

Date : 30/08/2018 4:40:06 PM

From : "Karen Kenny"

To : "GEORGE Catherine"

Cc : "Melissa Hector"

Subject : Follow-up from yesterday's meeting

Attachment : image001.png;image003.png;

Hi Catherine,

Thanks for the updates from the meeting yesterday. Can I ask you to keep us posted on the progress of the Essential Habitat mapping- assuming there is approval for the update, we will need some lead time to ensure the Development Assessment Mapping System and the SPP can be updated in time with the release. Also, is there an electronic version of the layer that can be shared with our SEQ team?

Rob had also asked whether we had a mapping layer with committed development to run with the KPA mapping layer. In short, this is still being developed and having chatted with the SEQ team they view it is probably better to see where the KPAs are and then compare to the mapping they have.

Mel Hector who moved to this team from SARA will be also working on this project and will come along to our fortnightly meetings commencing next week.

Let me know if you need anything further from us.

Thanks,
Karen



Karen Kenny

A/Director

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Date : 20/08/2018 8:32:04 AM

From : "HOWELL Steven"

To : "CLOUSTON Beth" , "GEORGE Catherine" , "PERSHOUSE Audrey" , "ROFF Paul" , "SUTHERLAND Narelle" , "DUNN Jayne"

Subject : identifying KPAs

Attachment : k_tcor_meeting_agenda_20180821.docx;CIM_List_data_package_20180820.xlsx;Priority Area

Types_20180820.docx;TCOR_process_results_20180820.docx;

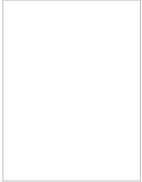
Hi

Attached is the meeting agenda and supporting information. Please let me know if there are any additions/changes for the agenda.

□

□ □ □

Thanks



Steven Howell

Manager

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Meeting agenda

Spatial modelling and planning for koalas in southern SEQ

Part 2 Priority areas for koala conservation

Details

Subject	Identifying Koala Priority Areas – project update
Chair	Steven Howell
Date and location	21/8/2018 – Level 27 Boardroom, 400 George St
Timing	3:00 – 4:30pm

Attendees

Name	Job Title	Position/Representation
Beth Clouston	Director	Conservation and Biodiversity Policy
Catherine George	Manager	Koala Policy and Oversight
Audrey Pershouse	Senior Policy Officer	Koala Policy and Oversight/Land Use
Paul Roff	Manager	Land Use
Narelle Sutherland	A/Director	Knowledge Information and Analysis
Jayne Dunn	Senior Program Officer	Biodiversity Assessment Team
Steven Howell	Manager	Biodiversity Assessment Team

Apologies:

Agenda

Item #	Description	Responsible	Timing (mins)
1.	What is a Koala Priority Area (KPA)?	Steven/Catherine	
2.	Methodology for identifying KPAs. Additions/changes to existing Measures. Alignment of Measures with KPAs.	Steven	
3.	Progress and results so far.	Steven	
4.	Next steps. Timelines and deliverables.	Steven	
5.	Consultation on KPAs & policy measures Who, when, responsible DES lead?	Steven/Catherine	
6.	Any other questions/issues?	Steven	
7.	Next meeting?	Steven	

Attachments

- Methodology and Progress report
 - o TCOR_process_results_20180820.docx
- Threats/Constraints/Opportunities/Resilience Criteria, Indicators and Measures
 - o CIM_List_data_package_180820.xlsx
 - o TCOR sheet is an expanded version of the Measures, description and rationale.
 - o TCOR Datasets sheet list the specific data used for each measure.
- Priority Area types
 - o Priority Area Types_20180820.docx
 - o BAT additions in purple.
- Draft results – will be provided at the meeting.

Minutes

Actions

Action	What	Who	Status	Notes
1.				
2.				
3.				
4.				
5.				

Spatial modelling and planning for koalas in southern SEQ

Part 2 Priority areas for koala conservation

Methodology and Progress report – 20/8/2018

Steven Howell, Jayne Dunn, Harriet Preece, Courtney Duncan, Larry Guo
Biodiversity Assessment Team

Aim:

To identify Koala Priority Areas (KPA) for koala conservation, including areas for: koala habitat protection, koala habitat restoration, threat management, reintroduction, offsets and monitoring.

Overview:

Data on threats, constraints, opportunities and resilience (TCOR) has been collated and categorised. This will then be combined with the koala habitat model to determine areas most suitable for conservation or restoration objectives. These objectives have been outlined in the table *Uses for Priority Areas* which lists the intent, planning mechanisms and the relevant TCOR Measures.

Method:

1. Core and non-core habitat have been further categorised and ranked (Figure 1) to identify the best of the best koala habitat (Figure 2). The highest rank (ie 10) will be given to classes with the highest categories from both Maxent and the experts (with or without a koala record). This represents the blue gum (*Eucalyptus tereticornis*) dominated woodlands regarded as the best regional ecosystems for koalas. Higher ranking was given to the experts assessment of regional ecosystem suitability over Maxent.
2. Pre-clearing, remnant, regrowth or scattered trees will be used depending on the KPA objective. For example :-
 - a. Remnant habitat will be used to identify areas for habitat *conservation*.
 - b. Pre-clearing habitat will be used to identify areas for habitat *restoration*.
3. Threats and constraints Measures representing Indicators of urban development, linear infrastructure, primary industry and koala stressors have been identified and categorised. Table 1
4. Opportunities and resilience Measures representing Indicators of koala habitat conservation, broad conservation and habitat resilience have been identified and categorised. Table 1
5. In order to address specific objectives, such as koala habitat protection, the individual TCOR Measures will be combined depending on the objectives outlined in the *Uses for Priority Areas* table. This will take advantage of spatial prioritisation tools to balance the cost of threats/constraints with the best habitat. This will create separate maps for each priority area type across the entire study area.
6. The separate priority area type layers will be spatially prioritised (eg using Marxan) to identify aggregations ie Koala Priority Areas.
 - a. Additional Measures may be used such as proximity to protected areas to help identify the KPAs.
 - b. Post analysis overlays using data such as the Urban Footprint, Priority Development Areas and Future Mining will be used to constrain the initial analysis or identify areas of conflict, such as where koala conservation objectives are at odds with other land management objectives such as urban development.

Questions:

1. Are there any additions/changes to the existing Measures?
2. Check with EPP, DSDMIP etc if any issues represent hard constraints that would be better incorporated earlier into our analysis.
3. Comments/questions in the priority area types table.

		Regional Ecosystem Suitability (Matrix Rank)				
		High 5	Medium 4	Low 3	Very low 2	Non-habitat 1
Matrix Rank	High 3	Record 1 (PHK) Preferred Habitat Known Core Rule 351	(PHK) Preferred Habitat Known Core Rule 341	(GHK) General Habitat Known Core Rule 331	(GHK) General Habitat Known Non-core Rule 321	(NH) Non-habitat Rule 311
		No Record 0 (PHP) Preferred Habitat Possible Core Rule 350	(PHP) Preferred Habitat Possible Core Rule 340	(GHP) General Habitat Possible Core Rule 330	(GHP) General Habitat Possible Non-core Rule 320	(NH) Non-habitat Rule 310
	Medium 2	Record 1 (PHK) Preferred Habitat Known Core Rule 251	(GHK) General Habitat Known Core Rule 241	(GHK) General Habitat Known Core Rule 231	(GHK) General Habitat Known Non-core Rule 221	(NH) Non-habitat Rule 211
		No Record 0 (GHP) General Habitat Possible Non-core Rule 250	(GHP) General Habitat Possible Non-core Rule 240	(GHP) General Habitat Possible Non-core Rule 230	(GHP) General Habitat Possible Non-core Rule 220	(NH) Non-habitat Rule 210
	Low 1	Record 1 (GHK) General Habitat Known Non-core Rule 151	(GHK) General Habitat Known Non-core Rule 141	(GHK) General Habitat Known Non-core Rule 131	(GHK) General Habitat Known Non-core Rule 121	(NH) Non-habitat Rule 111
		No Record 0 (GHP) General Habitat Possible Non-core Rule 150	(GHP) General Habitat Possible Non-core Rule 140	(GHP) General Habitat Possible Non-core Rule 130	(NH) Non-habitat Rule 120	(NH) Non-habitat Rule 110

		Regional Ecosystem Suitability (Matrix Rank)				
		High 5	Medium 4	Low 3	Very low 2	Non-habitat 1
Matrix Rank	High 3	Record 1 (PHK) Preferred Habitat Known Core Rule 351 10	(PHK) Preferred Habitat Known Core Rule 341 9	(GHK) General Habitat Known Core Rule 331 8	(GHK) General Habitat Known Non-core Rule 321 1	(NH) Non-habitat Rule 311 0
		No Record 0 (PHP) Preferred Habitat Possible Core Rule 350 10	(PHP) Preferred Habitat Possible Core Rule 340 9	(GHP) General Habitat Possible Core Rule 330 8	(GHP) General Habitat Possible Non-core Rule 320 1	(NH) Non-habitat Rule 310 0
	Medium 2	Record 1 (PHK) Preferred Habitat Known Core Rule 251 7	(GHK) General Habitat Known Core Rule 241 6	(GHK) General Habitat Known Core Rule 231 5	(GHK) General Habitat Known Non-core Rule 221 1	(NH) Non-habitat Rule 211 0
		No Record 0 (GHP) General Habitat Possible Non-core Rule 250 4	(GHP) General Habitat Possible Non-core Rule 240 3	(GHP) General Habitat Possible Non-core Rule 230 2	(GHP) General Habitat Possible Non-core Rule 220 1	(NH) Non-habitat Rule 210 0
	Low 1	Record 1 (GHK) General Habitat Known Non-core Rule 151 1	(GHK) General Habitat Known Non-core Rule 141 1	(GHK) General Habitat Known Non-core Rule 131 1	(GHK) General Habitat Known Non-core Rule 121 1	(NH) Non-habitat Rule 111 0
		No Record 0 (GHP) General Habitat Possible Non-core Rule 150 1	(GHP) General Habitat Possible Non-core Rule 140 1	(GHP) General Habitat Possible Non-core Rule 130 1	(NH) Non-habitat Rule 120 0	(NH) Non-habitat Rule 110 0

Rank habitat suitability

Figure 1 The koala habitat matrix rules (a) will be used to identify the best of the best koala habitat (b).

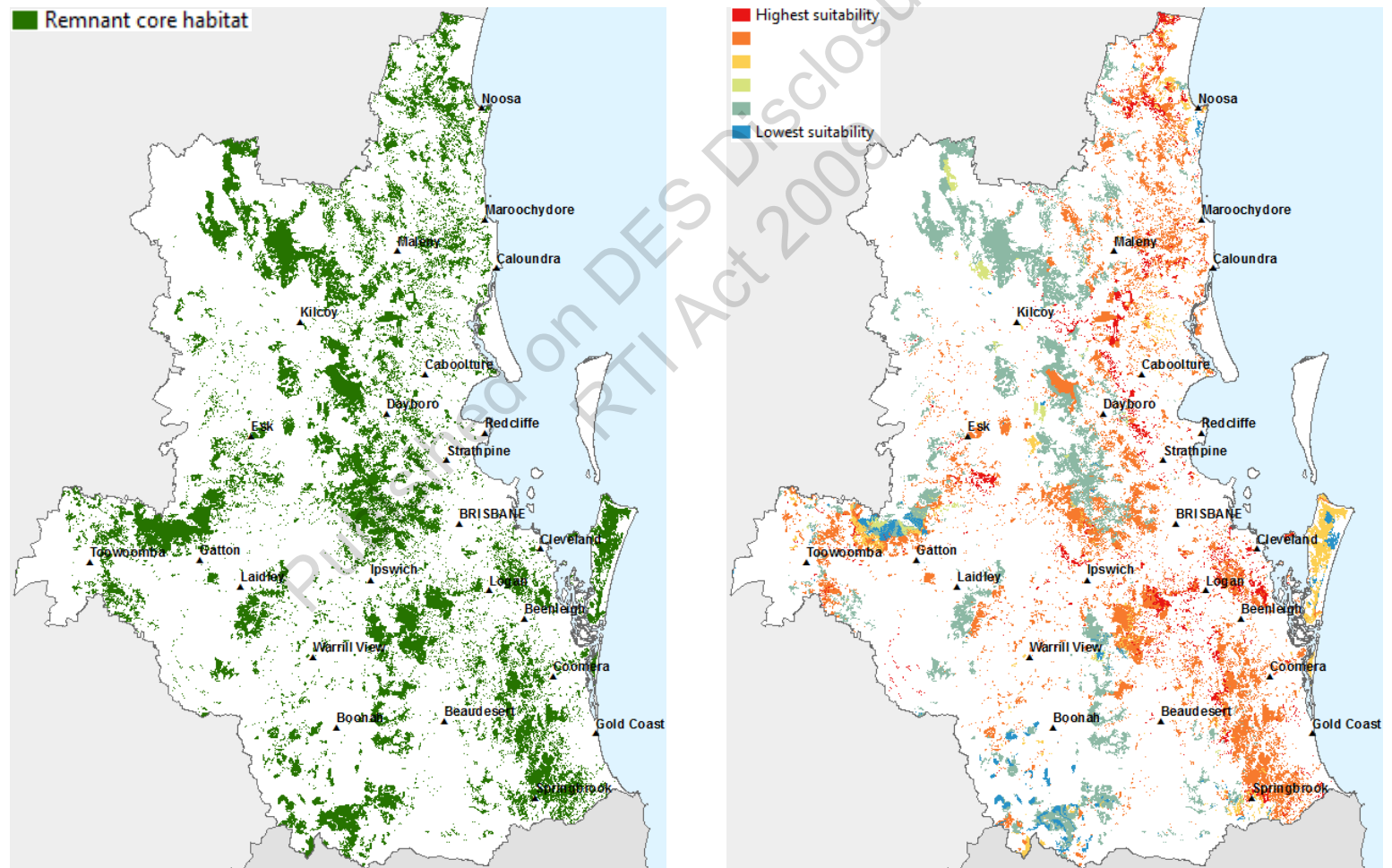


Figure 2 Example showing the suitability ranking of core remnant habitat (a) broken into individual classes and ranked (b) from the highest suitability (warm colours) to the lowest suitability (cool colours).

Criteria	Indicator	Measure	Short Description	Status	Koala Priority Areas Assessment Category
3 Threats and Constraints	3.1 Koala Stressors	3.1.1 Heat stress	Hot days/nights and consecutive hot days/nights	Data preprocessed	Protection
		3.1.2 Dogs	Dog density	Data preprocessed	Threat Management
		3.1.3 Disease	Disease	No Data	Threat Management
		3.1.4 Climate Change	Heat stress / fatality	Data preprocessed	Protection
		3.1.5 Fire	Bushfire potential intensity	Data preprocessed	Threat Management
	3.2 Linear Infrastructure	3.2.1 Roads	Road density	Data preprocessed	Protection & Threat Management
		3.2.2 Railways	Railway density	Data preprocessed	Protection & Threat Management
	3.3 Urban Development	3.3.1 Urban development	Urban Zoning	Data preprocessed	Protection
		3.3.2 Non-conservation recreation reserves	Built recreation areas & Intensive Use	Data preprocessed	Protection
		3.3.3 Priority Development Areas	Priority Development Areas	Use in post Analysis	Do not include to identify Priority Areas - look at conflict between PDAs and output protection area
		3.3.4 Urban Footprint	Urban Footprint & Rural Living Area	Use in post Analysis	Do not include, areas where zoning does not overlay may be an opportunity - more of a contextual layer - use in post analysis
	3.4 Primary Industry	3.4.1 High Value Agriculture	Priority Agricultural Areas	Data preprocessed	Protection & Restoration
		3.4.2 Cropping	Cropping and Horticulture	Data preprocessed	Protection & Restoration
		3.4.3 Grazing	Agricultural Grazing & Pasture	Data preprocessed	Protection & Restoration
		3.4.4 Plantation	Forest plantation Areas	Data preprocessed	Protection
		3.4.5 High Intensity Rural Zoning	Rural Zoning	Data preprocessed	Protection & Restoration
		3.4.6 Current Mining	Current Mining Leases & Permits & Haulage routes	Data preprocessed	Protection
		3.4.7 Future Mining	Future Mining Leases & Permits	Use in post Analysis	Restoration
4. Opportunities	4.1 Specific Conservation Reserves	4.1.1 High Conservation Areas	High security and value conservation areas	Data preprocessed	Protection & Restoration
		4.1.2 Medium Conservation Areas	Medium security and/or value conservation areas	Data preprocessed	Protection & Restoration
		4.1.3 Low Conservation Areas	Low security and/or value conservation areas	Data preprocessed	Protection & Restoration
	4.2 Broad Conservation Area	4.2.1 Corridors and Stock routes	Regionally & Locally Significant Corridors & Stock Routes	Data preprocessed	Protection & Restoration
		4.2.2 LGA defined biodiversity areas	LGA defined biodiversity areas	Use in post Analysis	Protection & Restoration
		4.2.3 Conservation Zoning	Conservation Zoning	Data preprocessed	Protection & Restoration
		4.2.4 Low Intensity Rural Zoning	Regional Landscape Rural Production Area	Data preprocessed	Protection & Restoration

Criteria	Indicator	Measure	Short Description	Status	Koala Priority Areas Assessment Category
5 Resilience	5.1 Refugia	5.5.1 Climate Change Refugia	Climate Change Refugia	Data preprocessed	Protection & Restoration

Table 1 TCOR Measures list

Please refer to the separate xls for a full explanation of the Measures.

Additional Notes:

1. The individual threats/constraints and opportunities/resilience Measures will be combined to create an overall threat and conservation layer (netTCOR). This will be useful to identify areas with the greatest opportunities and the fewest threats.
2. The TCOR methodology has been designed to be transparent, consistent and repeatable to ensure that updates are possible as more or better data becomes available. Processing the input measures has been automated using Python code to make re-running the model easier and more efficient. The code can be easily adjusted to change the inputs, weightings and other parameters.
3. A large number of datasets were assessed before choosing datasets based on known or potential relationships with koala conservation. In addition the datasets needed to be readily available and mappable across the whole study area. Preference was given to statutory datasets or those identified in the South East Queensland Regional Plan 2017. Additional datasets (such as domestic dog registrations and council land managed for koala conservation) were sourced from the each of the twelve local governments in the study area.
4. A proximity or context measure will be derived using the core koala habitat mapping and protected area (estates) layers to increase connectivity, aggregate small patches, reduce edge effects and minimise management costs.
5. Ecological defensibility will be maintained by ensuring the initial modelling is conducted in a tenure blind and politically neutral manner. There is the ability to lock out particular areas on the basis of pre-defined planning decisions.
6. Scattered trees will be represented by a tree density surface and used to supplement the identification of restoration areas using the cleared habitat derived from the pre-clearing core habitat mapping.
7. A 1km (100ha) hexagon grid of planning units will be used to streamline analysis, avoid slivers and as input into the spatial prioritisation modelling (Marxan).
8. All measures will be scaled from zero to one and any weights (if applied) will sum to one.
9. Land conservation intent will be compiled from a number of Measures including the estates layer, nature refuges and local parks and reserves. This combined layer will rank land based on its conservation management objectives and tenure security using IUCN categories (Table 2) to become one of the most important inputs into the opportunities layer.

Weight	Rank	IUCN	Conservation Area
High	1	II	Protected Areas - National Parks
	2	III	Protected Areas - Conservation Park
Medium	3	IV	LGA Koala Specific Conservation Areas LGA Bushland Reserves
	4	VI	Protected Areas - Forest Reserve & Resource Reserve
Low	5	-	Protected Areas State Forest & Timber Forest
	6	-	QPWS Other Lands Private Properties Managed for Koalas
	7	-	Nature Refuges
	8	-	Parks & Public Reserves
	9	-	Covenants Offsets

Table 2 Land conservation intent will be categorised using conservation management intent and tenure security.

Shor term Timelines:

20 August 2018	Draft individual Measures (3 and 4), separate maps for each priority area type (5)
21 August 2018	Planning meeting
22 August 2018	Presentation to QPWS regional planners focussed on the habitat mapping
3 September 2018	Presentation to CSS SMT

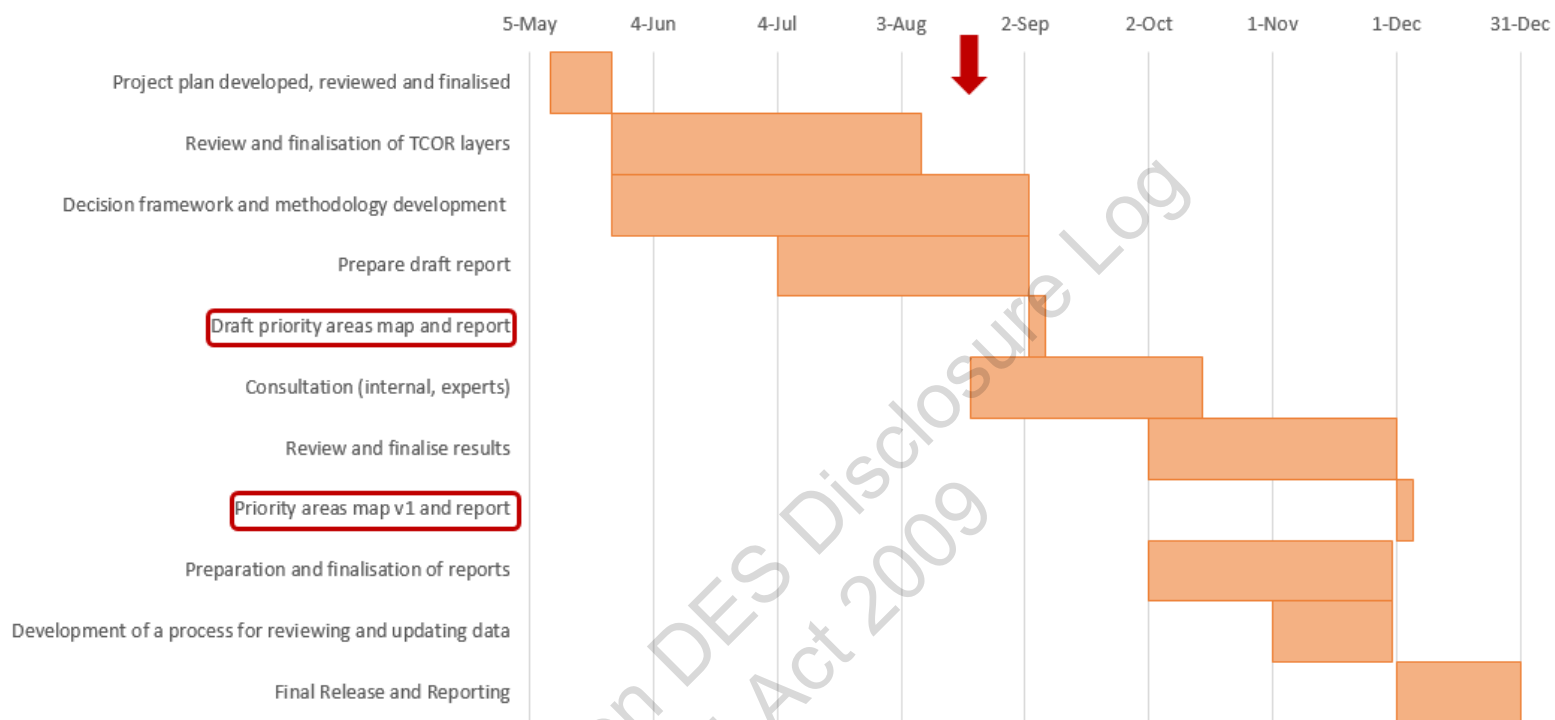


Figure 3 Project timelines and deliverables

Spatial prioritisation (Marxan) methodology

Following recommendations from the KEP to conserve koalas in both urban and non-urban areas, our plan is to use Marxan with zones to simultaneously explore different planning objectives both on and outside the urban footprint (i.e. within the regional landscape and rural production area; RLRPA).

1. Our **objective** will be to conserve the best quality koala habitat with the target of securing 17% of the pre-clearing extent in line with the Queensland government's commitment to the international Aichi biodiversity target 11 (REFERENCE).
2. Our **cost layer** will represent the environmental cost of conserving koala habitat and will be used in accounting for the relative costs and benefits of a range of land uses.
3. Each **measure** in the cost layer will be multiplied by a weight (with the combined weights adding up to one) before the costs are summed together. Deciding on the weights can be problematic depending on the measure and the objective.
4. **Land valuation** data can be used as a simple economic cost layer. The cost for each planning unit can be calculated based on the area of habitat conserved and the cost of purchase if the planning unit is reserved. Similarly, the cost of securing land under primary production can be calculated by estimating the loss in production (such as grazing) that would be incurred if the planning unit was reserved.
5. In another **example** (such as Canadian national parks) the environmental cost layer could be calculated using road density and distance to roads – on the basis that roads are a good indicator of development with mines and forestry also requiring roads.

Marxan Background

Marxan is the most widely used spatial prioritisation conservation planning software in the world. Marxan allows policy makers and planners to design the most effective conservation measures and explore different management options and scenarios. The software takes into account the costs and benefits of complex environmental decisions, rather than just focussing on the size of a proposed protected area. It can map complex information such as waterways, vegetation types, threatened species habitats, drought refuges as well as socio-economic factors.

Marxan uses a mix of maths, economics and ecology to equip users with clear, repeatable and auditable planning options to design or prioritise protected areas. Developed by teams at The University of Queensland and The University of Adelaide, led by Professor Hugh Possingham.

New versions of Marxan can also utilize zones so that planning units (such as hexagons) can be simultaneously considered for a range of management actions (not just reserved or unreserved). Each zone has the option of its own actions, objectives and constraints, with the flexibility to define the contribution of each zone to achieve targets for pre-specified features (e.g. species or habitats). The objective is to minimize the total cost of implementing the zoning plan while ensuring a variety of conservation and land-use objectives are achieved.

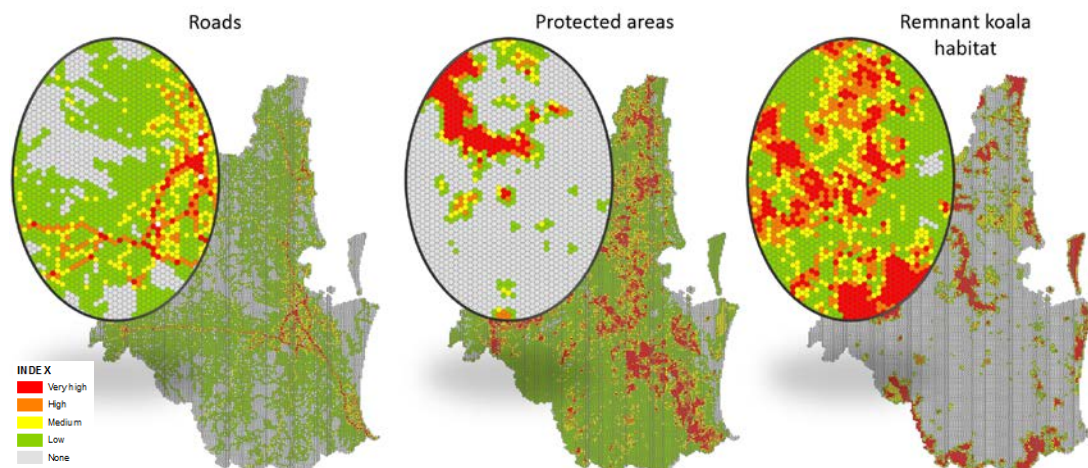


Figure 4 Example of ranked and weighted datasets to be used in both the overlay and Marxan analyses.

Uses for Priority Areas – updated 20/08/2018

Original table from Catherine. BAT additions in purple.

Name	Description	Application	What we need the mapping to tell us	Other sources for info	Measures	TCOR
Koala Habitat Protection	These priority areas will be used for planning purposes to define where clearing can't occur, where clearing is to be avoided and where clearing can occur.	Land use planning Triggers for koala related assessment Minimising exemptions for koala related assessments Assessment management	<ul style="list-style-type: none"> What should be protected in the urban footprint (core habitat in areas with low development pressure and constraints) What should be protected outside the urban footprint (core and non core) How could one area be prioritised over another? (minimum size threshold?/connectivity?) Where are the constraints (i.e. committed development, priority development area) How can we meet the criteria of 'sufficiently large' – many small priority areas, or few large priority areas? <p>BAT note: The TCOR model initially aims to identify Koala Protection Areas without regard tenure. Later, the urban footprint and other overlays (such as PDAs) can be used to identify Protection Areas either on or off the footprint. We can prioritise areas using both pre-clearing and remnant habitat which ranks habitat suitability on a sliding scale.</p> <p>Koala density (observed or modelled) could also be used to prioritise areas.</p> <p>Other TCOR indicators will also be used ie specific conservation reserves, broad conservation areas and climate refugia. Remnant patch size, fragmentation, connectivity and proximity can also be used.</p> <p>Constraints: The TCOR model includes a number measures representing both threats and constraints. The census dwelling density measure will be particularly useful to identify areas with low development intensity (especially on the urban footprint).</p>	<p>DES – New koala habitat modelling (Core-habitat, Non-core habitat)</p> <p>Constraints: DSDMIP - Urban footprint mapping, priority development areas https://dams.dsdip.esriaustraliaonline.com.au/damappingsystem/?accordion=SARA%20DA%20Mapping Local councils – land use zoning</p> <p>Opportunities for 'connectivity': DSDMIP – biodiversity corridor mapping, SEQ regional greenspace network, MSES mapping https://dams.dsdip.esriaustraliaonline.com.au/damappingsystem/?accordion=SARA%20DA%20Mapping</p> <p>BAT note: The koala habitat, footprint, LGA zoning & biodiversity corridors from the SEQRP have been incorporated.</p> <p>BAT needs to investigate the usefulness of greenspace network and MSES further.</p>	<p>Threats 3.1.1 heat stress (T) 3.1.4 climate change risk (T) 3.2.1 roads (T) 3.2.2 rail (T)</p> <p>Constraints 3.3.1 urban development (C) 3.3.2 Non-conservation recreation reserves (C) 3.4.1 high value ag (C) 3.4.2 cropping (C) 3.4.4 plantation (C) 3.4.5 High Intensity Rural Zoning (C) 3.4.6 Current mining (C)</p> <p>Opportunities 3.4.3 grazing (O) 4.1.1 LGA bushland reserves (O) 4.1.2 nature refuge (O) 4.1.3 parks and public recreation reserves (O) 4.1.4 state protected areas (Estates) (O) 4.2.1 LGA Koala Specific Conservation Area (O) 4.2.2 Koala offsets (O) 4.2.3 Private properties managed for Koala (O) 4.2.4 Covenant (O) 4.3.1 Corridors and Stock routes (O) 4.3.2 LGA defined biodiversity (O) 4.3.3 Conservation Zoning (O) 4.3.4 Low Intensity Rural Zoning (O) 5.1.1 Climate Change Refugia (O)</p>	<p>Notes</p> <ol style="list-style-type: none"> Aim to identify intact remnant or regrowth habitat with the highest habitat suitability rank and high koala density We propose not to use the Urban Footprint (3.3.4), PDAs (3.3.3) and Future Mining (3.4.7) layers to constrain our initial identification of Koala Habitat Protection Area. From an ecological (tenure blind) point of view, these datasets would be better used to identify where proposed development conflicts with highly suitable koala habitat (i.e. Protection Areas). LGA Urban Zones (i.e. suburban areas) are still included. Need to check with EPP and DSDMIP if any of these, or any other (i.e. (Bromelton State Development Areas), layers are hard constraints. We need to develop layers to capture habitat context, such as connectivity, patch/tract size or proximity. For example, proximity to protected areas or to other high value habitat. Our koala habitat classes might be suitable surrogated for koala density and carrying capacity and applied across the whole SEQ. Analysis needs to be undertaken to determine whether there is a relationship between habitat class (model rule) and koala density*.

Name	Description	Application	What we need the mapping to tell us	Other sources for info	Measures	TCOR
Koala Habitat Restoration	These priority areas will inform where strategic focal points for concentrated state government investment in effective preservation and restoration of koala habitat; restoration should occur.	Management and partnerships for habitat restoration Land Restoration Fund	<ul style="list-style-type: none"> Areas suitable for rehab Connectivity with protected areas Connectivity with high quality habitat Tenure split Refuges from bushfire and climate change <p>BAT note: The pre-clearing habitat mapping will be used to identify areas suitable for rehabilitation. Protected areas and other areas with conservation intent have been identified. Connectivity and proximity can be calculated.</p>	<p>DES:</p> <ul style="list-style-type: none"> Koala Nature Refuges Program Land Restoration Fund Grant programs <p>DSDMIP eg PDA? DNRME eg Mining?</p> <p>BAT note: Mining has been included in 3.4.6 What about DAF in relation to Ag? Some agricultural layers were included. What is the level of consultation required with other departments wrt the layers used?</p>	<p>Constraints</p> <p>3.4.1 high value ag (C) 3.4.2 cropping (C)</p> <p>Opportunities</p> <p>3.4.3 grazing (O) 3.4.5 rural zoning & rlrp (O) 4.1.1 lga bushland reserves (O) 4.1.2 nature refuge (O) 4.1.3 parks and public recreation reserves (O) 4.1.4 state protected areas (Estates) (O - Proximity) 4.2.1 LGA koala specific conservation area (O) 4.2.2 Koala offsets (O) 4.2.3 Private properties managed for Koala (O) 4.2.4 Covenant (O) 4.3.1 Corridors and Stock routes (O) 4.3.2 LGA defined biodiversity (O) 4.3.3 Conservation Zoning (O) 4.3.4 Low Intensity Rural Zoning (O) 5.1.1 Climate Change Refugia (O)</p> <p>Consider including additional measures for:</p> <ol style="list-style-type: none"> density of scattered trees within planning unit proportion of planning unit with regrowth 	<p>6. Aim to identify cleared or degraded habitat suitable for restoration with a potentially high carrying capacity</p> <p>7. We will also include context layers eg proximity to protected areas or proximity to other high value habitat.</p>

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Name	Description	Application	What we need the mapping to tell us	Other sources for info	Measures	TCOR
				Redland habitat mapping was not used in the TCOR analysis but it is broadly similar to our koala habitat mapping and could be used as an additional spatial overlay.		
Reintroduction	These priority areas have been identified as the most appropriate for the reintroduction of rehabilitated koalas	Release of rehabilitated koalas (where their original habitat is no longer suitable) Translocation	<ul style="list-style-type: none"> Habitat below carrying capacity Empty habitat that would be suitable for reintroduction <p>BAT note: It is difficult to identify empty or habitat below carrying capacity without field survey data. Koala density data from the western LGAs (where we have no data) is needed. Existing koala survey data (from the eastern LGAs) could be analysed to provide this information (see note*). In addition the modelled density data from the Rhodes (2015) report could be used to support the assessment.</p>	Rescue/carer groups Local Councils Wildnet BAT note: Rescue and carer groups were not consulted due to time constraints and the sensitivities surrounding this project. Council and WildNet data have been utilised where appropriate.	Reintroduction areas should be linked to Priority Conservation Areas (see above) Threats (absence and/or mitigation needed) 3.1.5 fire (T) 3.1.2 dogs (T) 3.1.3 disease (T) – NO DATA 3.2.1 roads (T) 3.2.2 rail (T)	<p>11. Characteristics of reintroduction areas will be broadly similar to conservation areas ie intact habitat with a high carrying capacity.</p> <p>12. The absence of threats or the ability to manage/mitigate can be a consideration in the identification of reintroduction areas.</p>
Offsets	These priority areas are where delivery of koala offsets will yield greatest result. Offset triggers to be revised to meet recommended clearing prohibitions.	Land use planning Management of habitat compensation for land clearing for development	<ul style="list-style-type: none"> Areas suitable for offsets, including private and state land. Relate priority areas to Strategic Offsets Investment corridor 	DES - Offsets register Local Councils Q Spatial Catalogue – Qld biodiversity & vegetation offsets features http://qldspatial.information.qld.gov.au/catalogue/custom/index.page BAT note: The DES offset register does not currently contain information in relation to koala offset locations as these are administered by local government.	Offset areas should be linked to Restoration Areas (see above) Threats (absence and/or mitigation needed) 3.1.5 fire (T) 3.1.2 dogs (T) 3.1.3 disease (T) – NO DATA 3.2.1 roads (T) 3.2.2 rail (T)	<p>13. Characteristics of offset areas will be broadly similar to Restoration Areas ie cleared or degraded habitat with a potentially high carrying capacity</p> <p>14. Responsibility for maintaining koala offset information rests with local governments who administer the offsets for PKADAs in SEQ. DES has a project underway to collate this information. It is anticipated that the data may be available by the end of 2018. (See Carole Rayner).</p>
Monitoring*	All priority areas: Monitoring will be undertaken to assess the effectiveness of management activities in priority areas.	Evaluation of management interventions and publicly report on results	<ul style="list-style-type: none"> How can we track habitat quality– has it diminished or recovered or stayed same? How can we track koala densities? 	DES survey team sentinel sites Local Council surveys	Location of the sentinel sites for monitoring should be within Koala Habitat Protection Areas (see above).	<p>15. Need to coordinate with monitoring team to ensure monitoring sites and Sentinel locations are located within the KPAs.</p> <p>16. Monitoring data, especially koala density and koala records would be useful inputs into the TCOR model if it was available.</p>

* Note: Although the Koala Expert Panel Report includes a range of recommendations relating to the use of priority areas for monitoring purposes, 'monitoring' is not considered a relevant use for the purpose of determining criteria to inform the location of priority areas.

Criteria	Indicator	Measure	Short Description	Status	Koala Priority Areas Assessment Category	Measure Description	Rationale for inclusion of measure
3 Threats and Constraints	3.1 Koala Stressors	3.1.1 Heat stress	Hot days/nights and consecutive hot days/nights	Data preprocessed	Protection	Combination of four dataset representing hot days (above 37.7C) and hot nights (above 25C) from 1950-2018. Includes both count and consecutive data.	High temperatures in the day and night have a direct affect on koalas and their ability to feed at night. When the days and nights are hot consecutively and there is no relief from the heat, this is particularly stressful on koalas and can lead to death.
		3.1.2 Dogs	Dog density	Data preprocessed	Threat Management	Number of registered domestic dogs per ha for each locality	Dogs are a direct threat to koalas whereby dog attacks are one of the main causes of koala mortality in urban environments
		3.1.3 Disease	Disease	No Data	Threat Management	not available	Suggested as inclusion by expert panel. Due to lack of available data we were not able to implement this measure.
		3.1.4 Climate Change	Heat stress / fatality	Data preprocessed	Protection	Koala habitat contraction when projected to a future climate scenario	Habitat that will be unsuitable for koalas, under future climate scenarios, represent a threat to the long-term viability of koala populations.
		3.1.5 Fire	Bushfire potential intensity	Data preprocessed	Threat Management	Bushfire prone areas from CSIRO	Bushfires have an impact on koala habitat loss
	3.2 Linear Infrastructure	3.2.1 Roads	Road density	Data preprocessed	Protection & Threat Management	Road hierarchy representing traffic volume	Road density has been shown to negatively influence koala occurrence in Noosa Shire, South East Queensland (McAlpine et al. 2005) and is also associated with increased road mortality (Dique et al. 2003d, Preece 2007).
		3.2.2 Railways	Railway density	Data preprocessed	Protection & Threat Management	Railway network represented linearly.	Railways reduce habitat connectivity and result in increased mortality when koalas are hit by trains (Preece 2007).
	3.3 Urban Development	3.3.1 Urban development	Urban Zoning	Data preprocessed	Protection	Compiled from data obtained from LGAs. SDAs are specialist planning areas which control the development of industrial land and multi-user infrastructure corridors based on existing industry and surrounding development.	Urban development limits koala food and shelter trees and is associated with increased koala mortality and represent a direct threat to koalas and constraint to protecting or restoring koala habitat.
		3.3.2 Non-conservation recreation reserves	Built recreation areas & Intensive Use	Data preprocessed	Protection	Non-conservation recreation reserves	Recreation reserves with a significant built or impervious component and limited opportunity as koala habitat.
		3.3.3 Priority Development Areas	Priority Development Areas	Use in post Analysis	Do not include to identify Priority Areas - look at conflict between PDAs and output protection area	Boundaries of all declared PDAs and sites previously declared as Urban Development Areas (UDAs). PDAs represent land declared for economic development or community purposes.	urban development has an impact on koala habitat loss and exposes koalas to direct threats, such as dog attacks, cars and reduced habitat connectivity.
		3.3.4 Urban Footprint	Urban Footprint & Rural Living Area	Use in post Analysis	Do not include, areas where zoning does not overlay may be an opportunity - more of a contextual layer - use in post analysis	SEQRP Urban Footprint & Rural Living Area	Urban footprint identified land necessary for urban expansion (up to the year 2031) and primarily has a development rather than a conservation intent
	3.4 Primary Industry	3.4.1 High Value Agriculture	Priority Agricultural Areas	Data preprocessed	Protection & Restoration	Combination of high priority agricultural areas (DNRME), important agricultural areas (DAFF) and priority agricultural areas (DSDIP), QLUMP data, data from Forestry Plantations Queensland	High value agricultural areas limit koala food and shelter trees and represent a constraint to protecting or restoring koala habitat.
		3.4.2 Cropping	Cropping and Horticulture	Data preprocessed	Protection & Restoration	Cropping and Horticulture	Cropping and horticulture areas limit koala food and shelter trees and represent a constraint to protecting or restoring koala habitat.
		3.4.3 Grazing	Agricultural Grazing & Pasture	Data preprocessed	Protection & Restoration	Grazing landuse areas	Grazing limits koala food and shelter trees and represent a constraint to protecting or restoring koala habitat. Grazing areas with increasing tree density through replantings, shelter belts etc represent an opportunity for koalas.
		3.4.4 Plantation	Forest plantation Areas	Data preprocessed	Protection	Plantations including forestry	Plantations limit koala food and shelter trees and represent a constraint to protecting or restoring koala habitat.
		3.4.5 High Intensity Rural Zoning	Rural Zoning	Data preprocessed	Protection & Restoration	High intensity rural zoning represented by rural designations under local government planning schemes.	Rural activities limit koala food and shelter trees and represent a constraint to protecting or restoring koala habitat.
		3.4.6 Current Mining	Current Mining Leases & Permits & Haulage routes	Data preprocessed	Protection	Areas representing current and future mining exploration permits including coal mines, petroleum facilities and infrastructure, pipelines, processing and separation areas	Current mining area and associated human activities impact on Koala
		3.4.7 Future Mining	Future Mining Leases & Permits	Use in post Analysis	Restoration	Areas representing current and future mining exploration permits including coal mines, petroleum facilities and infrastructure, pipelines, processing and separation areas	Future mining area and associated human activities impact on Koala

4. Opportunities	4.1 Specific Conservation Reserves	4.1.1 High Conservation Areas	High security and value conservation areas	Data preprocessed	Protection & Restoration	Protected National & Conservation Parks	High tenure security and conservation intent of these areas makes them suitable opportunities to consider for koala conservation in terms of landscape context.
		4.1.2 Medium Conservation Areas	Medium security and/or value conservation areas	Data preprocessed	Protection & Restoration	Forest & Resource Reserves + LGA Conservation and Bushland areas	Medium tenure security and conservation intent of these areas makes them suitable opportunities to consider for koala conservation in terms of landscape context.
		4.1.3 Low Conservation Areas	Low security and/or value conservation areas	Data preprocessed	Protection & Restoration	State & Timber Forests, Other Lands, Nature Refuges, privately managed properties, parks and reserves, covenants, offsets	Low tenure security and conservation intent of these areas makes them suitable opportunities to consider for koala conservation in terms of landscape context.
	4.2 Broad Conservation Area	4.2.1 Corridors and Stock routes	Regionally & Locally Significant Corridors & Stock Routes	Data preprocessed	Protection & Restoration	Queensland corridors mapped as terrestrial and riparian corridor buffers derived from published Biodiversity Planning Assessments and the Statewide Conservation Corridors.	DES dataset represents buffers of terrestrial and riparian corridors. Corridors of vegetation allow the movement of wildlife and provide continually between larger tracts of remnant forests and woodlands and therefore have relevance to koala.
		4.2.2 LGA defined biodiversity areas	LGA defined biodiversity areas	Use in post Analysis	Protection & Restoration	Biodiversity area defined by LGA	Individual local government have set locations of areas within their management areas that are specifically managed for biodiversity conservation
		4.2.3 Conservation Zoning	Conservation Zoning	Data preprocessed	Protection & Restoration	Conservation and Environments in land use dataset	current land use for conservation and environments
		4.2.4 Low Intensity Rural Zoning	Regional Landscape Rural Production Area	Data preprocessed	Protection & Restoration	SEQRP Regional Landscape Rural Production Area	Some of the conservation intents of the Regional Landscape Rural Production Area (RLRPA), such as protecting land from urban encroachment and protecting natural assets, are compatible with koala habitat conservation.
5 Resilience	5.1 Refugia	5.5.1 Climate Change Refugia	Climate Change Refugia	Data preprocessed	Protection & Restoration	Koala habitat unchanged when projected to a future climate scenario	Habitat that will be suitable for koalas under future climate scenarios represent refugial habitat that may contribute to the long-term viability of koala populations.

Date : 10/10/2018 10:53:59 AM

From : "DUNN Jayne"

To : "ROFF Paul" , "PERSHOUSE Audrey" , "GEORGE Catherine"

Cc : "HOWELL Steven" , "PREECE Harriet" , "SEABROOK Leonie"

Subject : KPA mapping meeting - TCOR progress report attached

Attachment : TCOR_methology_progress_report_20181010.docx;image001.png;image002.png;image004.jpg;

Hi All

Please find attached the Koala project TCOR progress report for your perusal and potential discussion during this afternoon's meeting.

Many Thanks

Jayne



Jayne Dunn

Senior Program Officer

Biodiversity Assessment Team | Conservation & Sustainability Services

Department of Environment and Science

P 07 3330 5099

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Please note I work Mondays to Thursdays.



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Date : 22/08/2018 2:54:12 PM

From : "HOWELL Steven"

To : "CLOUSTON Beth" , "GEORGE Catherine" , "ROFF Paul" , "SUTHERLAND Narelle" , "DUNN Jayne" , "ARMOUR Kristen" , "PERSHOUSE Audrey"

Subject : outcomes from identifying KPAs meeting

Attachment : k_tcor_meeting_minutes_20180822.docx;

Hi

Thanks very much for the meeting yesterday. Attached are the minutes (thanks to Jayne and Narelle). Please let myself or Jayne know if any changes. The two presentations are on [T drive](#).

□
Thanks



Steven Howell

Manager

Biodiversity Assessment Team

Conservation and Sustainability Services

Department of Environment and Science

P 07 3330 5911

Level 27, 400 George St, Brisbane QLD 4000

GPO Box 2454, Brisbane QLD 4001

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Meeting agenda

Spatial modelling and planning for koalas in southern SEQ Part 2 Priority areas for koala conservation

Details

Subject	Identifying Koala Priority Areas – project update
Chair	Steven Howell
Date and location	21/8/2018 – Level 27 Boardroom, 400 George St
Timing	3:00 – 4:30pm

Attendees

Name	Job Title	Position/Representation
Beth Clouston	Director	Conservation and Biodiversity Policy
Catherine George	Manager	Koala Policy and Oversight
Paul Roff	Manager	Land Use
Narelle Sutherland	A/Director	Knowledge Information and Analysis
Jayne Dunn	Senior Program Officer	Biodiversity Assessment Team
Steven Howell	Manager	Biodiversity Assessment Team
Kristen Armour	Senior Policy Officer	Koala Policy and Oversight
Apologies:		
Audrey Pershouse	Senior Policy Officer	Koala Policy and Oversight/Land Use

Agenda

Item #	Description	Responsible	Timing (mins)
1.	What is a Koala Priority Area (KPA)?	Steven/Catherine	
2.	Methodology for identifying KPAs. Additions/changes to existing Measures. Alignment of Measures with KPAs.	Steven	
3.	Progress and results so far.	Steven	
4.	Next steps. Timelines and deliverables.	Steven	
5.	Consultation on KPAs & policy measures Who, when, responsible DES lead?	Steven/Catherine	
6.	Any other questions/issues?	Steven	
7.	Next meeting?	Steven	

Attachments

- Methodology and Progress report
 - TCOR_process_results_20180820.docx
- Threats/Constraints/Opportunities/Resilience Criteria, Indicators and Measures
 - CIM_List_data_package_180820.xlsx
 - TCOR sheet is an expanded version of the Measures, description and rationale.
 - TCOR Datasets sheet list the specific data used for each measure.
- Priority Area types
 - Priority Area Types_20180820.docx
 - BAT additions in purple.
- Draft results – will be provided at the meeting.

Minutes

- Steven and Catherine delivered a presentation which summarised the methodology which will be used to identify the KPAs, including the criteria, indicators and measures used to determine areas where Threats/Constraints/Opportunities/Resilience (TCOR) occur. Draft results were also presented.
- Beth raised the question “how does the criteria determine which areas are sufficiently large and well connected enough?” Steven explained that the TCOR measures will determine the land suitability and that the methodology chosen to identify the KPAs will be justifiable and defensible.
- Paul commented on the wording for non-core habitat, suggesting to re-consider approach to non-core habitat (or at least naming and messaging about it) – as shade trees and other non-core habitat can be critical to survival. VMA exceptions will override planning assessments (so non-core will not be protected).
- We will need to establish case that core/non-core habitat is not to be treated in the same way as the VMA. Planners need to understand that a mix of both habitats is critical. Steven agreed review.
- Paul questioned the data used to determine some of the criteria, such as the data used for ‘SEQ urban zoning’. EPP can provide data on PDAs and SDAs, large committed development areas, master planning now, as Paul suggests it’s important to factor in the now.
- Paul suggested to meet further to determine the appropriateness of some of the datasets and Measures and for a more detailed discussion on how the measures have been weighted (not weighting at the moment).
- Paul recommended a Director level meeting to resolve some of issues including those around identification of Koala Habitat Protection areas which may end up in legislation:
 - Measures and data sets.
 - Include some discussion of threats – dogs.
 - Approach to patch/hexagon size – e.g. the use of 20ha hexagonal size in the coastal zones and a 100ha hexagonal size for the western zones (noting that the EPBC trigger is 20ha). Steven commented that the hexagon size was chosen as a balance between the input data and the questions being asked. A different size can be used, however we would like to avoid using a mix of sizes as this increased the computational complexity.
 - Percentage of hexagon issue ie if the hexagons are too large then some information will be lost. Related to previous point.
 - How identified koala areas in Gold Coast & other local government biodiversity planning layers (including carrying capacity of remaining habitat) is going to be treated as many years of work have gone into these.
 - Consideration of underlying zones, comparing mapping to the biodiversity overlay – justification as to why we would not use it.
 - Determine who we need to consult with (internally and externally).
- Paul added that if we get measures right we could use the Koala Habitat Protection areas for regulatory map (and not have to re-do the process).
- Catherine added that other issues will require discussion across teams, such as habitat and population targets. We will need some strong policy about what we’re trying to achieve - what’s going to resonate and what will get community support.
- Steven has requested further feedback from all on the Uses for Priority Areas table which includes Koala Habitat Protection areas, Koala Habitat Restoration areas, etc. Please provide all comments via email to Jayne and Steven.

- Beth mentioned that the KPA mapping is intended for inclusion in a package of products towards the release of the draft Koala Conservation Strategy in May 2019. This may go to Cabinet before the end of 2018.
- How is this related to the SEQ Strategic Assessment?
- The meeting was generally supportive of the work done so far and the identified process.

Actions

Action	What	Who	Timeline	Status	Notes
1.	Steven to reconsider naming and messaging around non-core habitat.	Steven			
2.	Steven to meet with Beth regarding further clarification on KPA identification methodology	Steven, Jayne	By Fri 24 Aug 2018	Organised for 27/8/2018.	Attendees – Beth, Catherine, Narelle, Jayne and Steven.
3.	Set up meeting to discuss process and Measures for identifying KPAs and specifically Koala Habitat Protection Areas.	Steven	By Fri 31 August 2018	Organised for 29/8/2018.	Attendees - Laurie Hodgman, Paul Roff, Peter Rollston, Andrew Irwin, Beth Clouston, Catherine George, Narelle Sutherland, Jayne Dunn, Harriet Preece, Leonie Seabrook and Courtney Duncan.
4.	Arrange Director level meeting.	Narelle			Attendees – Beth, Laurie and Narelle.
5.	Steven to send copy of presentations to attendees.	Steven	By Fri 24 Aug 2018	Done.	
6.	Provide further feedback to Steven or Jayne on the Uses for Priority Areas table.	All	By Fri 31 Aug 2018		

Workshop minutes

KOALA HABITAT PLANNING POLICY

TECHNICAL WORKSHOP 3

Details

Subject	Koala Habitat Planning Policy – Technical Workshop 3
Chair	Dr Beth Clouston, Peter Rollston and Audrey Pershouse
Meeting type	Interagency Workshop
Date and location	11 December 2018 Level 27, 400 George Street, Brisbane
Timing	9.00 am to 12.00 pm
Distribution	Restricted distribution to DES and DSDMIP authorised officers only.

Present

Name	Job title	Representation
Christopher Aston	A/Executive Director, Planning Group	DSDMIP
Robert Hughes	A/Executive Director, Conservation and Biodiversity Strategy	DES
Dr Beth Clouston	Director, Conservation and Biodiversity Strategy	DES
Kristy Forwood	A/Director, Policy and Statutory Planning	DSDMIP
Catherine George	Manager, Koala Policy and Oversight	DES
Robyn Kiss	Manager, Policy and Statutory Planning	DSDMIP
Melissa Hector	Principal Planning Officer	DSDMIP
Peter Rollston	Principal Planning Officer, Land Use	DES
Ryan Longland	Principal Planning Officer	DSDMIP
Alana Barry	Senior Policy Officer, Environmental Policy and Planning	DES
Andrew Irwin	A/Senior Policy Officer, Land Use	DES
Audrey Pershouse	Senior Policy Officer, Koala Policy and Oversight	DES
Evan Jackson	Senior Planning Officer	DSDMIP

Laura Affleck	Senior Policy Officer, Koala Policy and Oversight	DES
Estelle Roux		DPC

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Minutes – Workshop 3: Reviewing analysis results and scoping next steps

sch3(2)(1)(a) Cabinet matter - For consideration by Cabinet

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Date : 10/10/2018 8:23:29 AM
From : "HOWELL Steven"
To : "GEORGE Catherine"
Cc : "DUNN Jayne"
Subject : RE: QnA Koala Habitat Mapping
Attachment : QnA Koala Habitat Mapping.docx;k_current_future_20181010.docx;TCOR_methology_progress_report_20181010.docx;
Hi Catherine

A few edits attached. I have a meeting this afternoon with Narelle and will check whether this is all that is required to meet the request from Nick (which came from the DES/DSDMIP meeting).

Also attached is a proposed list of current and future work for the koala habitat work. Please treat as confidential as I believe Narelle will progress this with Beth.

Finally a summary of the progress so far and what's next. This was requested by Rob and might help with our meeting this afternoon. This has yet to be checked by Narelle.

Thanks
Steven
Manager. Biodiversity Assessment Team
Department of Environment and Science
Ph 07 3330 5911

From: HOWELL Steven
Sent: Monday, 8 October 2018 12:14 PM
To: GEORGE Catherine <Catherine.George@des.qld.gov.au>
Cc: DUNN Jayne <Jayne.Dunn@des.qld.gov.au>
Subject: RE: QnA Koala Habitat Mapping

Hi Catherine

I have added a few minor edits and Jayne will review and send back to you tomorrow.

Thanks
Steven
Manager. Biodiversity Assessment Team
Department of Environment and Science
Ph 07 3330 5911

From: GEORGE Catherine
Sent: Friday, 5 October 2018 4:28 PM
To: HOWELL Steven <Steven.Howell@des.qld.gov.au>
Subject: QnA Koala Habitat Mapping

Steve, as discussed, this is the updated FAQs and messaging, for your review please.

Thanks
Catherine

Statement – General

The Queensland Government is committed to addressing the decline in koala populations in South East Queensland and has commenced working with stakeholders on actions that will herald a new direction for koala conservation.

The Koala Expert Panel (the Panel) provided recommendations on ~~the most~~ realistic and achievable measures for koala conservation. One of the first recommendations to be ~~rolled implemented~~ is ~~an~~ updating ~~the~~ koala mapping and protection ~~of~~ core koala habitat through an update to the Vegetation Management Act 1999.

The updated map has been prepared under direction of the Panel and uses up-to-date information and modelling techniques. While consistent with the existing Essential Habitat mapping methodology, the Panel considers the updated mapping to be a significant improvement in accuracy over the existing habitat mapping.

Statement - Detailed

The Queensland Government has committed to implement a range of recommendations from the 2017 Koala Expert Panel (the Panel) report to reverse the decline in the koala population in South East Queensland. This includes a commitment to consider new koala habitat mapping for inclusion in the Essential Habitat maps for the purposes of the *Vegetation Management Act 1999 (VMA)*.

The regulation of native vegetation through the VMA includes habitat mapping, referred to as Essential Habitat, for species that are endangered, vulnerable or near threatened under the Nature Conservation Act 1992.

An important function of the VMA is to protect habitat for listed threatened species. The ~~Koala~~ ~~koala~~ is listed as vulnerable in Queensland and its habitat is included in the VMA ~~Essential Habitat~~ layer of regulated vegetation ~~through Essential Habitat~~. Where an area is identified as habitat for a threatened species under the VMA, additional development assessment may be required for clearing, depending on factors including the extent and purpose of clearing.

Changes to the Essential Habitat mapping will also result in a change to the Matter of State Environmental Significance maps, identified as 'MSES Regulated Vegetation (essential habitat)'. The State Planning Policy requires local governments to map all MSES in their planning schemes and to ensure that development is located in areas that avoid adverse impacts on these matters. However, work is progressing separately on developing koala priority area mapping for use in the planning and development approval system for proposals not triggering VMA assessment.

The ~~koala~~ update will ~~increase~~ ~~change~~ the area within the SEQ urban footprint that is covered by the Essential Habitat layer by approximately 3%.

Questions and Answers – Essential Habitat Update

Q: What is the relationship between the *Vegetation Management Act 1999* and the new methodology for mapping koala habitat?

A: The *Vegetation Management Act 1999* regulates vegetation clearing in Queensland and provides a map of regulated vegetation (known as the Regulated Vegetation Management Map). This map contains many layers, and one of these layers is ~~the 'essential habitat' layer~~. This layer identifies habitat for ~~particular~~ threatened species including the koala based on where core habitat for each species is known to occur. The Department of Environment and Science and the department administering the *Vegetation Management Act 1999* (the Department of Natural Resources Mines and Energy), work together to ~~regularly~~ update this mapping on a yearly basis. ~~The new koala habitat mapping can be used for a future update to the essential habitat mapping.~~

Q: What are the details of this update?

A: New contemporary koala habitat mapping has been developed to replace the existing koala habitat mapping for South East Queensland. The methodology for the new mapping has been endorsed by the Koala Expert Panel (the Panel) and is based on improved modelling techniques, including new survey data and updated data sources such as vegetation mapping.

This amendment is necessary to incorporate the best available data and an improved methodology to identify essential habitat for the koala that will be used to regulate the clearing of native vegetation.

Q: What is the difference between this update and the update associated with amendments to the VMA?

A: The base layers, including essential habitat for Vegetation Management Map are routinely updated every March. Ministerial discretion can be used to determine if there is a need to update the mapping if there have been substantial changes identified outside of this cycle, such as the new koala habitat mapping.

Q: What avenues are there for disputing the mapping?

A: After viewing the regulated vegetation management map for ~~your~~ a property, ~~the~~ a landowner may wish to apply for a Property Map of Assessable Vegetation (PMAV) to:

- confirm the vegetation category areas as currently mapped
- amend the mapping if ~~you believe~~ there is an error.

A property map of assessable vegetation (PMAV) is a property-scale map that shows the boundaries of vegetation categories on the property.

A PMAV is made through agreement between the landowner and the Queensland Government (application fee applies). Once the PMAV is certified, it replaces the regulated vegetation management map for determining the location and extent of the areas of regulated vegetation.

The PMAV application will be assessed using the information supplied by the applicant, as well as imagery and any other relevant data available. A site inspection may ~~also~~ be necessary.

After all available information is considered, the applicant will be sent a draft PMAV or certified PMAV, depending on whether all of the changes requested in the application have been made. If proposed changes have not been made, the applicant will be provided with information detailing the reasons behind the decision and offered an opportunity ~~for the applicant~~ to supply additional information.

Q: What is the impact on koala habitat protection?

A: The outcome of the new mapping will see an increase to Essential Habitat of xx% which represents an increase of xx% of the entire SEQ Regional Plan area. It will also result in an increase to Essential Habitat within the urban footprint of xx% which represents an increase of xx% of the entire SEQ Regional Plan urban footprint.

The inclusion of the new koala habitat mapping in the VMA (replacing the existing koala habitat mapping in southern SEQ) will not create additional or amended regulatory provisions, nor will it extend the regulated vegetation mapping coverage.

General

Q: How did the Queensland Government prepare the new koala habitat mapping?

A: The Queensland Government prepared the new koala habitat mapping using a number of spatial datasets, including but not limited to, validated records of koala sightings, knowledge of preferred koala habitat trees, climate, geology, elevation and other variables important for koala habitat. The peer-reviewed spatial modelling tool/process known as MAXENT was also used in conjunction with sightings and vegetation preferences, to identify each area of suitable koala habitat in the region. Whilst there was no specific field truthing of the results, additional work was undertaken to exclude areas mapped as habitat but have since been cleared or modified. In addition, areas were excluded from the mapping where there were overlaps with areas that are clearly not koala habitat such as playing fields.

The Koala Expert Panel endorsed the methodology and mapping and recommend its release, as mentioned in their final report. AA separate Koala Advisory Group was formed of koala ecologists and spatial modelling experts to assist in determine the process for developing the mapping process, including chair of the Koala Expert Panel Assoc. Professor Jonathon Rhodes, Dr Alistair Melzer, Dr Hawthorne Beyer, Professor Clive McAlpine, and Dr Bill Ellis.

Q: What koala habitat values does the new mapping contain?

A: The new mapping identifies areas of 'core habitat' (highest quality koala habitat), 'non-core habitat' (other suitable koala habitat) and 'non-habitat' (such as sand dunes, mangroves and other types of vegetation). These types of habitat have been mapped over areas of remnant vegetation (old growth/never been cleared), and regrowth vegetation (has been cleared and allowed to regrow), as well as identifying any scattered koala habitat trees (a tree within an otherwise cleared area that provides food or habitat for a koala).

Q: Is there koala habitat mapping available for the rest of Queensland?

A: There is koala habitat mapping available for the rest of South East Queensland based on koala sightings and and koalas preferred vegetation types (regional ecosystems). This mapping, known as 'essential habitat', is used during the assessment of development applications under the Planning Act 2016 and vegetation clearing applications under the Vegetation Management Act 1999. Outside the South East Queensland bioregion, koala essential habitat is mapped based on buffers placed around validate sightings. The This mapping outside southern South East Queensland is not as comprehensive as the new koala habitat mapping for South East Queensland, however the same method used to prepare the new mapping could be used to prepare/create more comprehensive mapping for the rest of Queensland.

Q: What is the relationship between the new koala habitat mapping and the Matters of State Environmental Significance (MSES) mapping?

Commented [HS1]: We should be able to add the numbers. Some will be approximations as will need to wait till we get the final authorised VMA layer back from DNRME.

Commented [HS2]: The coverage will increase due to the updated mapping.

A: The Matters of Environmental Significance mapping includes many environmental values (as defined under the State Planning Policy and the Environmental Offsets Regulation 2014). One of these values is 'threatened species habitat'. The new koala habitat mapping may be used to update the MSES mapping used by these instruments and update the area identified as having important koala habitat values.

Q: Will the new mapping result in an increase or decrease to the area in South East Queensland that is mapped as MSES, or koala habitat?

A: The new koala mapping includes areas not already covered by the existing MSES mapping, and removes areas previously mapped ~~incorrectly~~ as koala habitat that are generally not suitable for koalas based on contemporary information. There would be an approximate increase in the area that is currently mapped as MSES of 10%, if the new mapping were used. However, there would also be a reduction of approximately 1% as some other areas would also be removed. MSES mapping is prepared by the Department of Environment and Science and follows a standard mapping process (known as the MSES mapping methodology) which is prepared by the Environmental Policy and Planning division of DES and is available online.

Q: Which stakeholders provided input to the development of the new koala habitat mapping?

A: The Queensland Government formed a dedicated team within the Department of Environment and Science with extensive knowledge, skills and experience in spatial ~~mapping analysis~~, ecology, and koala habitat identification. This dedicated team liaised with and obtained information from multiple stakeholders including members of the Koala Expert Panel, local government agencies in South East Queensland, academics, botanists, ecologists, and the Queensland ~~H~~erbarium. The Queensland Government also formed a dedicated Koala Advisory Group, consisting of koala ecologists and spatial modelling experts to provide input and ensure the mapping was developed based on the latest scientific evidence. The Koala Advisory Group included Associate Professor Jonathan Rhodes, Dr Alistair Melzer, Dr Hawthorne Beyer, Professor Clive McAlpine, and Dr Bill Ellis.

Q: Will the new koala habitat mapping result in an increase or decrease to the area of land regulated by the VMA?

A: ~~The~~ Vegetation Management Act 1999: ~~This Act~~ regulates the clearing of vegetation that ~~is~~are either endangered, of concern, or least concern remnant regional ecosystems. The new koala habitat mapping will be used to identify areas of essential habitat for the koala which are also remnant and high value regrowth regional ecosystems. This would not result in an increase to the extent of vegetation that is regulated under the Act, but would result in an increase to the extent of essential habitat for the koala.

Q: Where can I access the mapping?

A: The new vegetation management laws will change some unregulated areas of vegetation (Category X on the regulated vegetation management map) to regulated areas (Category C and Category R). You can find out if your property is affected by requesting a regulated vegetation map or property report.

When you request a property report for a specific area, you will receive relevant property information and a series of maps and supporting information outlining the requirements for clearing vegetation (<https://www.qld.gov.au/environment/land/vegetation/clearing>) on area of interest~~this land.~~

This information will help ~~you~~ determine whether you ~~will~~ need a development approval, or can clear under exempt clearing work; an accepted development vegetation clearing code; or area management plan. The report will also tell you if your proposed clearing is in a high-risk area and subject to the protected plant laws.

The report and all maps are free and can be requested using our online request form (<https://www.dnrm.qld.gov.au/qld/environment/land/vegetation/vegetation-map-request-form>).

Q: What if I have an existing development approval granted before the release?

A: ~~There will be n~~No impact ~~and y~~—You can continue clearing under the conditions of your development approval. Development applications for clearing that are made but not decided before the release will be decided as if the new Essential Habitat update is released.

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Spatial modelling and planning for koalas in southern SEQ

Current and future tasks

10/10/2018

Current till the end of 2018

1. Combine the habitat mapping with threats/constraints/opportunities/resilience (TCOR) to identify a network of connected priority areas with a focus on :-
 - a. Koala Habitat Viability Areas for Protection
 - b. Koala Habitat Restoration
 - c. Threat management
 - d. Reintroduction
 - e. Offsets
2. Publish an internal Environmental Reports Online focussed on the full koala habitat model (ie not just Essential Habitat). Draft report has been created (by Larry).
3. Provide high level technical advice on interpretation and implementation of the habitat mapping and TCOR results especially within the planning framework.
4. Provide advice to the koala survey and monitoring team wrt ongoing and future survey work.
5. Undertake analysis and mapping to answer queries.

Future

6. Extension of the habitat methodology to the northern section of the SEQ bioregion.
7. Extension of the habitat methodology to outside the SEQ bioregion.
8. Publish the full habitat mapping GIS results, metadata etc to QSpatial, Queensland Globe, Biomaps and Environmental Reports Online.
9. Peer review of the methodology.
10. Publish methodology and results as a scientific paper
11. Investigate approaches for including confidence measures in future mapping.
12. Investigate relationship between high value regrowth used in the updated koala mapping and high value regrowth used in the recent VMA update. Possibly update with the VMA regrowth layer when updating to RE v11.
13. Change analysis for RE v11 and determine whether an update to the koala habitat mapping is required.
14. Gap analysis with respect to the protected area estate.
15. Design and implement a process for yearly updates to the mapping. KEP recommended every two years, however yearly will sync with the RE/VMA update cycle.

Date : 29/08/2018 10:29:40 AM

From : "Karen Kenny"

To : "GEORGE Catherine" , "HUGHES Robert (NRE)" , "CLOUSTON Beth" , "ROFF Paul" , "PERSHOUSE Audrey"

Cc : "Melissa Hector"

Subject : RE: Revision of koala document

Attachment : Koala new revision.docx;image001.png;image003.png;

Thanks Catherine, please find enclosed the updated document from our last meeting, I have incorporated DES feedback apart from on the last item where it would be good to discuss further.

Happy for feedback today.

Karen



Karen Kenny

A/Director

Policy and Statutory Planning

Department of State Development,

Manufacturing, Infrastructure and Planning

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From: GEORGE Catherine <Catherine.George@des.qld.gov.au>

Sent: Wednesday, 29 August 2018 10:01 AM

To: Karen Kenny <Karen.Kenny@dsdmip.qld.gov.au>; HUGHES Robert (NRE) <Robert.Hughes@des.qld.gov.au>; CLOUSTON Beth <Beth.Clouston@des.qld.gov.au>; ROFF Paul <Paul.Roff@des.qld.gov.au>; PERSHOUSE Audrey <Audrey.Pershouse@des.qld.gov.au>

Subject: KEP-DILGP meeting agenda 20180828

Good morning, please see attached an agenda for this afternoon meeting and note that there has been a change in venue to room 14:15 1WS.

Kind regards

Catherine

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Item	KEP Action	Government response to the KEP	Process	Measurables and timeframes
ACTIONS THAT CAN COMMENCE IMMEDIATELY				
1.	6.2(a)	The Queensland Government will continue to develop and update koala habitat mapping	<p>Release Essential Habitat mapping</p> <p>Internal to State: DSDMIP supports this action. The standard process for this action involves DES submitting the mapping to DNRME for them to apply their certified edits before it can go live.</p> <ol style="list-style-type: none"> DES to update Ehab mapping using new koala mapping. DES to supply DNRME with updated version of Ehab map. DNRME to apply certified edits and authorise for release. DSDMIP to update DAMS (Development Assessment Mapping System) Inform stakeholders of changes. <p>Internal to DSDMIP</p> <ol style="list-style-type: none"> Update to DAMS Communications Strategy and mapping elert issued 	<p>DES to submit changes to DNRME by end of August.</p> <p>DNRME updates Ehab mapping on a yearly basis. Next update scheduled for March 2019.</p> <p>**note that with DSDMIP support from previous meeting, DES have already approached DNRME to commence this action.</p>
2.	2.2(h)	The Queensland Government will improve the planning framework for koala-related development to improve consistency and simplicity.	<p>Review all planning controls including exemptions currently impacting on Koala habitat in SEQ</p> <p>Internal to State:</p> <ol style="list-style-type: none"> DES to provide information from KEP. DES to provide areas of current exemptions and how they interact. DSDMIP to review and decide whether to proceed with procurement process and the extent of external input required based on information already received. 	To commence now.
3.	2.2(k)	The Queensland government will deliver a communication and education strategy to support any changes to the koala regulatory framework.	<p>Provide guidance to local government on existing framework for koala habitat protection and clarify roles of state and local government</p> <p>Internal to State:</p> <p>As a first stage:</p> <ol style="list-style-type: none"> Write guidance document for local government to clarify their existing role in protecting koalas. Option to also flag the role of local laws. DES to review draft guideline and provide examples where possible of successful work. <p>As a second stage:</p> <ol style="list-style-type: none"> Update document when MLES review is finalised <p>As a further stage:</p>	<p>To be informed by Action 2 above.</p> <p>Release 2018.</p> <p>Dates for subsequent versions to be decided.</p>

Item	KEP Action	Government response to the KEP	Process	Measurables and timeframes
			3. Update document again when framework has been amended with the outcomes of other recommendations- state role as assessment manager/referral agency	
4.	2.2(h)	Improve the planning framework for koala-related development to improve consistency and simplicity.	Review issues associated with transitioned Koala SPRP Internal to State: 1. DES and DSDMIP to exchange issues received about the provisions (old koala SPRP) in the Planning Regulation 2017 2. Agree intervention required (guidance or rewrite of provisions) 3. Proceed to rewrite or update guidance material	To commence now.
SHORT TO MEDIUM TERM ACTIONS				
5.	1.2(ii) 6.2(a)	The Queensland Government will establish priority areas for koala conservation measures.	Identify Koala Priority Areas Internal to State: 1. DES will produce draft KPAs based on scientific information. 2. DES and DSDMIP (and any other affected state agencies) to work through proposed areas and compare with any existing planning commitments (such as Shaping SEQ) 3. Both agencies to agree on location, extent and purpose of each KPA	Update to be discussed 29/08
6.	1.2(a) 2.2(c) 6.2(a)	The Queensland Government will work with stakeholders to tighten clearing requirements, inside and outside the urban footprint, and establish appropriate assessment provisions based on new habitat mapping	Agree on planning controls to apply to Koala Priority Areas Internal to State: The extent of the KPAs agreed in the previous step. 1. Review recommendations of KEP for planning provisions 2. Develop and evaluate options based on KEP recommendations (DES and DSDMIP to lead). 3. Recommend planning controls for assessment based on evaluated options. 4. Consultation as determined by Ministers and OBPR	Update to be discussed 29/08
7.	2.2(b) 2.2(c) 2.2(d)	Work with stakeholders to tighten clearing requirements, inside and outside of the	Agree on Planning Controls to operate <u>outside</u> of KPAs in combination with new mapping, this includes triggers and exemptions 1. Identify areas where key koala habitat occurs outside of priority koala areas and existing planning controls that apply (should be informed by Item 2)	Update to be discussed 29/08- timing of mapping and KPAs will determine this timeframe

Item	KEP Action	Government response to the KEP	Process	Measurables and timeframes
		<p>urban footprint, and establish appropriate assessment provisions based on new habitat mapping.</p> <p>Address development assessment exemptions that have an adverse impact on koala habitat.</p>	<ol style="list-style-type: none"> 2. Provided science to support any changes to triggers in these areas- DES to provide from KEP discussions 3. Consult with state agencies on changes- Discussion with DNRME regarding why the VMA exemptions remained unchanged through VMROLA 4. Decide level of consultation in combination with Ministers and OBPR 5. Progress amendments as needed 	
LONGER TERM ACTIONS				
8.	2.2(i)	The Queensland Government will review coordination between legislative instruments and between state departments for koala-related development.	<p>Internal to State:</p> <ol style="list-style-type: none"> 1. DSDMIP and DES agree on the scope of this government response, there are many other agencies that could be involved in this action depending on the scope, e.g. NC Act (DES), VMA (DNRME), PDAs (EDQ) etc. 2. DES to provide any work partially undertaken during the KEP review. <p>Contractor/External to state- with state input:</p> <ol style="list-style-type: none"> 1. review and report on differences and the impacts these may have on koala-related development. 2. make recommendations on edits/amendments or other options to improve consistency. 3. State to decide on recommendations to support 4. State to decide level of consultation with internal and external stakeholders 	Could occur alongside Item 7
9.	2.2(a)	The Queensland Government will identify and manage inconsistencies in development standards between state and private sector development	<ol style="list-style-type: none"> 1. DSDMIP and DES agree on the scope of this government response <p>This work could be undertaken by a consultant.</p> <ol style="list-style-type: none"> 1. Conduct a review the standards placed on state development for consistency with other types of development, recognising existing Government commitments 2. In terms of SDAs and PDAs, review policies in place and determine if these policies need any adjustment in relation to koala habitat, noting that SDAs and PDAs are specific purpose vehicles to achieve government objectives. 	Dependent on earlier actions to clarify what the development standards in planning are- these can then be investigated in the context of other state assessment models.

Item	KEP Action	Government response to the KEP	Process	Measurables and timeframes
		requirements for koala habitat.	3. make recommendations on edits/amendments or other options to improve consistency. 4. State to decide on recommendations to support 5. State to decide level of consultation with internal and external stakeholders	
10.	2.2(a) and 1.2(a) 2.2(j)	The Queensland Government will assume responsibility of koala related planning and development assessment issues in SEQ, strengthen state development assessment requirements to improve consistency in approach to koala habitat protection across SEQ.	DSDMIP and DES will develop options relating to the state's role in development assessment. This work is dependent on: <ol style="list-style-type: none"> 1. Decisions on the planning controls associated with the KPAs and outside of KPAs 2. MLES review and Offsets review 3. Progress of Strategic Assessment 	This item may occur alongside item 6 and 7. DES comment: A consideration of the most suitable planning instruments will need to occur later in the process as an SDAP will only be required if the State assumes assessment. This process must be independent of SA due to timeframes.