effect of exempting vegetation clearing from assessment for a material change of use or reconfiguring a lot if, among other things, the approval relates to premises of less than 5 ha.

Removing these exemptions, or substantially reducing their scope as they apply to koala habitat, is vital for effectively protecting koala habitat.
- c. Broaden triggers for koala-related development assessment in SEQ based on the new EHP koala habitat mapping. This should ensure, at least, that self-assessment is not permitted and that development assessment is triggered when there are potential development impacts on koala habitat, or koalas, in the following cases:
 - i) in identified priority areas for koalas (see Recommendation 1), regardless of whether inside or outside the Urban Footprint
 - ii) outside the Urban Footprint and within areas mapped as core and non-core koala habitat (remnant and regrowth)
 - iii) inside the Urban Footprint, but outside identified priority areas for koalas, and within areas mapped as core koala habitat (remnant and regrowth).
- d. Develop new development assessment requirements for SEQ that:
 - i) do not permit clearing of core and non-core habitat (remnant, regrowth and scattered trees) inside identified priority areas for koalas (see Recommendation 1), regardless of whether inside or outside the Urban Footprint
 - ii) do not permit clearing of core and non-core habitat (remnant and regrowth) outside of the Urban Footprint and outside of identified priority areas for koalas
 - iii) avoid clearing of core habitat (remnant and regrowth) inside the Urban Footprint, and outside identified priority areas for koalas, with any residual impacts offset as a last resort.

- e. Biodiversity offsets for koala habitat should continue to be imposed as conditions on development approvals only as a ‘last resort’, and not as an automatic ‘licence to clear habitat’. Offsetting of residual impacts should only be an available option for impacts occurring inside the Urban Footprint that are not in identified priority areas for koalas. Elsewhere, clearing of koala habitat should not be permitted.
- f. Any future expansion of the Urban Footprint, undertaken by the State as part of revisions to the SEQRP, should not occur over areas where core koala habitat (remnant and regrowth) has been identified through the EHP mapping, or where koala populations are known to occur.
- g. Ensure that locally significant koala habitat, not captured by the EHP mapping, or not in identified priority areas for koalas, can still be protected through local government planning schemes.
- h. Reduce the complexity of the current planning framework by:
 - i) aligning the various different regimes which apply, including priority development areas, State development areas and infrastructure designations under the Planning Act, to ensure a consistent approach to koala development and offsetting across all development
 - ii) standardising terminology so that the same term (and only one term) is used under both environmental and planning State legislation and instruments, especially in relation to koala habitat.
- i. Review coordination between State departments in relation to different legislative instruments. In particular, the interrelationship between the SDAP and the State nature conservation system needs to be explicit and consistent.
- j. The State’s commitment to a SEQ strategic assessment with the Commonwealth under the EPBC Act should be undertaken as soon as possible to give certainty to all stakeholders and permit strategic planning for koalas with respect to the protection of habitat. The State will need to ensure that any strategic assessment is adequately resourced (the Panel notes the \$10M funding provided for two years in the 2017 State Budget) and, that any strategic assessment is undertaken as quickly as possible using the large amounts of data already available, including the new EHP koala mapping product. Any new legislative assessment scheme that arises from this process should address the recommendations in this report. Given the length of time that strategic assessments have taken in other jurisdictions, the Panel recommends that the State should proceed to implement the Panel’s recommendations before the strategic assessment is completed.
- k. Develop a communication, education and extension strategy to ensure community and business awareness and understanding of new and revised koala habitat protection measures.
- l. Develop and resource effective models of habitat protection incentives and partnerships that have the potential for broad uptake amongst industry and rural enterprise sectors.

2.3 Justification and Explanation

The lack of protection of koala habitat was one of the most prominent issues raised during the consultation process and almost always this was associated with issues identified in planning framework (Koala Expert Panel 2017).

It was therefore made very clear to the Panel that the planning framework needs to be a core contributor to which the protection of koala habitat in SEQ is realised. However, the Panel also recognise that the planning framework only deals with future development impacts and has limited ability to deal with existing threats and actions required for koala recovery. This means that it is critical that the planning framework works in a coordinated fashion with other activities for threat mitigation and recovery.

Strategies for achieving this coordination are outlined in Recommendation 1 and should be reflected in the planning framework.

Habitat loss and the planning framework

Analysis conducted for the Panel’s interim report (Koala Expert Panel 2017) demonstrated clear evidence for continuing loss of habitat, especially in the Urban Footprint and within Rural Living Areas (over 10% of koala bushland habitat in the Urban Footprint was cleared between 2008 and 2015).

Clearing rates outside of the Urban Footprint over the same time period were lower, but not insignificant (0.7% of koala bushland habitat was cleared in the Regional Landscape and Rural Production Area between 2008 and 2015). There is also no evidence for a reduction in clearing rates over time in SEQ (Koala Expert Panel 2017).

Given that the planning framework has been used as the primary way to protect koala habitat, this provides strong evidence that it has generally been ineffective at sufficiently reducing the loss of habitat, especially in the Urban Footprint.

The Panel’s view is that the solution to koala conservation in SEQ must be more holistic than a sole focus on the planning framework, but it is an important part of the solution. As such, our consultation and analysis of habitat loss revealed that it requires some fundamental changes if it is to be sufficiently effective at protecting koala habitat in SEQ, although the Panel is supportive of the overall structure of the planning framework.

Mapping to underpin the protection of koala habitat

One of the most frequently raised issues by participants of the consultation was the mapping. Based on this feedback, the Panel identified a number of issues with the existing State Government habitat mapping that currently underpins the Planning Regulation (previously the SPRP). These include:

- lack of comprehensiveness
- coarse resolution
- the simplicity of the model that fails to fully account for vegetation communities
- no updating of the mapping over time.

Although mapping is also conducted by local governments, inconsistencies among local government methodologies, and with the State Government mapping, also make a consistent approach to koala habitat protection across SEQ difficult. At the time of writing this report the State Government were finalising koala habitat mapping for SEQ that splits habitat into three categories (core habitat, non-core habitat, and non-habitat) across remnant vegetation, regrowth vegetation, and scattered trees. Core habitat represents those habitats in which koalas are most likely to occur and therefore maps the most important koala habitat values. Non-core habitat represents areas where koalas may occur and these areas are important because of their role in providing important supplementary habitat and connectivity. The Panel is supportive of this ecological mapping, and believe it is an improvement over existing mapping, and that it reflects important koala habitat values across the region. The Panel therefore recommends that this forms the basis of a consistent approach to the protection of koala habitat across SEQ.

The panel acknowledges that mapping and assessment framework decisions made by government which have the effects of reducing, or restricting development may give rise to complex social and political questions for government, involving potential compensation issues.

A simplified and consistent approach to koala habitat protection

Some of the criticisms levelled at the planning framework during the consultation process focussed on the complexity of the framework that limits effectiveness and consistency in approach for the protection of koala habitat. Different mapping used for different regulatory instruments, different assessment managers (e.g., local governments, MEDQ, DILGP, the Coordinator-General, and the Federal Government) under the different regulatory mechanisms contribute to the complexity and lack of consistency (Koala Expert Panel 2017). Further, different terminology used in each regulating instrument makes it difficult for both public and private sector entities to determine whether and how, in any given case, koala habitat may be impacted by development, and how any impact should be conditioned. The complexity of wording also leads to potentially unintended consequences (i.e., exceptions or unintentionally caught development). The Panel therefore believe that a more consistent and simplified approach to dealing with development related impacts on koalas would be more effective. This could be achieved by making the State Government the assessment manager or referral agency in all koala-related development issues. The State has already achieved this under the Planning Regulation in relation to a number of key State interests, such as marine plants, State-listed heritage places and fish habitat. This would also enable a simplification of the approach to the assessment of koala-related development issues.



Strategic and effective habitat protection

Many criticisms of the planning framework identified during the consultation highlighted the lack of comprehensiveness in the Planning Regulation (formally the SPRP) in protecting koala habitat and the large number of exemptions available that limit the extent to which the planning framework protects koala habitat. The Panel recommends that both these issues need to be addressed if the planning framework is to be effective at protecting sufficient koala habitat to ensure the long-term persistence of koalas in SEQ.

The existing Planning Regulation essentially identifies priority areas for koala habitat protection (Priority Koala Assessable Development Areas and Koala Assessable Development Areas) but these are highly constrained in spatial extent (largely focussing on the Koala Coast and Pine Rivers areas). Many participants in the consultation process indicated that this does not cover many important populations in the Gold Coast, for instance, limiting powers to protect habitat in these areas. The Panel also note that these areas only cover a small component of the identified koala habitat values in the new EHP mapping. The Panel therefore recommends that priority areas for koalas, identified as part of a regional strategic approach to koala conservation (see Recommendation 1), should be much broader than the existing Priority Koala Assessable Development Areas and Koala Assessable Development Areas in the Planning Regulation and be informed by the EHP habitat mapping. Within these priority areas, habitat should be protected, regardless of whether it occurs inside or outside the Urban Footprint.

Consequently, the identification of priority areas for koalas should be used as a strategic approach to the protection of koala habitat that coordinates with other activities. However, given the critical importance of rural koala populations to the long-term persistence of koalas in SEQ, habitat outside of the Urban Footprint, more broadly, should also be protected. Finally, the Panel recognise the difficulty of protecting all koala habitat inside the Urban Footprint, given the overall development trajectory for SEQ. But the Panel recommends that the clearing of koala habitat must still be avoided in the Urban Footprint wherever possible, with any residual impact offset. Overall, these recommendations would expand the areas where State regulation of koala habitat applies and strengthen protection of habitat values across SEQ, but particularly in identified priority areas.

A broad range of exemptions, often based around vegetation clearing triggers, were also identified as an issue for the effective protection of koala habitat. In many of these cases, the policy justification for the exemptions are not always clear. Reducing the number exemptions is therefore likely to be critical for improving the protection of koala habitat. In particular, the scientific, or policy, justification for the 5 ha exemption is unclear and should be revisited if the State wishes to preserve koala habitat; the cumulative adverse impact of multiple 5 ha lots being exempt from assessment, regardless of their ecological attributes or their location, is likely to have a significant impact on koala habitat and the long-term persistence of koalas in SEQ. Substantially reducing the size of this threshold, or adoption of a graded approach that depends on the location of a particular parcel of land and on the type of koala habitat located there, would improve the protection of koala habitat across SEQ and is recommended by the Panel. The Panel further recommends that self-assessment is not permitted, given the potential for clearing to increase rapidly if this were the case.

Significant issues related to biodiversity offsets for koala habitat were also raised with the Panel during the consultation. Offsets are only required under Queensland State legislation where there is a requirement for a relevant approval, and there is a significant residual impact on the relevant environment matter. Because there are many exemptions related to vegetation clearing, in many cases no development approval is required and hence no offsets are required. Therefore, expanding the cases when development assessments are required will increase the provision of offsets for residual impacts. However, given the Panel's recommendation that habitat should not be cleared outside the Urban Footprint, or in identified priority areas, offsets should only apply for development impacts in areas inside the Urban Footprint that are outside priority areas for koalas.

Strategies beyond the planning framework

Regulatory protection of habitat plays a significant role, but the Panel also believe that communication, engagement and incentive mechanisms also play an important role in enhancing the protection of habitat (see also Recommendation 3 for recommendations on incentives for habitat restoration and Recommendation 5 for recommendations more broadly on engagement and partnerships). This is consistent with the Panel's overarching view that engagement and partnerships need to be enhanced, and are critical to ensure the long-term protection of koalas in SEQ. The panel therefore also recommends the consideration and resourcing of models for the protection of habitat through incentives and partnerships.

3. Strategic and Landscape-scale Koala Habitat Restoration

3.1 Recommendation

Develop and adequately resource regulatory, incentive and partnership mechanisms to achieve strategic koala habitat restoration at landscape scales in SEQ, particularly in identified priority areas.

3.2 Recommended actions

- a. Resource greater investment in koala habitat restoration, focused primarily in identified priority areas for koalas (see Recommendation 1) through:
 - i) investigating, implementing and resourcing targeted incentive mechanisms for koala habitat restoration on private land
 - ii) enhancing partnerships between State Government, local governments, natural resource managers (e.g., Healthy Land and Water), NGOs, and the community to support koala habitat restoration
 - iii) dedicated extension officers within local government with primary roles to identify koala habitat restoration opportunities and to facilitate engagement with landholders (see also Recommendation 5)
 - iv) development of partnerships with NGOs to implement targeted acquisitions (including using financial offsets) and covenanting programs that also facilitates koala habitat restoration programs
 - v) identification of priorities for koala habitat restoration on state lands and implementation of restoration directly on these lands, with a mechanism for long-term protection.
- b. Review and modify the Offsets Policy and associated regulation to achieve the following:
 - i) strategic prioritisation of sites for koala offsets that will provide the greatest long-term benefits to koalas, consistent with the overall strategic approach to koala conservation (Recommendation 1). This would include identifying priority locations for offsets consistent with Recommendation 1 and the possibility of offsetting outside of the LGA where the impact occurred when essential to address regional priorities. This could be implemented using the strategic offset investment corridor mechanism which exists under the Offsets Act and could also occur as part of the proposed strategic assessment for SEQ under the EPBC Act (Queensland Government 2017), if this is undertaken in a timely fashion
 - ii) permit and facilitate advanced offsets to be established in strategic priority areas and provide landowners and developers certainty that these offsets will be able to be used in the designated situations
 - iii) the process of developing offsets should be transparent and cost-effective, with as few administrative steps, and as much certainty for all stakeholders as possible. Feedback from consultation indicated that the current process, involving a series of plans and agreements, after a condition is imposed, generally without set timeframes, is not well understood
 - iv) identify how the provision of financial offsets could be improved to provide the State Government with a mechanism to achieve more strategic offset outcomes for koalas, given limited uptake of financial offsets for koalas to date. For example, the State should re-examine the current financial calculator to ensure that perverse outcomes in SEQ due to high financial contributions do not occur. The State should also reconsider the process considered in 2016 of being able to accept Commonwealth financial contributions, and being able to apply these to the delivery of State-arranged offsets to allow a more strategic outcome
 - v) resource a mechanism for improved transparency, enforcement and monitoring of offsets, including meeting timeframes for offset benefits. The State should consider whether working with NGOs should be investigated further in order to relieve pressure on scarce State resources, and to encourage the development of creative alternative offset delivery solutions. Acquisition of land by the State alone is unlikely to be a long-term cost-effective mechanism for delivery of offsets
 - vi) Ensure that the State Government and local governments communicate clearly in regards to koala offset delivery and each contribute to a regional database and linked mapping to record priority areas for koala offset delivery, approved offset delivery sites, progress of offset delivery, and offset monitoring outcomes.

3.3 Justification and Explanation

Much of the feedback the Panel received through the consultation process focussed on the issue of habitat loss, but the Panel believes that habitat restoration is a critical management activity for the recovery of koala populations. Given the rapid declines in koala populations in SEQ in over the past 20 years there must be a focus on koala population recovery, as well as protection. The restoration of habitat will need to be a key component of any successful koala recovery strategy and will be most effective at landscape scales.

The case for habitat restoration

Koalas are unique in many ways for a threatened species because the success rate for the restoration of habitat is relatively high. There is also evidence that koalas can use planted habitat trees as young as six years old (Kavanagh and Stanton 2012, Rhind et al. 2014) which limits the time lag between restoration activities and benefits to koalas. There is also evidence that, when habitat restoration occurs at scale across broad landscapes this can successfully lead to increases in koala populations over time, e.g., in Gunnedah, NSW (Lunney et al. 2012). This suggests that there are excellent opportunities for successful habitat restoration. But, to be successful, restoration has to occur at a scale that results in restoration of habitat across broad landscapes. It also relies on restoration being conducted in association with other activities such as habitat protection, threat reduction, and community partnerships. Failing to coordinate restoration with these other activities, especially threat reduction, risks costly restoration activities having little benefits for koalas. The participants in the Panel's consultation emphasised the importance of incentivising restoration (Koala Expert Panel 2017), but the expert elicitation suggested a view that it was unlikely that the extent of restoration could compensate entirely for ongoing losses of habitat. Nonetheless, the Panel's view is that habitat restoration must form a central pillar for achieving recovery of koala populations in SEQ, in combination with improved protection of habitat. The Panel has identified two main mechanisms by which restoration at landscape scales could be achieved. One is direct investment in restoration programs and the other is through the Offsets Policy.

A holistic approach to achieving restoration outcomes

Central to the State Government's koala habitat restoration activities has been their Koala Habitat Program that focussed around acquisitions of properties. One of the issues with this approach that the Panel identified is that it has been relatively expensive (\$18.1 million) and has only resulted in 270 ha being in the process of being restored (Koala Expert Panel 2017). Although the Koala Refuges Program was also supposed to contribute to the restoration of habitat and 67 Koala Refuges were declared, with a total area of 11,000 ha, it is not clear to what extent this has contributed to the restoration of habitat. Given the size of SEQ and that the known areas restored under these programs is dwarfed by the rate of habitat loss, it is unlikely that this has had a major impact on the regional persistence of koalas. Although the Panel sees the benefits of acquisition programs, they believe that a broader, more holistic approach that also incorporates incentive mechanisms and partners with organisations (and individuals) who can deliver habitat restoration solutions is likely to be much more cost effective at achieving effective restoration at landscape scales (Tisdell et al. 2017). A critical aspect of this will need to be engagement with local governments and the community in developing restoration activities and the Panel identified that dedicated extension officers to achieve this would be of substantial benefit. Another solution that was raised repeatedly during our consultation was the use of state-owned lands to target restoration activities. The Panel agree that this could be a cost effective way of achieving broad-scale restoration outcomes provided restored habitat has long-term protection on those lands. The Panel recognise that these activities will require substantial State Government investment to be successful, but there are well established and cost effective methods and technologies to restore tree species across broad areas.

Solutions through offsets

In general, offsets have been widely criticised for failing to adequately compensate for development impacts through a number of pathways (Maron et al. 2010, Bull et al. 2013, Maron et al. 2015). During the Panel's consultation, the Offsets Policy was similarly heavily criticised. Many of the issues raised related to the Planning Regulation in determining when an offset is required (such as issues with the large number of exemptions that limit the requirement for offsets and the limited number of areas where State offsets apply for koalas – See Recommendation 2 for a consideration of this), but many also focussed on the delivery of offsets. These issues included: (1) the lack of strategic delivery of offsets, leading to offsets in locations that have limited benefit for koalas, (2) problems with financial offsets, such as the high cost of financial offsets, potentially leading to perverse behaviour where developers use other exemptions or strategies to avoid the requirement for offsetting, and (3) the lack of enforcement and monitoring of offsets (Koala Expert Panel 2017). Despite these limitations, the Panel believe the Offsets Policy does have an important role to play in achieving habitat restoration targets, particularly since the Offsets Policy specifically requires offsets based on restoration of habitat.

In general, the Panel recommends that a more strategic region-wide approach to offsets is required with priority offset sites focussed around identified priority areas for koalas (Recommendation 1) and integrated into the proposed Strategic Assessment when that occurs (Queensland Government 2017). This could involve allowing offsets outside of the LGA where the impact has occurred when this is strategically advantageous to maximise benefits to koalas. Advanced offsets and improving some of the issues with financial offsets would also provide a mechanism for more strategic application of the Offsets Policy. Implementation of a mechanism and resourcing for better monitoring and enforcing offsets also appears crucial, recognising that resourcing requirements may be different in different LGAs.

4. Coordinated Threat Reduction and Koala Population Management

4.1 Recommendation

Resource and implement a new coordinated threat reduction and koala population management strategy that complements habitat protection and restoration activities, particularly in identified priority areas.

4.2 Recommended actions

- a. Undertake a threat assessment across SEQ to quantify and map threats to koalas from habitat loss, vehicle collisions, dog attacks (domestic and wild dogs), disease, fire, and climate change.
- b. Identify priority locations for investment in reducing existing and future threats from vehicle collisions, dog attacks (domestic and wild dogs), disease, and fire that consider:
 - i) whether reductions in each threat are necessary and feasible to recover declining koala populations in each location
 - ii) that threat reduction measures must complement other measures to protect and restore koala habitat and to minimise opportunities for threats to increase in the future.
- c. Resource a targeted and transparent threat reduction program across SEQ, in partnership with local governments, particularly in identified priority areas for koalas, NGOs, industry, and the community using a range of initiatives, including the following:
 - i) retrofitting of existing roads and railroads and education programs to reduce koala mortalities
 - ii) predator control programs for wild dogs where they are identified to pose a significant threat to koalas
 - iii) local laws and incentive programs for reducing threats from domestic dogs
 - iv) koala-specific fire management planning and liaison with rural fire authorities, and State land managers
 - v) direct disease management, where it is feasible to do so, and where strategic conservation goals are met
 - vi) identify priorities for threat reduction and population management in koala habitat populations on State lands, and the establishment of koala habitat and populations as key values with mechanisms for long-term protection
 - vii) coordination with koala hospitals and carers to help standardise record keeping and reporting, share advances in treatment protocols and provide support as required
 - viii) investment in research and innovation into potential technological solutions (e.g., virtual fencing)
 - ix) communication and engagement strategies.
- d. Review and develop a new koala translocation policy (currently in the State Koala Conservation Plan), so that it:
 - i) is consistent with best-practice international IUCN guidelines
 - ii) enables regulated translocation to be used as a component of the management of at-risk koalas where this is considered to be beneficial for koalas both on animal welfare and conservation grounds
 - iii) ensures translocation cannot be considered during the development assessment process as an 'alternative' to in-situ habitat and population protection
 - iv) enables regulated translocation to be considered as a strategic tool for koala population management, re-introductions, and genetic management
 - v) ensures a thorough risk assessment pre-translocation (including consideration of relevant genetic, phenotypic, habitat quality, configuration and security, ethical, threat mitigation, and potential disease transmission issues) and comprehensive post-translocation monitoring.
- e. Review policy on release of rehabilitated koalas (currently in the State Koala Conservation Plan) to consider allowing release more than 5km from the capture site when ongoing threats to the individual in the vicinity of the capture site remain high.
- f. Identify where there is empty habitat in SEQ and consider the reintroduction of koalas to these areas, provided:
 - i) there is good evidence that koalas occurred in the area historically
 - ii) threats that may have led to the disappearance of koalas from the area have been mitigated
 - iii) these areas complement other measures to protect and restore koala habitat, particularly in locations identified as priority areas for koalas.
- g. Integrate zoo-based koala populations more explicitly into the management of wild koala populations in SEQ, particularly in urban areas, through:
 - i) recognition that some zoo populations may provide a valuable reservoir for future potential re-introductions
 - ii) supporting the on-going maintenance of studbook records for all koalas held in zoos and wildlife parks in Queensland
 - iii) engaging zoos, where appropriate, in the management of wild koala populations, drawing on their knowledge and expertise in captive breeding and reintroduction.

4.3 Justification and Explanation

The need to better protect koala habitat is critical and was widely acknowledged during the consultation process. However, threats that directly affect koalas such as dog attacks, vehicle collisions, and disease that drive down koala populations are equally critical, particularly in urban areas. The Panel's review of existing policy measures suggests that there has been a focus almost exclusively by the State Government on habitat protection potentially at the expense of a clear and well-resourced strategy to tackle direct threats. The Panel therefore recommends that a greater emphasis needs to be placed on tackling direct threats and that this should be complemented by population management strategies that consider regulated reintroductions, translocation and captive breeding programs as components of an integrated strategy.

Tackling complex threatening processes

The Panel's review, consultation, and expert elicitation revealed three important challenges for reducing the threats impacting directly on koala populations. These are: (1) that most koala populations are affected by multiple threatening processes thus require multiple threatening process to be tackled, (2) that there is considerable spatial variation in threatening process across SEQ, and (3) the difficulty of effectively implementing strategies to reduce threats. There is compelling evidence that koalas in SEQ are simultaneously affected by multiple threats that include dog attack mortality, vehicle collision mortality, disease, fire and climate change. This is especially true in urban areas where the number of threats are higher than in rural areas and tackling single threats is unlikely to be successful in recovering koala populations. This is supported by research evidence (Rhodes et al. 2011) and the results of the expert elicitation (Figure 2). Consequently threat mitigation strategies must be coordinated so that multiple threatening processes are tackled in areas where they are needed. However, since the presence of individual threats vary substantially across SEQ, this needs to be underpinned by a comprehensive threat mapping process. Finally, the expert elicitation revealed a view that the chance of implementing successful strategies to reduce dog attack mortality, vehicle collision mortality or disease threats within 5 years was well below 50%. This reflects key social limitations for implementing some strategies such as domestic dog control (Ng et al. 2014), the high cost of successfully managing multiple threats in urban landscapes (e.g., the Moreton Bay Rail Link Project successfully reversed the decline in the local koala population, but was economically very costly), and logistical or technological constraints, such as those related to developing and deploying a chlamydia vaccine for koalas in the wild (Khan et al. 2014). The Panel believe that addressing these issues requires a targeted approach for threat management that is underpinned by high quality threat mapping, but also recognises the logistical, social and economic constraints on threat mitigation. These constraints could be minimised by developing effective partnership with local governments, industry, NGOs and the community and investing in the exploration of technological solutions where feasible.

Population management for koala recovery

Broadly speaking, the NC Act, through the State Koala Conservation Plan, regulates the direct management of individual koalas, including translocation and rehabilitation of koalas. The regulation of translocation and, to some extent the release of koalas after rehabilitation, have been widely criticised (e.g., <http://www.koalahealthhub.org.au/position-statements>) and were also raised during the consultation. Some of the major issues include concerns around the inability to use translocation to minimise the risk to koalas from processes such as habitat clearing and the risk to koalas after rehabilitation when released near their capture sites only to be subjected to the same high threat levels. Given these issues, the Panel recommend that the policy on translocations and release be reviewed with the aim of following best practice and modifying the policy to permit population management that aims to minimise threats to koalas from habitat loss and other threats. Translocation could also be used as a tool to reintroduce koalas to currently empty habitat where feasible and where threats have been removed. The Panel recommends that this be explored as a strategy. Finally, zoos have a long history of developing expertise in the management and maintenance of captive bred populations that can contribute to the management of wild populations. In particular, the zoo-based koala populations could support the management of fragmented urban and peri-urban koala populations and reintroductions of koalas and are largely an untapped resource. The Panel therefore recommend integration of zoo-based populations into the population management of koalas, especially in urban and peri-urban areas.

5. Strong Community Partnerships and Engagement

5.1 Recommendation

Develop and implement a strategy for partnership development and engagement with the broader community, utilising an approach that is sensitive to the nature and views of local communities.

5.2 Recommended actions

- a. Recognise and properly engage with Traditional Owner communities in recognition that Indigenous rangers could play a major part in data collection and management and to achieve:
 - i) mobilisation of the support and knowledge that Traditional Owners within communities can offer for the conservation of the koala
 - ii) removal of the current obstacles, increased efficiencies, and maximisation of the chances of success within Indigenous Protected Areas (IPAs), Indigenous Ranger programs and Working on Country programs
 - iii) the formal acknowledgement of the cultural and spiritual significance of the koala to Traditional Owners and their engagement as partners in koala conservation programs.
- b. Engage regional extension officers, drawn from local communities, to work within local governments or catchment groups. The role of the extension officers would be to keep open communication channels between the State Government and local communities as well as identify opportunities and facilitate partnerships.
- c. Enhance partnerships to deliver state-wide community engagement campaigns that provide consistent clear messaging, community action, and the potential for citizen science.
- d. Enable knowledge exchange through a multi-faceted communication/extension strategy that includes workshops, conferences, local media (radio and newspapers), and rural community contacts.
- e. Encourage active community participation through citizen science and field activities.

5.3 Justification and Explanation

The Panel received overwhelming interest from the broader community to contribute to the conservation of koalas in SEQ by providing their views and advice to the Panel during the consultation. What was very clear is that there is strong support for finding a solution to the conservation of koalas in SEQ. There is therefore a considerable imperative for the State Government to work to develop partnerships with the broader community to achieve koala conservation goals jointly. The Panel believes this is both necessary for achieving long-term koala conservation success and for enhancing the coordination of koala conservation initiatives. Although the State has previously developed some engagement and partnership programs (e.g., the Koala Nature Refuges program) the Panel recommends that it should be enhanced and form a central component of their koala conservation strategy to include much greater recognition of the role of First Australians, improved engagement through extension officers, and greater opportunities for two-way communication and citizen science. Communication, engagement and partnerships at the institutional level (e.g., local governments, NGOs, and industry) is equally important and the Panel's recommendation for a Koala Advisory Council (see Recommendation 1) is designed to facilitate this.

Recognition of First Australians' role

First Australians have had no formal acknowledgement of the cultural and spiritual significance of the koala to Traditional Owners, nor have they been fully engaged as partners in the conservation of the species. The Panel therefore recommends that the cultural significance of the koala is acknowledged and, where possible, koalas be managed jointly with Traditional Owners. The Panel envisage a future in which the koala and its cultural significance are valued and embraced by all Australians. In partnership with Traditional Owners, enhanced frameworks to support and secure viable and self-sustaining wild populations will be possible.

A model for effective community engagement and partnerships

Queensland's population is highly urbanised and that trend is increasing. This has resulted in well recognised cultural differences between the urban public and rural and regional landholders. It is the experience of some Panel members that rural producers and private land managers are resistant to messages delivered by city-based government officers, and that misunderstandings are common. In contrast, the use of officers derived from the local community, or the industry sector, provides a basis for the establishment of relationships, the acceptance of messages and development of partnerships. The old Department of Primary Industries extension officers were a good model for this. The Panel therefore recommend that extension officers be engaged to fulfil this role and be allowed to develop new mechanisms for the State Government to partner with local communities.

Enhanced two-way communication

It was clear to the Panel from the consultation process that the community desired to be engaged, and that elements of the current engagement were based on limited knowledge of strategic goals or realistic outcomes. This suggests that one element of improved communication needs to be more effective and accurate education and knowledge dissemination of the goals of koala conservation initiatives and pathways for community engagement. This will greatly improve transparency and contribute to long-term conservation outcomes and could be achieved through working with communication experts (including zoos that have a wide range of communication expertise) to develop a coherent communication strategy. However, communication the other way (from communities to State Government) is equally important and the Panel recommend the development of two-way knowledge exchange strategies.

6. Targeted Mapping, Monitoring, Research, and Reporting

6.1 Recommendation

Develop targeted and high quality koala habitat mapping, threat mapping, monitoring and research programs that aim to: (1) identify key koala ecological values and threats, (2) measure changes in koala ecological values and threats over time, as well as understand the drivers of those changes, (3) inform policy and management decision-making, and (4) communicates trends and outcomes transparently and publically to enhance engagement.

6.2 Recommended actions

- a. Develop consistent mapping of koala habitat across SEQ at a fine resolution that addresses the problems of the previous mapping and implements a systematic mechanism for updating this mapping to improve accuracy and track changes in koala habitat over time. This should consist of:
 - i) finalising the new EHP mapping that the Panel fully supports, and has provided advice on. This will map core and non-core koala habitat across remnant vegetation, regrowth vegetation and scattered trees that reflect the key ecological koala habitat values across SEQ
 - ii) applying the habitat map to develop trigger mapping for development applications and identify priority areas for koalas across SEQ based on the recommendations in this report (see Recommendations 1 and 2)
 - iii) implementing a mechanism for updating this mapping over time to improve accuracy and track changes in koala habitat over time (both losses and gains)
 - iv) every two years, publically reporting on changes in koala habitat over time, relative to conservation targets, in an easily accessible format.
- b. Develop: (a) broad-scale assessment tools to measure the extent and condition of koala habitat, and (b) ground-based rapid habitat assessment tools that can be integrated to provide statistics on trends and metrics on condition of koala habitat across SEQ.
- c. Develop a consistent approach to mapping threats to koalas across SEQ and implement a systematic mechanism for updating this mapping to track changes in threats over time. This should:
 - i) use existing spatial data sets that represent proxies, or direct measures, of threats such as urban development, land clearing, dog attacks, vehicle collisions, fire management, climate change, disease, and reductions in genetic diversity
 - ii) where necessary, collect additional spatial data on the distribution of threats for which limited data currently exist, such as wild dog attacks, disease and genetic diversity
 - iii) Apply the threat mapping to guide the selection of priority actions for threat reduction and koala recovery actions across SEQ (see Recommendation 4).
 - iv) Implement a mechanism for updating this mapping over time to track changes in the level and composition of threats.
- d. Develop a comprehensive koala monitoring program that explicitly evaluates and communicates progress towards koala conservation targets and evaluates policy and management success. This should include:
 - i) every two years, monitoring koala densities at 10-20 sentinel sites located across SEQ that are representative of koala populations in rural and urban landscapes and publically reporting trends in these densities, relative to conservation targets, in an easy to interpret report card every two years
 - ii) in identified priority areas for koalas (see Recommendation 1), developing monitoring programs that are specifically designed to evaluate, in terms of outcomes for koalas, the effectiveness of management interventions to reduce threats to koalas. Report publically on the outcome of this evaluation every five years
 - iii) implementing a citizen science program that uses modern technology (e.g., data recording apps) to improve the recording of koala sightings by the public and engagement in koala issues (also see Recommendation 5)
 - iv) developing a single repository to integrate monitoring data with data from other sources, such as local government monitoring programs, and make this publically available
 - v) working in partnership with local governments to develop standard approaches to koala monitoring that would facilitate the integration of monitoring data collected by the State and local governments.
- e. Implement a mechanism (e.g., workshops, synthesis and evaluation) for review of the outcomes of the mapping, monitoring and evaluation by the Koala Advisory Council every five years and for the Koala Advisory Council to make recommendations on the revision of policy and management that arise from this review. This should follow the principles of adaptive management.
- f. Incentivise multi-disciplinary research that explicitly addresses key management and policy priorities and the development of partnerships between researchers, the State Government and other end-users.
- g. Explore mechanisms to enhance the cost effectiveness of koala research through targeted leveraging of funding (e.g., through Australian Research Centre Linkage Projects and other Commonwealth funding opportunities such as Cooperative Research Centre).
- h. Run a koala conference every five years that brings together researchers (across a broad range of disciplines), policy makers and planners from across different levels of government, NGOs, industry, and the community from across Queensland. The aim of this conference would be to:
 - i) open communication channels among different stakeholders and provide a forum for discussing the latest issues for conserving koalas and latest research that has practical relevance for informing policy, management and planning
 - ii) provide a synthesis on the outcomes of the conference to the Koala Advisory Council
 - iii) enhance engagement between governments and the community in the broadest sense and enhance the profile of koalas in Queensland.

6.3 Justification and Explanation

Appropriate and reliable information to support policy and management decisions and implementation, and to underpin planning regulation for koalas is essential. Three areas that form the basis of primary information requirements are habitat and threat mapping, monitoring and evaluation, and research. The Panel undertook a review of existing Queensland Government mapping and monitoring programs for koalas and considered the views expressed through the consultation process on mapping and monitoring. The Panel also made recommendations to the State Government on the mapping being undertaken by EHP for SEQ, the design of a revised koala monitoring program, and key research priorities. Initial recommendations on each of these were presented in the Interim Report (Koala Expert Panel 2017). Excellent progress has been made by EHP in improving the mapping of habitat, but improvements and greater resourcing of monitoring is still needed. A critical additional element is ensuring that there is a mechanism in place for updating policy based on the outcomes of monitoring and research.

Progress on mapping koala habitat

Problems with habitat mapping was one of the most prominent issues raised during the consultation process (Koala Expert Panel 2017). Under Recommendation 2 we outline the issues raised with the current mapping.

At the time of writing this report the State Government was finalising koala habitat mapping for SEQ, to address the key issues with the current mapping (see Recommendation 2 for details). The Panel are supportive of this ecological mapping and believe it is an improvement over existing mapping, subject to satisfactory validation. However, it is essential that this mapping is updated over time to improve accuracy and to track trends in koala habitat (both losses and gains).

Threat mapping to inform threat management

Although consultation comments rarely mentioned the lack of information on threats, the Panel believe that information on threats is critical to being able to identify the most appropriate responses to recover koala populations. One way to do this is to map threats spatially (Evans et al. 2011), but information such as this is entirely absent for koalas in SEQ at present. Therefore, the Panel believes that the spatial mapping of threats that can then be used to identify recovery actions is a priority.

Comprehensive monitoring

The Queensland Government has had in place a koala monitoring program for SEQ since 1996 (Rhodes et al. 2015). This is probably one of the best long-term monitoring programs for koalas anywhere in Australia, and has been instrumental in identifying the rapid declines in koalas in SEQ. However, the monitoring program was originally designed to track changes on koala abundance in only one or two locations (primarily in the Koala Coast and Pine Rivers areas) and was not designed to understand the drivers of trends, or to evaluate policy impacts. This has severely limited the ability to use the monitoring data to understand why declines are happening (although that is clear from other ancillary information), to evaluate the effectiveness of specific management and policy interventions, and to assess progress towards policy objectives. There has also been no monitoring of changes in habitat to evaluate progress towards habitat retention targets. There is therefore a clear need for a revised monitoring and evaluation program that: (1) explicitly tracks progress towards habitat and koala population targets, (2) evaluates the effectiveness of policy and management, (3) communicates outcomes to the community and stakeholders and engages the community in koala issues, and (4) has an explicit mechanism for the monitoring results to feed back into management and policy decision-making processes. A significant further issue that was identified during the consultation was that there is a lack of integration of monitoring data from different sources, such as from the State Government, local governments, community groups, etc., and this was leading to ineffective use of data. An effective mechanism to ensure integration of monitoring data would therefore be highly beneficial.

Policy relevant research outcomes

The Queensland Government has implemented a number of research funding schemes for koalas in the past 10 years and, in fact, has invested over \$4 million in koala research over this time through three grant funding schemes. Although these have funded many interesting research projects, the benefits and links to improved management have often been unclear based on the Panel's review. The Panel believes that koala research funded by the Queensland Government should target research that has a more direct benefit to policy and management decision-making, although recognising these priorities will change through time. There is therefore a need to encourage research that is directly linked to policy decisions and to incentivise multi-disciplinary partnerships between researchers and end users. The Panel also believes that there are opportunities to leverage funding from sources such as the Australian Research Council and other Commonwealth funding schemes that could be utilised to increase the cost-efficiency of State Government funded research. The Panel's consultation also revealed that often koala research was not well coordinated and therefore there is a need to incentivise greater strategic coordination of research activities and data to address key policy questions.



Recommendations for the Rest of Queensland

In addition to making recommendations for SEQ, the Panel were asked to provide recommendations on the directions that policy should consider more broadly for Queensland.

In general the Panel believes that the models underpinning the recommendations for SEQ should be capable of being extended to other parts of Queensland, as required. In the first instance, it is recommended that the SEQ koala mapping, planning and regulations be expanded to encompass the LGAs of Gladstone, Bundaberg, Fraser Coast, Gympie, North Burnett, and South Burnett, given that these LGAs are experiencing similar development pressures to those within the SEQ Planning Region and the need for protection of existing koala populations that are under threat. For example, communities in the northern part of the SEQ bioregion report significant koala/habitat impacts already taking place and conservation opportunities will be significantly reduced if conservation measures are not initiated in the near future. LGAs in this region are experiencing the same threatening processes found within the SEQ Planning Region and concern is rising within local community groups.

More broadly, for the remaining extent of the koala's distribution in Queensland, it is recommended that the State should focus investment on consolidation of existing koala populations and recovery at a landscape scale. A key approach should be based around the Panel's recommendations for SEQ that apply to rural koala populations. However, there are some significant hurdles that need to be addressed, and it is further recommended that:

- a. regional studies are undertaken to fill knowledge gaps around koala distribution, abundance, habitat utilisation and environmental drivers of population dynamics, especially in the far north
- b. state-wide planning and habitat mapping are undertaken to identify ecological values and land use conflicts and to guide sustainable investment in koala/habitat conservation
- c. a strategy for community engagement and extension is developed and implemented at a regional level to address local cultural needs.

References

- Bull, J. W., K. B. Suttle, A. Gordon, N. J. Singh, and E. J. Milner-Gulland. 2013. Biodiversity offsets in theory and practice. *Oryx* 47:369-380.
- Burgman, M. A. 2015. *Trusting Judgements: How to Get the Best out of Experts*. Cambridge University Press, Cambridge.
- Craig, A. P., J. Hanger, J. Loader, W. A. H. Ellis, J. Callaghan, C. Dexter, D. Jones, K. W. Beagley, P. Timms, and D. P. Wilson. 2014. A 5-year Chlamydia vaccination programme could reverse disease-related koala population decline: Predictions from a mathematical model using field data. *Vaccine* 32:4163-4170.
- de Oliveira, S. M., P. J. Murray, D. L. de Villiers, and G. S. Baxter. 2014. Ecology and movement of urban koalas adjacent to linear infrastructure in coastal south-east Queensland. *Australian Mammalogy* 36:45-54.
- Dique, D. S., J. Thompson, H. J. Preece, G. C. Penfold, D. L. de Villiers, and R. S. Leslie. 2003. Koala mortality on roads in south-east Queensland: the koala speed-zone trial. *Wildlife Research* 30:419-426.
- Evans, M. C., J. E. M. Watson, R. A. Fuller, O. Venter, S. C. Bennett, P. R. Marsack, and H. P. Possingham. 2011. The spatial distribution of threats to species in Australia. *Bioscience* 61:281-289.
- Kavanagh, R. P., and M. A. Stanton. 2012. Koalas use young Eucalyptus plantations in an agricultural landscape on the Liverpool Plains, New South Wales. *Ecological Management & Restoration* 13:297-305.
- Khan, S. A., C. Waugh, G. Rawlinson, J. Brumm, K. Nilsson, V. Gerdt, A. Potter, A. Polkinghorne, K. Beagley, and P. Timms. 2014. Vaccination of koalas (*Phascolarctos cinereus*) with a recombinant chlamydial major outer membrane protein adjuvanted with poly I:C, a host defense peptide and polyphosphazine, elicits strong and long lasting cellular and humoral immune responses. *Vaccine* 32:5781-5786.
- Koala Expert Panel. 2017. *Koala Expert Panel Interim Report*. Queensland Government, Brisbane, Australia.
- Lunney, D., M. S. Crowther, I. Wallis, W. J. Foley, J. Lemon, R. Wheeler, G. Madani, C. Orsches, J. E. Griffith, M. Krockenberger, M. Retamales, and E. Stalenberg. 2012. Koalas and climate change: a case study on the Liverpool Plains, north-west New South Wales. Pages 150-168 in D. Lunney and P. Hutchings, editors. *Wildlife and Climate Change. Toward Rovvust Conservation Strategies for Australian Fauna*. Royal Zoological Society of New South Wales, Mosman, Australia.
- Maron, M., J. W. Bull, M. C. Evans, and A. Gordon. 2015. Locking in loss: baselines of decline in Australian biodiversity offset policies. *Biological Conservation* 192:504-512.
- Maron, M., P. K. Dunn, C. A. McAlpine, and A. Apan. 2010. Can offsets really compensate for habitat removal? The case of the endangered red tailed black cockatoo. *Journal of Applied Ecology* 47:348-355.
- McAlpine, C. A., J. R. Rhodes, J. G. Callaghan, M. E. Bowen, D. Lunney, D. L. Mitchell, D. V. Pullar, and H. P. Possingham. 2006. The importance of forest area and configuration relative to local habitat factors for conserving forest mammals: a case study of koalas in Queensland, Australia. *Biological Conservation* 132:153-165.
- Ng, C. F., H. P. Possingham, C. A. McAlpine, D. L. De Villiers, H. J. Preece, and J. R. Rhodes. 2014. Impediments to the success of management actions for species recovery. *Plos One* 9.
- Queensland Government. 2017. *ShapingSEQ. South East Queensland Regional Plan 2017*. Department of Infrastructure, Local Government and Planning, Brisbane, Australia.
- Rhind, S. G., M. V. Ellis, M. Smith, and D. Lunney. 2014. Do Koalas *Phascolarctos cinereus* use trees planted on farms? A case study from north-west New South Wales, Australia. *Pacific Conservation Biology* 20:302-312.
- Rhodes, J. R., H. Beyer, H. Preece, and C. McAlpine. 2015. *South East Queensland Koala Population Modelling Study*. Uniquist, Brisbane, Australia.
- Rhodes, J. R., C. F. Ng, D. L. de Villiers, H. J. Preece, C. A. McAlpine, and H. P. Possingham. 2011. Using integrated population modelling to quantify the implications of multiple threatening processes for a rapidly declining population. *Biological Conservation* 144:1081-1088.
- Tisdell, C. A., H. J. Preece, S. Abdullah, and H. L. Beyer. 2017. Strategies to conserve the koala: cost-effectiveness considerations. *Australasian Journal of Environmental Management* 24:302-318.

Appendix 1—Koala Expert Panel Membership

The Koala Expert Panel consists of:

Associate Professor Jonathan Rhodes, School of Earth and Environmental Sciences, Centre for Biodiversity and Conservation Science, and ARC Centre of Excellence for Environmental Decisions, The University of Queensland

Jonathan is a conservation scientist with a broad range of interests in biodiversity conservation and environmental decision-making. He leads a diverse research group that aims to inform better decision-making to conserve biodiversity and achieve environmental sustainability. His work integrates ideas from ecology, economics and social science to address these challenges. Over the past 15 years Jonathan's work has particularly provided important insights into the conservation requirements of the koala.

Ms Antra Hood, Partner, MinterEllison

Antra specialises in planning and environment law with a focus on strategic infrastructure development projects, greenfield property development projects and large scale asset acquisitions and disposals. Antra has worked on many of Queensland's landmark property developments and strategic transactions, from the development of large residential estates and infrastructure to urban renewal projects and the sale of significant State assets. Antra has a particular interest in biodiversity offsets and has worked with many different stakeholders in this space, ranging from government, to charitable offset providers, aggregators and property developers in the development of both policy and practical solutions, giving her broad ranging practical experience and perspective. Prior to joining MinterEllison's team, Antra was the General Counsel and Company Secretary for Springfield Land Corporation, the developer of Australia's largest master planned community.

Dr Alistair Melzer, Koala Research Centre of Central Queensland, Central Queensland University

Dr Alistair Melzer is an ecologist who has studied koalas, primarily in Queensland, since 1988. His work on the ecology of koalas (ranging behaviour, habitat selection, morphological variation, effects of climate) and their conservation, especially in remote and regional Queensland, has resulted in requests from Commonwealth, State and local governments, for expert advice on koala management and conservation. Dr Melzer also works with local communities and industry. His work in Central Queensland has been made possible through strong local and international community support. In conjunction with colleagues, Dr Melzer has maintained long term programs that are continuing after 20 years of monitoring.

Mr Al Mucci, General Manager/Director, Dreamworld Wildlife Foundation

Al is a professional wildlife manager with expert knowledge in the husbandry of koalas and has been in the zoological industry for 18 years. Al has broad based experience with a wide variety of animals which has included senior positions in non-government organisations, private and public institutions. Al is President of the Zoo and Aquarium Association, Queensland Branch and Director of the Dreamworld Wildlife Foundation. He is an invited member of the Biosecurity Queensland Ministerial Advisory Council. He has a professional interest in the conservation of koala populations and in the presentation of the species as an iconic ambassador for the conservation of Australian native wildlife and habitats.



Appendix 2—Terms of Reference

Terms of Reference - Koala Expert Panel

Intent

To provide recommendations to the Queensland Government that will inform a strategy for the protection of the vulnerable koala in south east Queensland.

Purpose of the Koala Expert Panel

To provide expert advice on the most appropriate and realistic actions to reverse the decline in koala population sizes and ensure the long-term persistence of koala populations in the wild within South East Queensland¹. This will include consideration of:

- Existing approaches to understand where policy and management has failed to deliver on koala protection.
- Regulation and planning instruments, and other protection measures.
- Management actions required to reduce threats.
- Monitoring and research actions such as population surveying, mapping and modelling of habitat, and research into preventable causes of death, and rescue and rehabilitation services.
- Policies, such as translocation policies.

The panel will also provide advice on the design and desirability of the immediate actions proposed by the Department of Environment and Heritage Protection (EHP).

Expected commitment from the panel

It is expected that the panel will:

- Review the success, or otherwise, of existing approaches to koala management.
- Provide feedback on the immediate actions proposed by EHP such as surveying and monitoring and the establishment of two supported koala precincts in coastal South East Queensland. Details are included in attachment 1.
- Provide direction to EHP on the collation of existing research to inform recommendations.
- Liaise with other experts to inform the recommendations.
- Oversee, and undertake as appropriate, consultation with key stakeholders including local governments, conservation groups and industry to inform recommendations.
- Report back to the participants of the 4 July workshop for input.
- Meet fortnightly and provide updates to EHP at these meetings. The purpose of these meetings will be to ensure regular communication among panel members and that deliverables align with EHP requirements.
- Oversee the preparation of and approval of the draft and final reports.

Timeframes

Deliverable	Timeframe (from date of finalising ToR)*
Provide feedback on immediate actions	1 month
Conduct consultation	3 months
Overview of consultation results (prepared by EHP and endorsed by the panel)	4 months
Reconvene the 4 July workshop (if necessary)	4 months
Interim report	4 months
Final report	12 months

* The ToR was finalised on 29 August 2016.

Deliverables

- Fortnightly updates on progress, including the ability for EHP to provide feedback to ensure the final deliverables meet requirements.
- Interim report.
- Final report.

The interim report should contain:

Identification of where current policy and management have failed, outcomes from the consultation, and direction/areas of work for the following 6 months.

The final report should contain:

Recommendations on the most appropriate and realistic actions to reverse the decline in koala population sizes and ensure the long-term persistence of koala populations in the wild within south east Queensland, including:

- Specific recommendations for koala policy and management in south east Queensland.
- Evaluation of the potential options and risk assessment.
- How the recommendations and expected outcomes can be evaluated over time.
- Analysis of data compilation and consultation.
- Future direction for research, monitoring and evaluation needed to support an adaptive management framework for koala conservation in south east Queensland.
- Outline of direction koala policy should consider more broadly across Queensland.

¹ Here “South East Queensland” refers to the region represented by the SEQRP and includes the following local government areas: Brisbane City Council, City of Gold Coast Council, Ipswich City Council, Lockyer Valley Regional Council, Logan City Council, Moreton Bay Regional Council, Noosa Shire Council, Redland City Council, Scenic Rim Council, Somerset Regional Council Sunshine Coast Council and Toowoomba Regional Council (part only).

Membership

The membership of the group is:

Chair:

- Dr Jonathan Rhodes, Associate Professor, Centre for Biodiversity and Conservation Science and the School of Geography, Planning and Environmental Management, The University of Queensland

Panel Members:

- Dr Alistair Melzer, Koala Research Centre of Central Queensland, Central Queensland University
- Mr Al Mucci, General Manager/Director, Dreamworld Wildlife Foundation
- Ms Antra Hood, Lawyer, Minter Ellison

Role of the Chair

- Primary contact and liaison between the Panel and EHP;
- Primary contact for media enquiries, with support from EHP;
- Convenor, facilitator and spokesperson for the panel;
- Organise the distribution of work to the panel, including utilising appropriate expertise and experience for particular components and consultation; and
- Resolve any conflicts of opinion.

Roles and responsibilities

The panel will commit to:

- Providing evidence-based and unbiased advice;
- Making timely decisions and provision of advice; and
- Notifying the Secretariat, as soon as practical, if any matter arises which may be deemed to affect membership.

The Department of Environment and Heritage Protection will:

- Provide secretariat support;
- Provide supporting information, such as access to data;
- Provide contact details and support for consultation, including liaison and organising meetings as required and assisting in the preparation of questions that will inform the consultation process;
- Provide a summary of consultation results that can be used by the panel for analysis;
- Reconvene participants from the 4 July workshop, if necessary;
- Collate and summarise existing research, to address specific components as identified by the panel;
- Provide support for drafting reports; and
- Collate discussions and prepare recommendations for approval by Government.

Other matters

Amendment, modification or variation

This Terms of Reference may be amended, varied or modified in writing after consultation and agreement by the panel members.

Communication Protocols

Responses to media and other information requests will be the responsibility of the chair.

Confidentiality

Members are to maintain confidentiality on the content of discussions for the duration of the term.

Conflicts of interest

Committee members will be required to declare conflicts of interest. It is recognised that members are involved in various projects on koala conservation, conflicts of interest would only need to be declared in the member is likely to gain financial advantage from their membership.

Remuneration

The Queensland Government will pay for all out of pocket expenses, including travel and accommodation.

Term

The group will initially be convened for 12 months.

Immediate Actions

Survey program overview

Under the oversight of the Koala Expert Panel, Dr Julia Playford (EHP) will develop a methodology for the on-going survey and monitoring of koala populations using expert knowledge. This will include a clear articulation of what the monitoring and survey is expected to achieve to allow for the on-going assessment of koala population trends.

Issues to be considered include new technology, capacity for spatial and temporal replication across south east Queensland and across the range of koalas in Queensland, capacity for data analysis and the use of incidental data records and citizen science.

Create two supported refuges within the SEQ urban footprint

It is proposed to develop two supported urban refuges; one in Daisy Hill and a second north of Brisbane; to invest focused effort on the survival of the koalas and their habitat within these refuges.

The focused effort would include management activities for the resident koalas and habitat consisting of:

- implementing threat mitigation measures, such as strategic exclusion fencing, wild dog baiting, vaccination against disease and habitat restoration and enhancement.
- actively managing the koala populations in each refuge by enabling translocation of mature and juvenile koalas, annual surveys and monitoring and associated data capture, and conducting regular health checks and population management and genetic diversity.

The establishment of the refuges will provide secure populations of koalas in a near natural setting within the SEQ Coastal zone, and maintain the opportunity for tourists coming to Brisbane and the Gold and Sunshine Coasts and locals to see koalas in the wild.

The Moggill Koala Hospital will continue to play a key role in the establishment and ongoing management of the supported urban refuges. Vets at the Hospital will oversee regular health checks and administer vaccinations. The Hospital will also receive koalas that have been, or are in need of, rehabilitation where their release to the site of capture would put the koala at further risk. A vaccine against Chlamydia would be administered to all new and existing koalas within the urban refuge and on an annual basis.

Spatial planning including modelling and mapping koala habitat and corridors in western SEQ

As part of the previous responses to koala protection, detailed mapping of koala habitat has been undertaken in the eastern local government areas of SEQ. The western Local Government areas of Scenic Rim, Somerset and Lockyer have koala habitat mapping showing suitable habitat. This mapping and modelling work will be undertaken at the scale of 1:25,000 identifying potentially suitable habitat and areas to five hectares.

As part of this work, strategic corridors and blocks of land that require protection and areas suitable for rehabilitation will be identified. This work will require a small team comprising a fauna ecologist, a GIS analyst and a project coordinator. In-kind support will be provided by the Department, including a fauna ecologist, a project manager, and additional GIS support. The cost for the spatial planning is \$0.337M over 12 months, and will be completed by June 2017.

Addendum

December 2016

The previously stated purpose of the Koala Expert Panel is to provide expert advice on the most appropriate and realistic actions to reverse the decline in koala population sizes and ensure the long-term persistence of koala populations in the wild within south east Queensland. This includes consideration of regulation and planning instruments.

This addendum details the role of the panel and timeframes in relation to planning instruments.

Consultation drafts were released in late 2016 for the State Planning Policy (SPP) and *ShapingSEQ* (a revised regional plan for SEQ). These draft documents state that an expert panel has been established and will provide recommendations that will inform the final versions. The role of the panel is described below:

Role of the panel

Item number	Deliverable	Due Date
SPP State interest - biodiversity	<ul style="list-style-type: none">Recommendation on what the policy should achieve, in relation to koala conservationDiscussion and justification on the recommendation(s)	20 February 2017
ShapingSEQ Goal 4 - sustain	<ul style="list-style-type: none">Recommendation on what the regional plan should achieve, in relation to koala conservationDiscussion and justification on the recommendation(s)	20 February 2017
Habitat mapping	<ul style="list-style-type: none">Advice regarding the adequacy of the new koala habitat mapping for land use planning and development assessment at the SEQ regional and local scale.Discussion and justification	31 March 2017
Offsets framework	<ul style="list-style-type: none">Recommendations on improvements to the Queensland offsets framework to ensure that local councils and state decision makers can apply the offsets framework in their development approvals.Discussion and justification on the recommendation(s)	24 February 2017

Role of EHP

EHP will:

- Review the panel's recommendations and request clarification (if required)
- Obtain Ministerial decisions on the panel's recommendations
- Negotiate with the Department of Infrastructure, Local Government and Planning to ensure the panel's recommendations are correctly reflected, where appropriate, in the SPP and *ShapingSEQ* (items 1-2)
- Facilitate targeted consultation in April 2017, in relation to the panel's recommendations and EHP's new koala habitat mapping.

Out of scope

Recommendations are not required on specific elements of the consultation drafts listed below:

- State Development Assessment Provisions
- Planning Regulation 2017

Image courtesy of DTMR Moreton Bay Rail Project



Appendix 3—Overview of Consultation and Expert Elicitation Participants

Online survey

The online survey was designed to identify the key issues relevant to each respondent's local community and requested a description of their local area. Respondents provided a range of responses including specific locations such as the postcode or local government area, or less-specific locations such as SEQ, another State or Territory, or overseas country.

The majority of respondents were identified as living in SEQ generally, and represented each local government area. Notably, the Redland City, Moreton Bay, Brisbane City and Gold Coast City local government areas provided the most respondents.

A small number of respondents were also identified from other parts of the State including Townsville, Central Queensland, Isaac, Cairns and Gladstone, as well as a number of broader responses from Western Australia, Australian Capital Territory, New South Wales, and one international respondent from Ireland.

The vast majority of respondents (92.9%) who completed the survey provided their views on behalf of themselves (as an individual), in contrast to a smaller number of respondents (7.1%) who's views represented a particular community or conservation group, care and rescue organisations, the government sector, the academic sector, the business sector, a peak body or a political party.

Formal submission and face-to-face consultation

Selected groups identified by EHP and the Panel were sent an invitation asking for written submissions, with the option to make their submission public. Participants were requested to provide a response in any written format and, as a guide, were provided questions based on their area of expertise.

Where the Panel required further clarification or information regarding a submission, that party was invited to a face-to-face session.

All LGAs in SEQ were invited to the face-to-face sessions, even if a written submission was not received.

Submitters were categorised as follows:

- 16 conservation groups
- 5 professional groups (2 property development groups, 2 law firms, 1 ecological consultancy)
- 11 local governments
- 5 academic professionals

Expert elicitation

25 experts were invited to participate in the expert elicitation process. These experts came from the following stakeholder groups:

- Local government
- Community wildlife groups
- Non-government organisations
- Natural resource management
- Infrastructure development
- Environmental consultants



Appendix 4—Expert Panel Recommendations on SPP and SEQRP

Shaping SEQ: Koala Expert Panel recommendations on the draft SEQ Regional Plan and the draft State Planning Policy

28 April 2017

1. Background and approach for the Panel’s review and recommendations

1.1 Background

- a. In late 2015 a Uniquist report entitled ‘South East Queensland Koala Population Modelling Study’ showed clear statistical evidence for dramatic declines in koala populations in South East Queensland (SEQ). The report showed a decline in densities of around 80% in the Koala Coast and 54% in Pine Rivers between 1996 and 2014, despite current protection measures. In fact, rather than a slowing of the rate of decline there was some evidence to suggest the rate of decline had actually accelerated. This prompted a review of koala conservation policies by the Queensland Government and the establishment of the Koala Expert Panel (the Panel) to review existing measures and make recommendations about the ‘most appropriate and realistic actions to reverse the decline in koala population densities and ensure the long-term persistence of koala populations in the wild within SEQ’. A proposed addendum to the Panel’s Terms of Reference (ToR) specifically requires the Panel to comment on the draft regional plan, Shaping SEQ (Draft Plan) and the draft State Planning Policy (Draft SPP).
- b. As part of the Panel’s process, consultation has been undertaken with a wide variety of stakeholders, including State Government stakeholders, koala conservation groups, local governments, and professional and industry organisations. In its interim report, the Panel has (as required by its ToR) identified a number of reasons why existing koala conservation measures have failed. These include:
 - i) the design of existing planning and vegetation management legislation can only, at best, slow the rate of loss of koala habitat and population declines and does not deal with cumulative impacts well;
 - ii) the legislation is highly complex and coordination across SEQ is limited;
 - iii) there is an over-reliance on the statutory planning framework as the sole solution and hence resources for management of existing threats and recovery is inadequate;
 - iv) the approach to koala conservation has not been sufficiently strategic;
 - v) the mapping and monitoring of koala habitat and populations has been inadequate; and
 - vi) there is a lack of information about rural koala populations.
- c. The purpose of this review is to provide recommendations about the treatment of koalas in the Draft Plan and the Draft SPP to address, where possible, existing limitations in the way koalas are protected in SEQ.

1.2 Timing issues

Unfortunately, the overall Panel process does not align perfectly with this review process of the Draft Plan and Draft SPP. So that these recommendations can be considered as part of this consultation process for the Draft Plan and Draft SPP, the proposed addendum to the Panel’s ToR requires the provision of advice on the Draft Plan and the Draft SPP well before the Panel’s final report. As such, the Panel is commenting on a planning framework that is already in place, or is in the process of being implemented, rather than being asked to comment more broadly on the suitability of the general structure of this planning framework. The Panel anticipates that broader comments about the suitability of the framework will therefore form part of the Panel’s final report, rather than being contained within the specific recommendations here on the Draft Plan and the Draft SPP. **The Panel has therefore assumed that, for the purposes of these recommendations that the current structure of the planning framework will remain in place for the time being and will make recommendations more broadly on the structure of the planning legislation in its final report.**

1.3 Approach to the Review

- a. The Panel approached the review of the Draft Plan from the perspective that the Draft Plan provides the State Government with an opportunity to demonstrate that koalas are an important policy priority for Queensland and sets the intent for a strategy that needs to strengthen the protection of koalas and their habitat over the long term. However, it is necessary to be realistic as to what the Draft Plan and Draft SPP can achieve given that they are only one component of a broader regulatory, policy and management response to the decline in SEQ koala populations and the timing issues described above. The Panel’s approach to this review is therefore to identify where protection of koalas can be improved in the Draft Plan and Draft SPP within the existing planning framework. That is, we do not make any recommendations here on structure or function of the Draft Plan and Draft SPP, reserving recommendations on these aspects for our final report.
- b. In addition, an SEQ koala habitat mapping project (koala mapping project) is currently being undertaken by the Department of Environment and Heritage Protection (EHP). The Panel expects that the mapping developed by the koala mapping project will inform the identification of koala habitat and potential koala habitat. **The Panel has assumed for the purposes of these recommendations that the mapping project will produce habitat maps that identify ‘priority koala habitat’, which will form part of the Draft Plan’s mapping, although the role that the mapping will play in the regulatory framework is still unclear.** In this review we do not comment on the mapping, or its intended application in the Draft Plan and Draft SPP, as the Panel is undertaking a separate consultation process with EHP and the Department of Infrastructure, Local Government and Planning (DILGP).

2. Panel comments on the Draft SPP

2.1 Role of the SPP

The SPP applies to the whole of Queensland (not just South East Queensland), and is used by the State to identify and assess all State interests against which local government planning schemes, the regional plan, and some State assessment decisions, are made. The current form of the SPP deals with State interests relatively briefly because in 2013, this combined form of State Planning Policy replaced a number of subject-specific State planning policies. Biodiversity is identified in the Draft SPP as a State interest, and koala/koala habitat preservation is a component of this broader whole-of-State interest. Importantly, the role of the SPP is not to resolve conflicts between the various State interests. This is a task for the relevant subordinate instruments and assessment decisions, which should be made by reference to particular geographic and other factual circumstances.

The Draft SPP identifies the following policies with respect to biodiversity state interests:

State interest – biodiversity

Matters of environmental significance are valued and protected, and the health and resilience of biodiversity is maintained or enhanced to support ecological processes.

All of the following policies must be considered and appropriately integrated in policy and development assessment outcomes in a local planning instrument.

- (1) Development is located in areas to avoid significant adverse impacts on matters of national environmental significance and considers the requirements of the *Environment Protection and Biodiversity Conservation Act 1999*.
- (2) Matters of state environmental significance are identified and protected.
- (3) Development:
 - (a) Is located in areas that avoid adverse impacts on matters of state environmental significance; or
 - (b) minimises and mitigates impacts, where they cannot be reasonably avoided.
- (4) Identified matters of local environmental significance are protected.
- (5) Ecological processes and connectivity are maintained by avoiding fragmentation of matters of environmental significance.
- (6) A net gain in koala bushland habitat in the South East Queensland region is facilitated.

2.2 Proposed text for the Draft SPP

The Panel recommends that the following changes be made to the proposed text, given that the text has considerable influence over the content of a number of key planning instruments and subordinate policy instruments.

- a. Dark green box: Change this to read: ‘matters of environmental significance are **valued, protected and enhanced, and the composition, health and resilience of biodiversity ...**’. **The panel believes that there is a need to place more emphasis on signalling the importance of enhancing and recovering biodiversity (including koalas) rather than simply protecting. For koalas, strategies for species recovery rather than just protection are key to their long-term survival, especially in SEQ.**
- b. Light green box:
 - i) Generally, the 6 principles do not appear to reflect the ‘avoid, minimise, mitigate, then offset for residual impact’ framework which is critical to the operation of the Environmental Offsets Act 2014 (Qld), and the treatment of the different levels of matters of environmental significance (MNES, MSES and MLES) – is inconsistent. For example, while policy (2) requires MSES to be identified, principle (4) only requires ‘identified’ MLES to be protected – perhaps implying that MLES that are not identified by local governments do not have to be protected. The wording should be consistent. These differing treatments make it difficult to assess how koalas and their habitat – which can be matters of at least two and sometimes three levels of environmental significance – should be treated. Also, rather than focussing on ‘development’ (as the first word of each principle), the Panel recommends that the principles should focus on the matters of environmental significance (compare to the wording used for coastal matters). This would strengthen the emphasis on the biodiversity values rather than development, which is appropriate for this State interest.

- ii) The Panel recommends that the State should consider wording the principles so as to give greater direction to local government and other plan makers about the formation of their planning instruments, which will then be used to assess development and ultimately strengthen protection for koalas. For example:
1. The treatment of ‘State interest – development and construction’ requires plan makers to identify suitable land for certain purposes in their instruments. We recommend that local governments be required to identify koala habitat to be preserved in their plans (for SEQ, this would be based on and consistent with the State’s trigger mapping).
 2. Local governments should be required to establish koala conservation codes, used to regulate koala-friendly development, as part of their planning schemes. This is consistent with the State’s approach to (for example) the protection of coastal areas or major hazard facilities under the SPP. Ideally, a consistent approach would be adopted across the whole of Queensland and local governments would be assisted in this process, possibly by having a standard code developed by the State with necessary changes for local conditions. It is therefore recommended that the State develop a model koala conservation code, and that local governments are required, as part of their planning schemes, to develop local koala conservation codes to regulate and encourage koala-friendly development. It is further recommended that these codes provide a consistent approach throughout Qld local governments areas wherever koala/habitat occurs.
 3. In relation to matters of national environmental significance, remove significant to read simply ‘avoid adverse impacts’. Even though the Commonwealth legislation refers to a ‘significant impact’, there is no reason why the Queensland protection goal should not be higher for these important environmental matters.
- iv) Principle (6) should be amended to refer to the State’s aim of preserving a viable wild population of koalas in South East Queensland, and referring to the identification, preservation and enhancement of habitat suitability for koala populations in order to achieve that aim. Protection of existing habitat is critical (rather than reliance on replacement/restoration of habitat). Existing koala populations can only be sustained where their habitat is protected.
- Alternative wording suggested is: *Koala populations and koala habitat are conserved and enhanced and the amount and quality of koala habitat does not decline over time* (i.e., there is no net loss of koala habitat) in South East Queensland and in Queensland more broadly.
- This would place greater emphasis on koala populations and their viability as well as their habitat and clarify what is meant by ‘no net loss’ of koala habitat which is an ambiguous term. We have also removed the word ‘bushland’ from the reference to koala habitat in our above wording recommendation because the panel believes that this is too narrow; important koala habitat exists that would not be typically defined as ‘bushland’. We also believe that there is no reason why this policy should apply only in SEQ if the State is committed to koala protection across Queensland – hence our recommendation is to not restrict this policy only to SEQ.
- v) The Panel appreciates that ‘development’ is broad enough to cover all types of development, including the construction of public infrastructure and clearing generally. However, given that transport infrastructure has a very significant impact on koalas, the State should consider specifically requiring that public infrastructure be located so as to avoid/minimise/mitigate impacts, and that any residual impacts must be offset in a way which protects and enhances ecological processes. This could be an additional policy in the SPP with respect to biodiversity.

The State will need to consider whether the Draft SPP is the correct place for specific directions to local government, or whether this is more appropriate in the respective regional plans. The Draft SPP’s approach is arguably inconsistent in this regard across the various State interests.

3. Panel comments on the Draft Plan

3.1 Reflecting the importance of the koala to South East Queensland in the Draft Plan

- a. The Panel supports the inclusion of biodiversity as one of the five key themes of the Draft Plan and acknowledges that the State has not specifically included many koala references at this stage, pending the Panel's review.
- b. The Panel recommends that, given government commitment to the preservation of the koala in SEQ, more emphasis on the preservation of the koala with respect to the balancing of development and koala persistence needs to be reflected in the Draft Plan, including a commitment to ensure no reduction in the amount and quality of koala habitat over time and to preferably achieve a net gain in koala habitat.
- c. Some suggestions about changes to achieve this shift in emphasis are set out in sections 5 and 5 below. Initially, in broad terms this should involve the insertion of a vision for the preservation of koalas. The details of the vision will depend on the final policy position adopted by government in this regard. However, the Panel suggests that a suitable vision (Chapter 2) could be:
The State and local governments should plan for the long-term persistence of koalas in South East Queensland by protecting koala habitat, minimising threats to koalas, ensuring habitat restoration and increasing habitat connectivity that makes a meaningful contribution to improving koala long-term persistence.
- d. There should be a clear statement up front in the 'vision' section to explain why koalas warrant separate treatment and recognition as a significant species that needs special consideration and attention in the regional plan to provide for their future and meet public expectations. The koala is a state, national and international iconic species requiring separate and particular treatment to meet the intense public interest and concern.
- e. To the extent that these types of issues can be addressed in the Draft Plan (and not in some other koala management tool/instrument), there should be greater recognition that koalas and other fauna species do occur in many urban areas and that we need to improve planning and management actions to provide for their safety and security. In other cases we need to protect and enhance bushland patches within the urban landscape and actively manage to make these areas safe for koalas and other fauna, prevent access by domestic dogs, and protect from future attrition. Koalas within the urban landscape need monitoring, active management and planning measures to identify and protect their habitat and reduce threats.

3.2 Implementation and monitoring

The Panel notes that previous State planning instruments have contained statements or requirements about koala conservation, but there has been very little on reporting or measurement about the achievement of outcomes under the previous plan. This monitoring is critical to assessing the performance of the plan. The Panel therefore strongly recommends that the State monitor the performance of planning instruments against the Draft Plan, when it comes into force. Chapter 4 of the Draft Plan will be helpful in this regard.



4. Specific Recommendations on Chapter 3

4.1 Part A—Sustain Theme: goals, elements and strategies

Given the Panel’s view that there should be greater emphasis on the koala in the Draft Plan, we recommend that an additional element with specific strategies for the koala should be added to ‘Sustain’.

Element 2A: Koalas	Strategies
A network of interconnected populations of koalas persists in the long-term in SEQ	<p>Identify and protect koala habitat and minimise threats to koalas so that viable populations, and sub-populations, of koalas are maintained in SEQ in rural, semi-urban and urban settings in the long-term and to achieve a gain in koala habitat amount and quality over time across SEQ.</p> <p>Future development activities (including construction and operation) in SEQ should avoid, minimise, and offset impacts on koala habitat and koala populations. In particular:</p> <ul style="list-style-type: none"> • Koala habitat and connectivity should be protected, enhanced and expanded. • In the Regional Landscape and Rural Production Area impacts on koalas and koala habitat should be avoided. • Within the Urban Footprint and Rural Living Areas impacts on koalas and koala habitat should be avoided and minimised, with any residual impacts offset to ensure a net gain in koala habitat and no increase in threats to koala populations over time in SEQ. Offsets against residual impacts must be designed, implemented and monitored to achieve a net gain in interconnected koala habitat over time, including being strategically located to increase koala persistence, connectivity and habitat function. • The landscape context and proximity to koala habitat and potential increases in threats to koalas must be considered when assessing potential impacts associated with proposed future development activities, including construction and operation. • All major new linear development and all State-sponsored development should be designed and constructed so as to avoid koala habitat, maintain ecological connectivity and protect against road/rail strikes during construction and during operation.

4.2 Part A—Sustain Theme: mapping, Map 4a

The Panel is currently providing advice to EHP on the koala habitat mapping that they are developing. At this stage, it is our understanding that this mapping will produce a product that will map the location of remnant vegetation that is important (core) koala habitat and regrowth/non-remnant vegetation that is important (core) koala habitat. It is crucial that this mapping is validated to test the accuracy of the mapping, which has not yet been undertaken, but conditional on satisfactory validation, we make the following recommendations with respect to the use of the new koala habitat mapping in Map 4a:

- a. In principle, areas of remnant vegetation mapped as core koala habitat should be matters of state environmental significance and shown as such in Map 4a (the Panel acknowledges that the current legal process to determine what is a matter of state environmental significance is established under the SPP/offsets legislation and involves definitions and methodology from various statutory sources); and
- b. Areas of regrowth/non-remnant vegetation mapped as core koala habitat should be mapped at least as Regional Biodiversity Values in Map 4a. This recommendation recognises the importance of regrowth and non-remnant vegetation for koala persistence. The Panel believes the protection of this vegetation is essential to the long-term persistence of koalas in SEQ.

The Panel considers that consistency between mapping and terminology under the various legislation and other statutory instruments is essential for koala preservation.

Note, however, that these recommendation are made within the existing planning framework, and the Panel reserves the right to make further or different recommendations about the use of the koala mapping in relation to recommendations about the structure of the planning framework that it makes in its final report.

4.3 Part B—Regional growth pattern

Our comments for this section re-iterate the recommendation to incorporate a greater emphasis on the protection of koalas and their habitat in each land use category and to ensure that future regional growth areas and future expansion of the urban footprint should exclude areas of core koala habitat and koala conservation regions.

4.4 Part C—Subregional directions

Currently, the Panel have on general recommendations with respect to the priority areas for the Sustain theme for each of the subregions because a number of current initiatives need to be completed and analysed prior to identifying priority areas for the koala. These include:

- The SEQ koala mapping need to be completed before precise statements can be made about the priority areas in each subregion for the long term conservation of koalas. Once this is complete a prioritisation process should be conducted to identify and map priority areas to include in Part C.
- The direction of various EHP policy initiatives are also critical, including the possible development of ‘koala precincts’ or ‘koala conservation landscapes’ (as discussed by the Panel in its interim report). When these are identified and mapped they should be identified in Part C.

5. Specific comments on consultation text of Draft Plan

The principles and recommendations outlined above are also reflected in a number of specific recommendations and comments that we outline in the table below and we recommend that these are also considered in developing the Draft Plan. Note that our comments in relation to themes other than Sustain assume that the State wishes to provide some guidance about how the balancing of themes should be achieved. Here we have aimed to provide some recommendation that aim to achieve that balance by suggesting an emphasis on koalas in some of the themes other than Sustain.

Section/page reference	Topic	Comment
Page 8	Our progress to date	The decline of koala populations, as well as the long-term destruction of habitat more generally, should be noted in item 9 (as part of the justification for taking a different approach in this plan). This information can be found in the Uniquist report on koala population declines and in the Panel's Interim Report.
Page 9	What's new	A new approach to koala conservation should be described here in item 7. Emphasise that planning can only influence future development patterns and that significant management intervention will also be required in many areas to support viable koala populations in the long-term.
Page 11	Sustain	<p>The reference to wildlife 'corridors' (here and in other places in the Draft Plan) implies that wildlife pass through SEQ on their way to somewhere else. This isn't accurate – we need to establish areas where wildlife can stay and persist as well as transit. The term 'corridor' is not accurate (here and elsewhere) and could be replaced with the term 'habitat links' or 'linkages'.</p> <p>The Panel's consultation indicated that people are also concerned about their 'urban' koalas due to the lack of koala friendly development. The members of the public we consulted with were not interested in merely pushing koalas to the fringes of SEQ. Rather, they were interested in ensuring that we live more sustainably with the koalas that are left in urban areas, including changing our rules about koala-friendly development for private developers, public sector builders of infrastructure, and local governments. This view could be reflected here.</p> <p>Also, the interaction with nature could be considered as part of the 'Live' theme as it provides many psychological and physical health benefits.</p>
Pages 13-19	SEQ today	This section should be written in a positive style with future opportunities identified. Is it appropriate to balance this with some of the challenges facing SEQ – of which the conservation of the koala is one?
Page 22-23	A 50 year vision for SEQ	<ul style="list-style-type: none"> • Pressure on biodiversity section could be improved by referring to koalas as an example. • This section should recognise the importance of biodiversity in urban areas (both from an ecological perspective, as well as from a public interest perspective) as well as within the Regional Landscape and Rural Production Area both from the perspective of bolstering population sizes and gene pools and providing green spaces and wildlife encounters from human residents. <p>Page 23 Future opportunities and challenges, para 2: Add a new dot point: 'Regional environmental values, especially the iconic koala, are under pressure as the extent and intensity of development increases, driving the development of strategic conservation planning.'</p>
Page 23	A 50 year vision for SEQ	The State's vision for the koalas could form an important component of this vision. We suggest adding a new sentence to para 5: 'All available and suitable landscapes support koala habitat and residents and visitors will enjoy the sight of koalas across the region.'
Page 25	Sustain	<p>Insert the following statement into the first two paras:</p> <p>'We will actively maintain and enhance the amount and quality of koala habitat and the viability and abundance of koalas across the region'.</p>
Page 26	Background papers on key themes	Most local government with whom the Panel has consulted have asked for the State Government to show more central leadership about koala 'rules' (for example, for koala-friendly development requirements). The background paper and guidelines could be utilised to provide some of this requested direction, or the rules could be incorporated into codes or other legally binding instruments. The Panel expects to comment further on these issues as part of its final report.

Section/page reference	Topic	Comment
Pages 33-35	Grow	<p>It is unclear to the Panel whether the Draft Plan should give more guidance about how the various themes should interact with and be balanced against each other. Consideration should be given to assisting local governments, State decision-makers and developers about what the relationship between the themes is. For example, if the State considered that it was appropriate to give more direction about how 'Sustain' was to be reconciled with 'Grow', some changes could be:</p> <ul style="list-style-type: none"> • Include an element focused on environmentally sensitive urban development that avoids, minimises and offsets remaining/residual significant impacts on biodiversity and threatened species including iconic species such as koalas. • Emphasise here that any future adjustments to the Urban Footprint should not include areas supporting native vegetation and/or biodiversity conservation values (future housing in greenfield areas should avoid locations that conflict with high conservation values for native vegetation, habitats, biodiversity – this could also be incorporated into the Draft SPP). When the SEQ koala mapping project is finalised, the future urban areas identified in the Draft Plan should be checked against this mapping (the Panel appreciates that this is one of the problematic timing issues for the Draft Plan).
Page 33, Chapter 3, Element 1, Strategy 6	Grow - elements	Incorporate koala habitat and koala friendly infrastructure within Rural Living Areas and avoid future development activities in areas supporting koalas and koala habitat.
Page 33, Chapter 3, Element 2	Grow - elements	Propose a new Strategy 4: Plan to incorporate protective (koala exclusion) fences, over/under passes to protect koala movement and provide for connectivity.
Page 33, Chapter 3, Element 3 Strategy 4	Grow - elements	This planning needs to relate to critical koala habitat needs, as identified by the new koala mapping.
Page 33, Chapter 3, Element 5	Grow - elements	Insert a new strategy: Plan for local koalas, habitat plantings/restoration, strategic planning for road and rail that protects koalas through placement and/or incorporation of protection/mitigation/connectivity structures.
Page 35 'Ensuring Sufficient Land to Accommodate Growth', Para 4, last sentence	Ensuring Sufficient Land to Accommodate Growth	Take account of strategic koala conservation / habitat conservation goals here and avoid impacts on established koala habitat and koala populations.
Page 38	Potential future growth areas	A number of 'potential future growth areas' are identified. Key strategic koala conservation goals need to be balanced against the adoption/development of these, but the revised koala mapping is required before this can occur.
Pages 42-46	Prosper	<ul style="list-style-type: none"> • 'Context' section should include a statement that biodiversity and threatened species conservation issues should be addressed in the planning phases for new economic activities and areas where significant impacts are likely on koala habitat and populations should be avoided. • Suggest stipulation of the 'Avoid, Minimise, Mitigate, Offset' principle in relation to any disturbance to natural ecosystems, biodiversity and threatened species such as the koala. • Rural Prosperity – rural precinct planning should take into account biodiversity conservation requirements. • Areas of regional economic significance could include biodiversity values and conservation areas as these also provide economic benefits to communities. • Prosper Map should also indicate known high biodiversity conservation value areas.
Page 44, Element 7, Strategy 3	Prosper - elements	Should incorporate sustainable koala populations relevant to each land use type at a sub-catchment scale.
Page 45	Prosper - elements	Rural precinct planning should incorporate key koala values, habitat densities and appropriate infrastructure protective measures.

Section/page reference	Topic	Comment
Page 54	Regional activity centres	Principal Rural Activity Centre and Major Rural Activity Centres should both take account of surrounding regional and local koala plans.
Page 65	SIP principles, 'Better Integration...'	<p>This principle should consider the strategic koala conservation goals and impacts on local populations.</p> <ul style="list-style-type: none"> SIP principles should include detailed assessment of potential impacts on biodiversity including koalas and should stipulate avoidance of impacts wherever possible and mitigation/offsetting where unavoidable. Mitigation measure should involve innovative designs for connectivity structures based on advances in scientific research and monitoring.
Pages 66-72	Sustain	<ul style="list-style-type: none"> Should place greater emphasis on identification and protection of biodiversity/threatened species and key koala habitat areas as a high priority. Consider splitting up or renaming this goal to place the clear focus on protection of natural values, biodiversity, threatened species and landscape values. Should place greater emphasis on the identification and protection of key habitat areas for biodiversity and threatened species such as koalas as highest priority. Biodiversity (Element 2) should emphasise 'habitat areas' as well as 'regional biodiversity corridor areas'. Biodiversity (Element 2) Strategies 2 and 3: add 'and priority koala habitat' to the end of the sentences in each Strategy. Biodiversity (Element 2) Strategy 4: rewrite as, 'Maintain and enhance the value of biodiversity corridors, as well as maintain, enhance and expand, through strategic offsetting, priority koala habitat'. Regional landscapes (Element 2) should include a strategy to protect and enhance 'wild space' networks to provide for urban biodiversity and connectivity. Natural resources (Element 4) should recognise that in some cases strategies 1 and 2 may require additional consideration of future impacts on biodiversity. Health and wellbeing (Element 5) should recognise the importance of bushland and wildlife for community well-being in urban and semi-urban areas. Suggested text: 'Ensure communities have adequate opportunity to experience wildlife in both a rural and urban bushland setting'.
Page 73 Table 13	Sustain	Insert a new Landscape area or natural asset row on page 74 under 'Regional Biodiversity Values' Asset Name: Areas of koala habitat. Definition: Areas of remnant vegetation and regrowth supporting regional ecosystems known to contain koala habitat values. Benefits: Potential habitat and dispersal environment for koalas.
	Sustain – additional text about road infrastructure	<p>Major road infrastructure is one of the key threats facing SEQ's koala population – both existing roads with 'hot spots' for koala deaths (with records often maintained by local governments), and new roads through greenfield sites. Consultation undertaken by the Panel indicates that more consideration needs to be given to both retrofitting existing roads and to ensure appropriate avoidance, minimisation and (as a last resort) mitigation measures are undertaken for other major road infrastructure.</p> <p>The Draft Plan could address these issues by requiring that planning for this infrastructure should account for koala population/habitat sustainability by:</p> <ul style="list-style-type: none"> avoiding key areas; incorporating protective barriers and over/underpasses; ensuring that there is no residual impact from the project; minimising incremental fragmentation; and budgeting to adequately resource strategic koala/habitat initiatives, including monitoring.
Page 77 Goal 5	Live, Elements and strategies:	<ul style="list-style-type: none"> 'Elements and strategies' – Working with natural systems. Suggest it should be made clear that in the protection, management and integration of urban living with high biodiversity, threatened species, such as koalas, should take precedence over other considerations.

Section/page reference	Topic	Comment
Pages 80-84	'Sustain'	<ul style="list-style-type: none"> • Page 82, Regional Landscapes and Rural Production Areas: • Consider Regional Landscapes separately from Rural Production Areas for environmental purposes. The dominant environmental issues applying in each differ. Regional Landscapes will be driven predominantly by natural processes. Rural Production Lands will be driven predominantly by anthropogenic factors. It is further recommended that these codes provide a consistent approach throughout Qld LGAs wherever koala/habitat occurs. <ul style="list-style-type: none"> » For Rural Production Areas (1) Incorporate the protection and enhancement of koala habitat within project, local and regional planning, (2) Strategically place and construct linear infrastructure to avoid important koala habitat, to maintain ecological connectivity, and to protect against infrastructure related mortality. » For Regional Landscapes (1) Protect and enhance koala habitat, (2) Strategically place and construct linear infrastructure to avoid important koala habitat, to maintain ecological connectivity, and to protect against infrastructure related mortality. • Page 83, Urban footprint: (1) Protect and enhance koala habitat, (2) Plan to maintain ecological connectivity among habitat isolates, (3) Strategically plan linear infrastructure to (a) slow traffic flow, and (b) to maintain ecological connectivity, and to protect against infrastructure related mortality. • Page 85, Rural Living Area: (1) Protect, enhance and expand koala habitat, (2) Incorporate the protection and enhancement of koala habitat within new projects, as well as local and regional planning, (3) Strategically place and construct linear infrastructure to avoid important koala habitat, to maintain ecological connectivity, and to protect against infrastructure related mortality, (4) Plan to maintain ecological connectivity among habitat isolates.
Page 87	Sub-regional directions	<ul style="list-style-type: none"> • Note that the results of the SEQ koala mapping project should be considered, to properly inform the desired priority outcomes for each sub-region in terms of priority regions. For example, the mapping could reveal areas within each sub-region that need protection and the Draft Plan could then specify these area. • Increasing focus on increasing future in-fill growth is supported. • Generally, greenfield developments should be required to avoid significant impacts upon koala habitat and/or koala populations. • Koala conservation networks and prominent koala populations should be included in the relevant descriptions of sub-regional character (when the mapping permits this to occur).
Table 22 Implementation actions		<ul style="list-style-type: none"> • 'Koala in SEQ' – The intention for DILGP to work with EHP and SEQ Councils to coordinate implementation of the koala expert panel recommendations and inform the final Shaping SEQ is supported. • Local Governments will have a vital ongoing role in koala conservation and it is suggested that a koala conservation forum be established with SEQ Local Government representation to meet regularly (perhaps quarterly) to discuss and review koala conservation planning programs. • An overarching SEQ Koala Queensland Conservation Plan should be prepared to guide local governments' koala conservation plan and initiatives (both LGA-wide and Precinct-Neighbourhood based). • 'Local Government and State Infrastructure Draft Planning' actions – add reference point stipulating the need to assess potential impacts of infrastructure on koala conservation and reaffirm principles of avoidance (wherever possible), minimisation and mitigation, which would include maximising connectivity based on up-to-date research outcomes and incorporating monitoring programs for future refinement. • 'Measuring progress' (page 128) and Table 23: measures that matter (page 132) – should include specific measures and provisions for ensuring ongoing koala monitoring programs across SEQ in conjunction with Local Governments. • Map 7 – Areas of regional interest (page 142) – should add protected areas managed by Local Government. The extent of protected lands in SEQ is small and should ideally be increased throughout the life of Shaping SEQ.
Draft SPRP		<ul style="list-style-type: none"> • The draft SPRP needs an improved statement to clarify its precise intentions • See other comments about the possible function of the SPRP – could or should it be used as a component of koala regulation, just as the urban footprint is enforced, through this SPRP? • If yes, then Division 4 – Assessment Criteria – 4.1, 4.2 and 4.3 should include an assessment criterion requiring that activity does not involve or adversely affect any areas of koala habitat as defined by the State Government or using approved assessment criteria under Shaping SEQ.

