

Guideline: State Development Assessment Provisions

State Code 25: Development in South East Queensland koala habitat areas



Prepared by: Department of Environment and Science

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Version	Effective date	Description of changes
1.00	07/02/2020	Initial version.
2.00	1/07/2022	Interim version to reflect changes to SDAP v3.0 State Code 25 and improve readability

Disclaimer

Any references to legislation are not an interpretation of the law. They are to be used as a guide only. The information in this publication is generally and does not take into account individual circumstances or situations. Where appropriate, independent legal advice should be sought.

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Human Rights

The Department of Environment and Science is committed to respecting, protecting and promoting human rights. Under the [Human Rights Act 2019](#), the department has an obligation to act and make decisions in a way that is compatible with human rights and, when making a decision, to give proper consideration to human rights. When making a decision under this guideline, decision-makers must comply with that obligation (refer to [Comply with Human Rights Act](#)).

March 2022

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1.0 Overview

This guideline provides advice to assist assessment agencies and development applicants in addressing State Code 25: Development in koala habitat areas (the code) in the [State Development Assessment Provisions](https://planning.dsdmip.qld.gov.au/planning/better-development/the-development-assessment-process/the-states-role/state-development-assessment-provisions) (<https://planning.dsdmip.qld.gov.au/planning/better-development/the-development-assessment-process/the-states-role/state-development-assessment-provisions>).

This guideline applies to development in koala habitat areas (KHA) made assessable under the Planning Regulation 2017. The use of this guideline does not guarantee compliance with all planning and environmental requirements of the code. Development applicants must refer and respond to the code.

Applicants should also refer to the [Koala-sensitive Design Guideline: A guide to koala-sensitive design measures for planning and development activities](#).

Development affecting koala habitat outside of koala habitat areas may be assessable by local government using Planning Regulation Schedule 11 benchmarks.

Purpose statement

The purpose of State Code 25 is to ensure development:

1. does not cause an unacceptable impact on **mapped koala habitat areas**;
2. is designed and located to avoid impacts or, where the **matters of state environmental significance** cannot be reasonably avoided, impacts are reasonably minimised and mitigated; and
3. does not result in a **significant residual impact** on a **matter of state environmental significance** unless the **significant residual impact** is acceptable, and an **offset** is provided.

Note: The extent of koala habitat areas can be found on the [Development Assessment Mapping System](#).

Structure of this guideline

Section 2 provides key concepts relevant to the code. It provides technical detail relevant to one or more of the codes performance outcomes (PO). An application for development that triggers assessment against the code must consider the key concepts, how they relate to the proposed development and address the relevant key concepts when addressing the performance outcomes. Section 3 provides the information on, how to respond to particular POs and specific information requirements. If a PO is not relevant to the proposed development, a response of “Not Applicable” and sufficient information to demonstrate why it is not relevant is required.¹

Section 4 provides links to policies, technical documents and guidelines that have been used to develop this guideline and may assist applicants to prepare responses to the POs.

Bolded terms are defined in the code and in the Nature Conservation (Koala) Conservation Plan 2017.

¹ If State assessment determines the PO is relevant, an information request to respond to the PO may be issued.

2.0 Key concepts

Koala ecology

koala habitat tree means— (a) a tree of the *Corymbia*, *Melaleuca*, *Lophostemon* or *Eucalyptus* genera that is edible by koalas; or (b) a tree of a type typically used by koalas for shelter, including, for example, a tree of the *Angophora* genus.

Food requirements

The koala, *Phascolarctos cinereus*, is an arboreal (tree living) marsupial that prefers to eat leaves of the *Eucalyptus* genera in a variety of different forest types, particularly those occurring on more fertile soils with a higher nutrient status, as biophysical measures like soil type and water availability affects the palatability and nutrient level of the leaves. Koalas are also known to forage on other species, such as *Corymbia*, *Lophostemon*, *Melaleuca* and *Angophora*.

Shelter and refuge requirements

Koalas exhibit a novel strategy to regulate their body temperature when exposed to high temperatures as a result of their arboreal lifestyle. Koalas need to move from food trees to shelter trees during the day to reduce their body temperature and practice conductive heat loss by seeking out and resting against tree trunks that are substantially cooler than ambient air temperature. Shelter and refuge trees are therefore as important as food trees because koalas cannot eat if their body temperature is too high and these trees provide safe refuge from predators.

The location and relative proximity of food and shelter trees is important to consider when determining which koala habitat areas are more significant than others.

Koala Habitat

Koala habitat means:

- (a) an area of vegetation in which koalas live and that includes a koala habitat tree; or
- (b) an area of vegetation that consists primarily of koala habitat trees and which is reasonably suitable for sustaining koalas; or
- (c) a partially or completely cleared area used by koalas to cross from an area mentioned in paragraph (a) or (b) to another area mentioned in paragraph (a) or (b)

As defined in the [Nature Conservation \(Koala\) Conservation Plan 2017: \(legislation.qld.gov.au\)](#)

Mapped Koala Habitat Area

Mapped koala habitat area means an area shown on the Koala Conservation Plan Map that the chief executive of the *Nature Conservation Act 1992* has determined to be a koala habitat area due to the combination of biophysical measures and suitable vegetation of the area.

Koala habitat areas are defined in the [Nature Conservation \(Koala\) Conservation Plan 2017](#) as those identified as containing koala habitat which is essential for the conservation of a viable koala population in the wild. The main purpose of identifying koala habitat areas is to avoid or minimise impacts on koala habitat to ensure the long-term persistence of koala populations in the wild.

Accessing the maps: [Koala mapping | Environment | Department of Environment and Science, Queensland \(des.qld.gov.au\)](#) and <http://www.qld.gov.au/environment/land/management/vegetation/maps/map-request> and <https://qldglobe.information.qld.gov.au/>

Koala Priority Areas

Koala Priority Areas have been identified to strategically focus long-term management and monitoring effort on areas that have the highest likelihood of achieving conservation outcomes for koalas.

Koala home range and population habitat size

Koala home range

Koalas require suitable extents of habitat that provide for the species ecological, physiological, and behavioural needs including feeding, seeking shelter and water, breeding, raising young and escaping threats such as predators. The area required to sustain a single koala depends on the quality of the available habitat and the extent to which it meets the animal's needs. Higher quality soils, such as alluvial soils, in areas with greater water availability generally produce higher quality habitat where trees are larger, have higher nutrient content, occur at greater densities and have greater canopy cover. Koalas have a smaller home range in areas with high quality habitat. As habitat quality reduces, less resources are available and the amount of area a koala needs for a home range increases.

In South East Queensland, the smallest home range on highly fertile soils is generally one hectare for female koalas and two hectares for male koalas. Across the region, however, home ranges are often larger, particularly further west from the coast.

Habitat size for koala populations

The minimum patch size for a viable koala population will depend, to some extent, on the level of koala habitat connectivity. For example, if several small patches of koala habitat areas are very close together (also known as 'highly connected') they may function equivalent to a single larger patch if the koalas can move freely and safely between them. However, if a patch is highly isolated, then it would need to be much larger to support a viable population.

Koala habitat areas that are less than 2ha in size, may be important to assist connectivity as stepping stones between larger patches of habitat.

Koala movement

Koalas will occasionally change trees during daylight hours but are most active at night, dawn and dusk. Female koalas have been found to move about 100m each day while males move about 200m.

In the breeding season (August to January) koalas move more frequently as they shift from tree to tree in search of a mate. They often move greater distances outside of their usual home range to find a mate.

Between June and December, juvenile koalas establish their own home range. Young koalas can travel long distances to find areas to establish themselves. This can be tens of kilometres in a highly modified environment.

Research has found instances where dispersing animals may move up to 2-5 km in a single night even in highly fragmented urbanised landscapes.

Koala safe movement

Safe koala movement opportunities within and across a site facilitate geneflow for healthy viable koala populations; minimise threats to resident and transient koalas; and provide food or refuge sources for koalas.

Threats to the safe movement of koalas in urban areas, or between stepping stone habitat, increases with distance between habitat and the number of threats introduced. This affects a koala's ability to move safely from one patch of habitat to another. As landscapes become modified, native vegetation (including mapped koala habitat areas) is replaced by barriers to koalas, such as urban development, roads, rail lines, fences and large expanses of cleared land. These barriers make it hard or impossible for koalas to move safely through the area. In existing or developing urban areas, or areas where road or rail is proposed, the safe movement of koalas and connectivity can be improved by using a range of koala-sensitive planning and design measures that aim to mitigate the risk to koalas.

Further information on this is provided in the [Koala-sensitive Design Guideline: A guide to koala-sensitive design measures for planning and development activities](#).

Connectivity

Connectivity means patches of mapped koala habitat areas that are linked to each other in a larger network of mapped koala habitat areas. Connectivity can be achieved in through:

1. physical connections between mapped koala habitat areas which includes areas of native vegetation; and

2. the ability for koalas to safely move between patches of mapped koala habitat areas without increasing the risk of injury or death of a koala.

Highly connected patches means mapped koala habitat areas that are less than 200 metres apart.

Connectivity affects the ability of plants or animals to move through a landscape. Higher levels of connectivity exist where there are fewer barriers to dispersal or migration. Maintaining safe and effective connectivity is important within and between patches of koala habitat to maintain viable koala populations.

Koala movement is safer where there are no obstacles or cleared land within a koala's home range or between nearby habitat patches. The greater the distance a koala spends on the ground moving between habitat trees and/or the more barriers in its way, the higher the risk is of death or injury from exhaustion, lack of food and safe shelter, heat stress, dog attack, rival koala attacks or vehicle strike. Urban areas, major transport routes and large expanses of cleared land provide the greatest risk to connectivity.

Maintaining and establishing corridors are the clearest way to increase connectivity, as they provide structural and often vegetated connections between habitats in the landscape. There are other ways to increase connectivity where having a corridor is not possible, such as reducing the distance between vegetated koala habitat areas and retaining stepping stones containing habitat trees.

Applying koala sensitive design principles in urban areas or across transport routes also assists connectivity. For further information refer to [Koala-sensitive Design Guideline: A guide to koala-sensitive design measures for planning and development activities](#).

Corridors

A corridor is an extent of vegetated or cleared unobstructed land that joins two or more larger areas of similar wildlife habitat allowing for wildlife movement. Adequate corridor width requires consideration of numerous factors, including the likely home range size of a koala based on the native vegetation type in that area, the length to width ratio of the corridor, topography and vegetation within the corridor and adjacent land use.

For koalas corridors can be described as:

1. koala habitat areas remaining intact and connected by continuous koala habitat areas;
2. continuous corridors of native vegetation with koala habitat trees between koala habitat areas;
3. continuous corridors of non-native vegetation with scattered koala habitat trees between koala habitat areas;
4. cleared land with small, segregated patches of vegetation with scattered koala habitat trees known as "stepping stones" between koala habitat areas;
5. cleared land that contains scattered koala habitat trees between koala habitat areas, ideally where the trees are 30m apart but no more than 200m apart and in small clumps to provide versatility to meet koala's habitat needs.

Stepping stones

Stepping stones are small patches of habitat where koalas can eat, rest and escape predators as they move between larger areas of habitat. Stepping stones can include small patches of koala habitat area (e.g., areas less than 2ha), patches of other vegetation that includes scattered koala habitat trees, or a single koala habitat tree. Stepping stones within urbanised environments include parks, vegetated waterways, easements and road reserves with koala habitat trees. There may also be several stepping stones between large patches of koala habitat areas that facilitate koala movement over long distances.

Stepping stones must be as close as possible. In non-urban areas they should be a maximum of 100m from large koala habitat areas or other stepping stones as this is the average distance that a female koala will move in a day. In urban environments the distance between areas of refuge should be 30m or less to significantly reduce the risk of koalas becoming stressed and/or encountering threats from dogs and vehicles.

Stepping stones at much greater distances should not be discounted, as these have shown to be important for koalas, particularly young males dispersing long distances when establishing new home ranges.

3.0 Addressing SDAP State Code 25

This part of the guideline provides information to assist applicants to demonstrate how they meet the performance outcomes (POs) of the code. The advice contained in this section covers the minimum information applicants are required to provide in response to the criteria.

Information supporting an application must be provided in document or map format described in the "Information requirements" sections. It must address the relevant considerations that is described in section 2.0 "Key Concepts" and section 3.0 "Intent of PO".

If the requirements are the same for more than one PO, supporting information, such as survey reports and mapping, only needs to be provided once. Reports and maps must identify which POs they are addressing.

Material change of use, operational work, building work and plumbing or drainage work

Performance Outcome PO1

PO1 Development supports connectivity between highly connected patches of mapped koala habitat areas .	No acceptable outcome is prescribed.
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Intent of PO1

PO1 seeks to ensure that connectivity between **highly connected patches** of mapped koala habitat areas is maintained or enhanced when undertaking development. To achieve this outcome development is to be sited, designed and constructed in a manner that:

- avoids removing vegetation between highly connected patches of mapped koala habitat area; and
- provides corridors to facilitate koala movement in undeveloped areas to improve connectivity.

Example scenario 1 illustrates an example to demonstrate how PO1 could be addressed.

Sites that are vegetated or that contain cleared undeveloped land, with or without stepping stones or single koala habitat trees, provide **connectivity** and opportunities for koalas to move safely throughout the landscape. Retention of these areas on a development site between habitat patches can maintain connectivity and reduce the risk of injury or death of koalas.

If a development proposes to remove habitat between highly connected koala habitat areas, corridors should be identified to mitigate the impact of that removal and ensure retained koala habitat areas are connected. Some considerations that should be made when determining corridor width include:

- corridors should be as wide as possible to function effectively;
- the minimum corridor width should be guided by the home range size of koalas using it;
- for territorial species, (e.g., male koalas) the width should be greater than one home range size to avoid an individual preventing others from using the corridor;
- if the corridor is shorter than one home range size, the corridor may be narrower than the above-mentioned widths;
- longer corridors should be wider to ensure it contains sufficient resources for koalas to move and rest over extended periods while they travel and support multiple individuals using the corridor at the same time; and
- streams and rivers form useful locations for corridors; however, the corridor should be wide enough to include continuous strips of flood free land that supports areas and habitat suitable for koala movement.

Literature recommends koala movement corridors should seek to be at least 100m wide to function effectively and to minimise edge effects. Further, studies recommend that after providing a minimum width of 100m, a nominal '10 percent rule' for corridor width versus length should be adhered to as a baseline. This means that the width of the corridor at its narrowest point should at least 100m or 10 percent of its length, whichever is greater.

PO1 Information Requirements

Development applications must include a plan in digital (preferably GIS) format that demonstrates the retention of connectivity between highly connected patches of mapped koala habitat areas. This includes:

- the location of koala habitat areas within the development site and on adjacent properties that are considered highly connected;

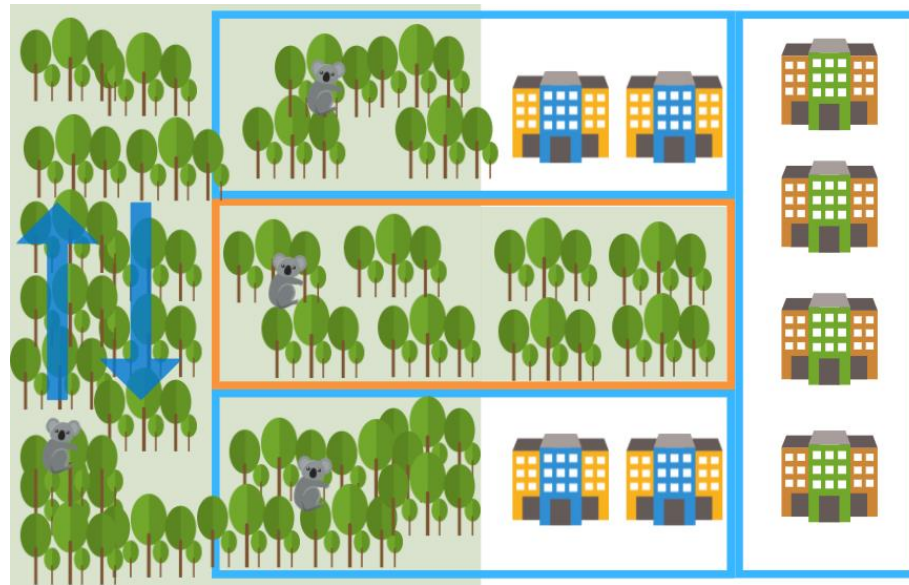
- koala habitat areas proposed to be impacted and the types of development and infrastructure that will be located in those areas.

Development applications that are proposing to impact connectivity between highly connected patches of mapped koala habitat areas must be accompanied by a report prepared by a suitably qualified ecologist that demonstrates how connectivity will be maintained. The report must specifically identify:

- the dimensions of the koala habitat area (e.g., length by width) proposed to be retained;
- the composition on the koala habitat area retained (e.g., does the area contain remnant or regrowth vegetation, native or non-native vegetation, is the area cleared, what is the location and distance between koala habitat areas or individual trees);
- any actions that will be undertaken on land retained that will improve connectivity between koala habitat areas (e.g., removing barriers, weed management, revegetating with koala habitat trees, the density of plantings, the distance between planted trees);
- elevation and slope of areas to be retained;
- the location of waterways and waterbodies in relation to areas retained;
- management actions to ensure corridor functionality/connectivity is maintained as anticipated: and
- discussion on why those areas are suitable for maintaining connectivity between highly connected patches of mapped koala habitat areas.
- the locations of retained vegetation should be based on koala surveys of known koala locations, koala home ranges within the area and resident koala movement patterns; or desktop analysis of koala's preferred habitat types for that locality and likely movement patterns.

PO1 Trigger Consideration

If this PO does not apply to the proposed development, a statement that it is not applicable and sufficient supporting information to justify why it is not applicable is required. For example, if there are no highly connected patches (i.e., patches within 200m of one another) of koala habitat that will be impacted by interference with koala habitat, this PO may not apply. In this instance, supporting information may include a map that identifies the location of all mapped koala habitat in proximity to the site, including distance measurements that demonstrate none of the mapped koala habitat areas are within 200m of one another.



Example Scenario 1: An applicant applies for an MCU (outlined in orange) which is mapped as a koala habitat area. The applicant wishes to build a warehouse on the site which is currently zoned as residential. The site is located between an existing koala corridor to the east and an existing

Mapped KHA



Avoid development that places structures in locations that provide safe movement opportunities for koalas or would fragment koala habitat areas.



Design development that avoids removing vegetation between highly connected patches of mapped koala habitat area. Design development that provides corridors to facilitate koala movement in undeveloped areas.

Performance Outcome PO2

PO2 Development supports **safe koala movement** by preventing **fragmentation** of patches of **mapped koala habitat areas**.

No acceptable outcome is prescribed.

Intent of PO2

PO2 seeks to prevent mapped koala habitat areas becoming fragmented from other mapped koala habitat areas to support safe movement by koalas between habitat areas. To achieve this outcome, development is to be sited and designed to avoid fragmenting koala habitat areas by:

- avoiding removal of vegetation that would fragment the site's mapped koala habitat area;
- retaining corridors or stepping stones to facilitate koala movement in undeveloped areas; and
- avoiding development that places structures in an area that would obstruct safe movement opportunities.

PO2 Information Requirements

Applications must include a plan in digital (preferably GIS) format that identifies:

- the location of koala habitat areas that will be interfered with as a result of the proposed development, in relation to the location of other mapped koala habitat areas within the development site and on surrounding sites;
- the location of koala habitat areas on the site that are proposed to be impacted through exempted development (as defined in Schedule 24 of the Planning Regulation 2017) which would apply as a natural and ordinary consequence of the development and increase fragmentation.
- how remaining koala habitat areas will be managed to protect them from future clearing, for example via legal security mechanism such as covenants or the area becoming an environmental reserve under local government jurisdiction;
- any areas where actions will be undertaken to prevent fragmentation, reduce fragmentation and improve connectivity between remaining koala habitat areas (e.g., retaining vegetated corridors, scattered trees and stepping stone vegetation, revegetating disconnected areas with koala habitat trees);

Applications must indicate:

- How koala sensitive design principles have been incorporated in the siting and design of the development for example:
 - the installation of koala exclusion fences that prevent koalas accessing dangerous parts of a site;
 - the installation of koala friendly fences, underpasses and overpasses that allow koalas to safely move through an area; and/or
 - reduced speed limits at times when koalas are most active.
- How the design ensures that there is opportunity for koalas to move safely from one patch of koala habitat area to another. Further information on practical examples of how to achieve PO2 can be found in the Koala-sensitive Design Guideline: A guide to koala-sensitive design measures for planning and development activities.
- For roads that separate koala habitat areas, the application must indicate:
 - the width and length of the road section intersecting koala habitat area;
 - measures proposed to reduce koalas being injured or killed by cars (e.g. overpasses, underpasses, road design and lighting, speed limits, signage, etc.).

Applications must include a report prepared by a suitably qualified ecologist that demonstrates how fragmentation caused by interference with koala habitat will be prevented. The report must identify:

- management actions or legal protection mechanisms (eg: covenants) to be undertaken on the site that will prevent fragmentation both on and off the site of remaining and adjacent koala habitat areas, resulting from the interference with mapped koala habitat;
 - measures to be implemented to ensure safe koala movement is not compromised as a result of interference with koala habitat (e.g., retention of individual koala habitat trees to provide safe movement opportunities between patches of mapped koala habitat area or rehabilitation opportunities);
 - measures that will be undertaken to ensure koalas can move safely between highly connected patches of retained koala habitat area;
 - why the proposed measures are suitable for providing safe koala movement opportunities.
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Performance Outcome PO3

PO3 Development within a mapped koala habitat area is undertaken in a way that prevents the risk of injury or death of koalas.	No acceptable outcome is prescribed.
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Intent of PO3

The intent of PO3 is to ensure koalas are not injured or killed as result of development. This includes clearing and subsequent construction activities that follow such as earthworks and building activities.

The risk to koalas can be higher in areas where clearing has previously occurred. Koalas will remain in or near their home range areas even after clearing has occurred. If koala habitat has been cleared on a site, it is possible that koalas will try to remain on the development site while it is being developed. Impacts to koalas on a development site may include:

- injury or death when trees are cleared while koalas are still in them or when trees fall on other trees that have koalas in them;
- falling into excavated pits and holes and becoming injured or trapped;
- koalas taking refuge in machinery at night and being injured when machinery starts the next day;
- being run over by heavy machinery;
- being stressed by dust impacting on remaining adjacent koala habitat; or
- being attacked by security dogs or dogs bought on site by employees working on the development site at construction stage.

Impacts to koalas can be managed through excluding koalas from dangerous worksites, providing koala safe movement areas through a development site, excluding dogs on site and ensuring dust and light does not affect adjacent koala habitat.

There are legal requirements for how koala habitat can be cleared safely under the Nature Conservation (Koala) Conservation Plan 2017 to ensure clearing minimises the risk of stress, injury or death to koalas. This includes sequential clearing requirements and having an experienced koala spotter on site when clearing occurs. For more information see sections 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017.

Risks to koalas at the construction phase and management practices to avoid those risks should be identified in a Koala Management Plan. Acceptable management measures to mitigate risks can include:

- installing koala exclusion fencing (temporary or permanent) in areas that may be dangerous to koalas (e.g., excavated pits, waterbodies, areas where guard dogs are present and areas with active machinery);
- checking machinery prior to use;
- ensuring a koala spotter with a current rehabilitation permit is present at any active clearing fronts;
- raising awareness of site workers to watch for koalas on site;
- installing koala crossing signage on site roads;
- ensuring site worker's dogs are excluded from a site, on a leash or otherwise restrained; and
- following the sequential clearing requirements of the Nature Conservation (Koala) Conservation Plan 2017.

PO3 Information Requirements

Applications should include a management plan that demonstrates compliance with the sequential clearing and koala spotter permit requirements of the Nature Conservation (Koala) Conservation Plan 2017 relevant to the development site. The plan would be developed by a suitably qualified and experienced person that has knowledge of koala ecology and experience and identify the following:

- all potential risks to koalas from clearing and construction activities proposed on site, including earthworks, plumbing and drainage works and building works;
- all management measures that will be implemented to address the risks;
- the process and measures to address accidental injury or death of koalas; and

- the process for implementing the management plan including:
 - identifying the person responsible for implementing the plan (e.g., site supervisor, foreman); and
 - the process for training all contractors working on the site to comply with the plan.

Performance Outcome PO4

<p>PO4 Development does not compromise safe koala movement through impediments that restrict movements between highly connected patches of mapped koala habitat areas.</p>	<p>No acceptable outcome is prescribed.</p>
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Intent of PO4

In addition to clearing, placing barriers that prevent or restrict koala movement or placing impediments in a koala's way when moving across the landscape can increase the risk of koala injury or death. Impediments can be introduced into an area through changes to the ground profile (e.g., as a result of bulk earthworks) and by changing land uses from ones that are suitable for koalas, to ones that introduce threats to koalas, such as dogs, cars, pools and other water bodies. Death and injury from vehicle strike and dog attacks are amongst the highest urban development impacts leading to the decline of koalas.

Mapped koala habitat areas located 200m or less from each other are considered 'highly connected patches'.

The intent of PO4 is to ensure development is sited, designed and constructed to allow koalas to move safely between these highly connected patches by not introducing impediments, or by incorporating koala sensitive design principles in the siting and design of the development to mitigate any potential barriers. For example:

- the installation of koala exclusion fences that prevent koalas accessing dangerous parts of a site (e.g. around pools, dog containment areas, and roads);
- the installation of koala friendly fencing, relocation of roads, installation of culverts, underpasses and overpasses that allow koalas to safely move through an area; and
- using road design features that reduce speed limits in areas where koalas are likely to cross.

Example scenario 2 illustrates how PO4 could be addressed.

The design must ensure that there is opportunity for koalas to move safely from one patch of koala habitat to another. Further information on practical examples of how to achieve PO4 can be found in [the Koala-sensitive Design Guideline: A guide to koala-sensitive design measures for planning and development activities](#).

PO4 Information Requirements

Development applications must include a plan in digital (preferably GIS) format that identifies:

- mapped koala habitat areas that are within 200m of each other (on the development site and on adjacent / nearby lots);
- development and infrastructure proposed in-between patches of retained koala habitat areas including roads, fences, waterbodies, buildings and bulk earthworks; and
- any proposed corridors, their width, proposed composition (e.g., native vegetation, other vegetation or cleared) and proposed uses (e.g., conservation, open space).

For roads that separate koala habitat areas, applications must identify:

- the width of the road and length separating the koala habitat areas;
- measures proposed to allow safe koala movement around, across, under or over the road; and
- measures proposed to reduce the risk of koalas being injured or killed by cars (e.g., overpasses, underpasses, road design and lighting, speed limits, awareness signage).

Applications that introduce impediments to movement must include a report prepared by a suitably qualified ecologist that:

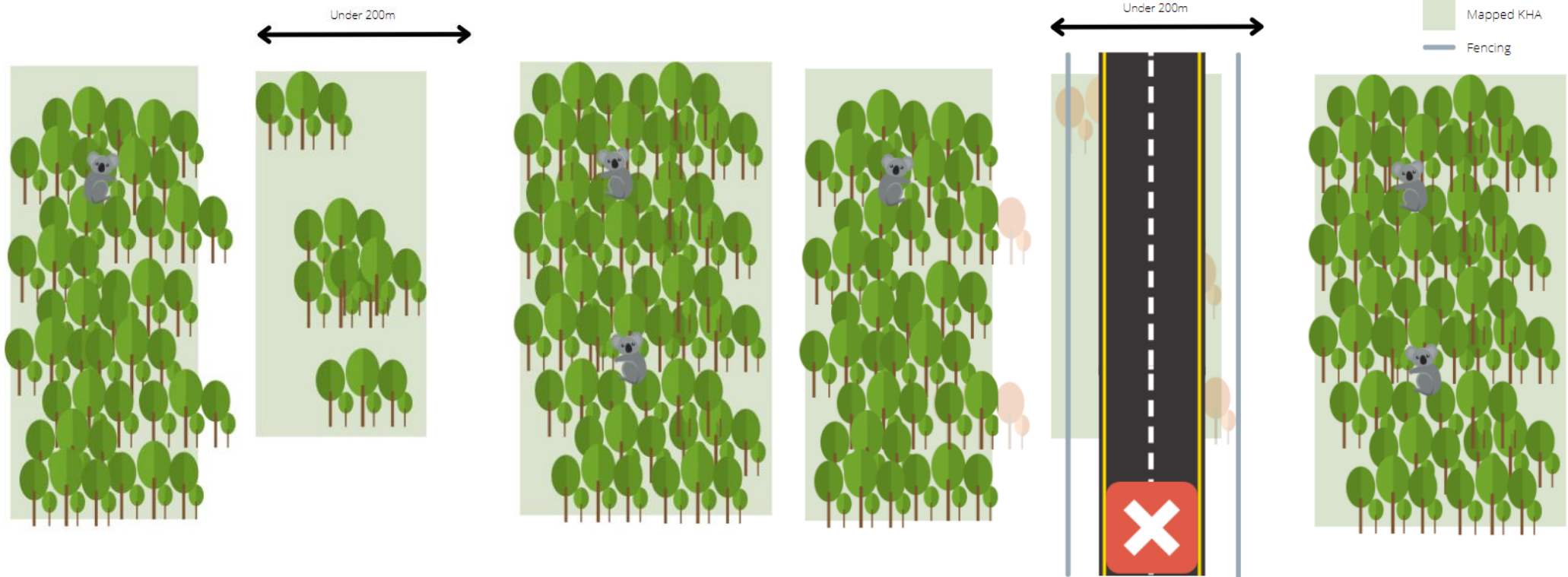
- identifies barriers to movement that will be proposed by the development;
- includes justification for why impediments to movement could not be located elsewhere;

- outlines measures that will be undertaken to ensure koalas can move safely between highly connected patches of retained koala habitat area; and
- includes justification for why the proposed measures are suitable for providing safe koala movement opportunities.

PO4 Trigger Consideration

- If this PO does not apply to the proposed development, a statement that it is not applicable and sufficient supporting information to justify why it is not applicable is required. For example:
 - if there are no highly connected patches (i.e., patches within 200m of one another) of koala habitat that will be impacted by interference with koala habitat, this PO may not apply. In this instance, supporting information may include a map that identifies the location of all mapped koala habitat in proximity to the site, including distance measurements that demonstrate none of the mapped koala habitat areas are within 200m of one another.
 - if the proposed development will not create impediments to koala movement or introduce risk, provide a statement of why this is the case and explain why, for example, no roads are proposed that will increase risk of car strike, etc.; no fencing is proposed to restrict koala movement.

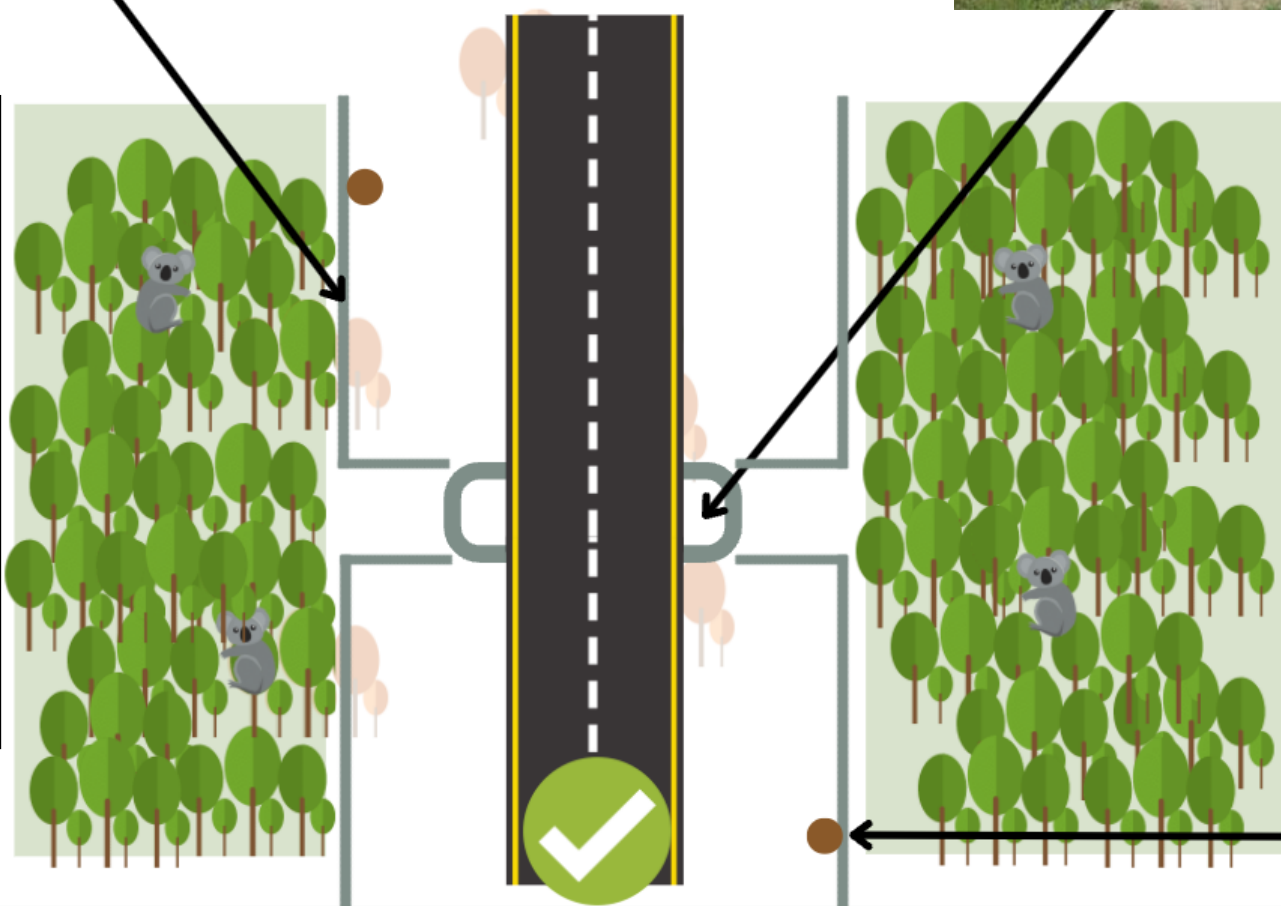
Example Scenario 2: An applicant applies to construct a road in mapped koala habitat. The site is located between two existing koala corridors to the east and west and is highly connected. The applicant has demonstrated in this instance that they cannot avoid interfering with koala habitat altogether but will however design the development to minimise the impact.



Avoid compromising and restricting safe koala movement through impediments when proposing development. In this scenario the applicant has used koala exclusion fencing along the entirety of the road. Although this would remove the threat of vehicle strikes, it would restrict koala movement and fragment the populations on either side of the new road.



Design development that promotes safe koala movement and removes impediments between highly connected patches of mapped koala habitat areas. In this scenario the applicant has utilised koala safe movement solutions through the use of an underpass and installed koala exclusion fencing to funnel koalas to the underpass making it more effective. The applicant has also proposed escape poles on the roadside of the koala exclusion fencing to allow koalas trapped in the road corridor to exit to habitat.



Performance Outcome PO5

<p>PO5 Development is designed and sited to:</p> <ol style="list-style-type: none">1. avoid impacts on matters of state environmental significance; or2. minimise and mitigate impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and3. provide an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development results in an acceptable significant residual impact on a matter of state environmental significance. <p>Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the <u>Brisbane Port LUP</u> precinct plan.</p>	<p>No acceptable outcome is prescribed.</p>
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Intent of PO5

The State Planning Policy (SPP) requires development to avoid impacts on all matters of state environmental significance (MSES). Where impacts cannot be avoided, impacts must be minimised and mitigated, including through offsets. The intent of this performance outcome is to achieve the SPP state interest by ensuring the siting, design, construction and operations of development will be undertaken to avoid, reduce and manage real or potential risks and impacts to MSES. It also aims to ensure that unavoidable impacts on MSES² are counterbalanced through offsets.

The mitigation hierarchy is the framework that underpins Queensland's environmental impact assessment process requiring the development demonstrates the following.

1. Avoid

The development must avoid direct or indirect impact to MSES as much as reasonably possible, for example, through careful spatial and/or temporal placement (i.e. siting, design, time of day/year, duration of activity).

2. Mitigate

Where direct or indirect impacts to MSES cannot be completely avoided, impacts are carefully minimised and mitigated using measures that reduce the duration, intensity and or extent of direct or indirect impacts.

3. Offset (noting that offsets are not an option for all environmental matters)

Under the SPP and the Queensland Environmental Offsets Policy, impacts to all MSES must be avoided in the first instances and where avoidance cannot be achieved, impacts must be carefully managed and minimised (mitigated).

It is a legislative requirement under the SPP that all planning and development activities implement the avoid and mitigate components of the mitigation hierarchy with respects to MSES. The intent of the first two components of this performance outcome is to ensure that development avoids and mitigates impacts to MSES to the greatest extent possible through careful siting and design. This is also a requirement of the Queensland Environmental Offsets Framework.

The third component of this performance outcome is to ensure that where development will likely result in a significant residual impact to MSES that are prescribed environmental matters, despite all reasonable avoidance and mitigation, an environmental offset is provided in accordance with the Queensland Environmental Offset Policy. Section 5(2), section 5(3) and schedule 2 of the Environmental Offsets Regulation list the MSES that are prescribed environmental matters.

It is important to note that some MSES are not prescribed environmental matters where they occur in urban areas. The *Information sheet: Resources for assessing environmental offset obligations, Environmental Offsets Act 2014*.

² The koala is a MSES.

Resources for matters of state environmental significance

(<https://environment.des.qld.gov.au/assets/documents/pollution/management/offsets/resources-for-mses-information-sheet.pdf>) Table 1, Column 2 outlines the MSES that are prescribed environmental matters outside of urban areas. Column 3 of Table 1 outlines the MSES that are prescribed environmental matters inside of urban areas. Regardless of whether a MSES is a prescribed environmental matter, impacts must be avoided and mitigated to satisfy the legislative requirements of the State Planning Policy and Queensland Environmental Offsets Framework.

Most MSES are spatially identified on the Development Assessment System (DAMS), State Planning Policy (SPP) Interactive Mapping System and Queensland Globe.

A suitably qualified ecologist must undertake an assessment against the Significant Residual Impact criteria in Chapter 2A of the Environmental Offsets Policy Guideline to determine whether any residual impacts prescribed environmental matters are likely to be 'significant'. The results of this assessment should be provided to support an application. Where this assessment identifies that there will be a significant residual impact to MSES that are prescribed environmental matters, an environmental offset in accordance with the Queensland Environmental Offset Policy may be required to fully counterbalance this impact.

As SARA places an emphasis on the avoidance and mitigation of adverse impacts on MSES, it should not be assumed that offsets will be automatically supported. Applicants must be able to demonstrate that all reasonable steps have been or will be undertaken to avoid and mitigate impacts to MSES and that an offset is a suitable outcome. There are instances where an offset would not be a suitable outcome, for example where the risk of the offset failing to achieve a conservation outcome is too high. This may be the case if the MSES is extremely threatened, highly localised, or efforts to restore or offset the value have proven to be unsuccessful.

If offsetting is being considered as part of the application, a pre-lodgement meeting with SARA is recommended to determine whether offsetting is a feasible option. Where an offset is considered to not be a suitable outcome, further an avoidance and mitigation will be required to ensure there will be no significant residual impact on a MSES that is a prescribed environmental matter.

PO5 Information Requirements

Development applications must include a plan in digital (preferably GIS) format identifying the extent of MSES on the impact site and within close proximity to the impact site with respect to the location of proposed development footprint or boundary realignment.

To determine the extent of MSES³ on site, refer to:

- the DAMS (<https://dams.dsdip.esriaustraliaonline.com.au/damappingsystem/>) and SPP Interactive Mapping System (<https://spp.dsdip.esriaustraliaonline.com.au/geoviewer/map/planmaking>) on the DSDMIP website; or
- Queensland Globe (<https://qldglobe.information.qld.gov.au/>); or
- Environmental Reports Online (MSES) from the Queensland Government website: (<https://apps.des.qld.gov.au/report-request/environment/>).

MSES mapping is indicative. Site specific survey and mapping is recommended to confirm the extent of MSES on-site.

Submission of an ecological assessment undertaken by a suitably qualified ecologist and prepared to the standards specified in Part 6 Supporting information of the State Planning Policy Guideline Biodiversity is required if:

- detailed site surveys confirm the development site is at a location where the presence or extent of on-site MSES differs from the current MSES mapping;
- development is located within MSES on-site or adjoins MSES (on or off the site) and may cause an impact on MSES.

Applications for development located close to MSES (on or off site) must demonstrate how the development has been sited and designed to avoid impacts to MSES to the greatest extent possible. Where avoidance is not reasonably possible, applications must demonstrate why this was not reasonably possible and demonstrate how

³ For MSES that is koala habitat area, applicants must provide the information requirements identified in PO1 and address the PO5 “avoid, minimise, mitigate” framework, Significant Residual Impact and offsets information requirements.

the development has been sited and designed to minimise and mitigate impacts to MSES to the greatest extent possible.

Where there will be any residual impact to MSES, applications must demonstrate why further avoidance and mitigation was not reasonably possible. To assist assessment of PO5 it is recommended that ecological assessments address the 'avoid, minimise and mitigate' framework, in particular, how the development proposal reduces impacts on MSES through location and design measures.

If there is an impact on MSES, applicants must submit a report by a suitably qualified person that provides an assessment against the Significant Residual Impact criteria justifying whether the residual impact is likely to be significant or not. This report will provide sufficient information to supporting the assessment findings.

SARA will advise in writing whether SRI on MSES are acceptable and, if so, an offset condition will be imposed on the development approval requiring that an environmental offset is undertaken in accordance with the Queensland Environmental Offsets Framework.

Development which does not provide sufficient justification or evidence as to how impacts on MSES have been avoided or minimised may not be approved.

Applicants should refer also to the Checklist: Assessing environmental offset obligations, Environmental Offsets Act 2014. Avoid and mitigate assessment checklist (<https://environment.des.qld.gov.au/assets/documents/pollution/management/offsets/avoid-and-mitigate-assessment-checklist.docx>).

Reconfiguring a lot

For applications for the purposes of reconfiguring a lot, interfering with koala habitat also includes interfering with koala habitat that could occur as a natural and ordinary consequence of the development including:

- interfering with koala habitat to construct built infrastructure, including stormwater management systems, water supply and sewerage systems, roads, access routes or utilities corridors that are proposed as part of the reconfiguring a lot application or that will be required as a condition of approval by the assessment manager;
- interfering with koala habitat associated with earthworks required for the development;
- interfering with koala habitat that could occur through exempted development introduced as a result of the development (whether or not it is proposed as part of the reconfiguration) including for example exempted development relating to:
 - boundary fence lines for each proposed lot;
 - driveways / access tracks for each proposed lot;
 - necessary fire management lines; and
 - necessary firebreaks.

For applications for the purposes of boundary re-alignment (where existing lot boundaries are changed, but there is not an increase or decrease to the number of lots), interfering with koala habitat also includes interfering with koala habitat that could occur as a natural and ordinary consequence of the boundary re-alignment including:

- clearing koala habitat to construct fences;
- clearing koala habitat for necessary fire management lines; and
- clearing koala habitat for necessary firebreaks.

Performance Outcome PO6

PO6 Development supports connectivity between highly connected patches of mapped koala habitat areas.	No acceptable outcome is prescribed.
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Intent of PO6

PO6 seeks to ensure connectivity between highly connected patches of mapped koala habitat areas is maintained or enhanced. To achieve this outcome development is to be sited, designed and constructed in a manner that:

1. Avoids removing vegetation between highly connected patches of mapped koala habitat area; and
2. Provides corridors to facilitate koala movement in undeveloped areas to improve connectivity.

Example scenario 3 depicts an example to demonstrate how PO6 could be addressed.

If development proposes to remove habitat or other vegetation between highly connected koala habitat areas, corridors should be identified to ensure retained koala habitat areas are connected. Some considerations when determining corridor width include:

- corridors should be as wide as possible to function effectively;
- the minimum corridor width should be guided by the home range size of koalas using it;
- for territorial species, (e.g., male koalas) the width should be greater than one home range size to avoid an individual preventing others from using the corridor;
- if the corridor is shorter than one home range size, the corridor may be narrower than the above-mentioned widths;
- longer corridors should be wider to ensure it contains sufficient resources for koalas to move and rest over extended periods while they travel and support multiple individuals using the corridor at the same time; and
- streams and rivers form useful locations for corridors; however, the corridor should be wide enough to include continuous strips of flood free land that supports areas and habitat suitable for koala movement.

Literature recommends koala movement corridors should seek to be at least 100m wide to function effectively and to minimise edge effects. Further, studies recommend that after providing a minimum width of 100m, a nominal '10 percent rule' for corridor width versus length should be adhered to as a baseline. This means that the width of the corridor at its narrowest point should at least 100m or 10 percent of its length, whichever is greater.

PO6 Information Requirements

Development applications must include a plan in digital (preferably GIS) format that identifies impacts on connectivity between highly connected patches of mapped koala habitat areas. This includes:

- the location of koala habitat areas within the development site and on adjacent properties that are considered highly connected;
- koala habitat areas proposed to be impacted and the types of development and infrastructure that will be located in those areas; and
- provide information on how any remaining koala habitat areas will be protected from future exempted development clearing, for example via legal protection mechanism such as an environmental covenant.

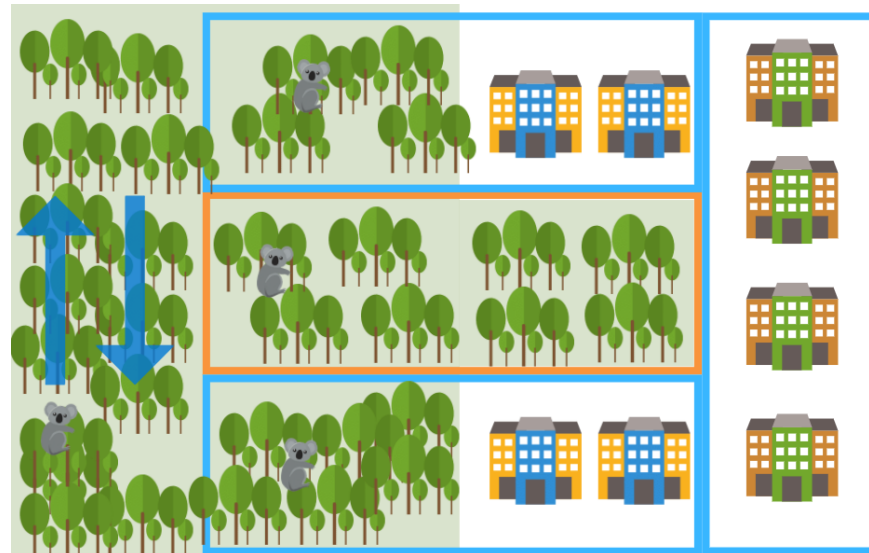
Development applications that are proposing to impact connectivity between highly connected patches of mapped koala habitat areas must be accompanied by a report prepared by a suitably qualified ecologist that demonstrates how connectivity will be maintained by retaining existing connectivity and/or identified corridors, or by providing alternative options for maintaining connectivity (e.g., fauna crossing bridges, underpasses). The report must specifically identify:

- If alternative options for the development that would better support connectivity between highly connected patches of mapped koala habitat area were available, justification for why the alternative options were not reasonably practicable;
- the dimensions of the area (e.g., length by width) proposed to be retained to support connectivity between highly connected patches of mapped koala habitat areas;
- the composition on the area retained (e.g., does the area contain remnant or regrowth vegetation, what are the flora species in the retained area, does it contain koala habitat area, other native or non-native vegetation, is the area cleared, what is the location and distance between koala habitat areas or individual tree);
- any actions that will be undertaken on land retained that will improve connectivity between mapped koala habitat areas (e.g., removing barriers, revegetating with koala habitat trees, the density of plantings, the distance between planted trees, encouraging natural revegetation, construction of fauna crossing structures);

- elevation and slope of areas to be retained to support connectivity between highly connected patches of mapped koala habitat areas;
- the location of waterways and waterbodies in relation to areas retained to support connectivity between highly connected patches of mapped koala habitat areas;
- management actions to ensure corridor functionality/connectivity is maintained as anticipated: and
- discussion on why those areas are suitable for maintaining connectivity between highly connected patches of mapped koala habitat areas.
- The locations of retained habitat based on koala surveys of known koala locations, koala home ranges and likely movement patterns within the area.

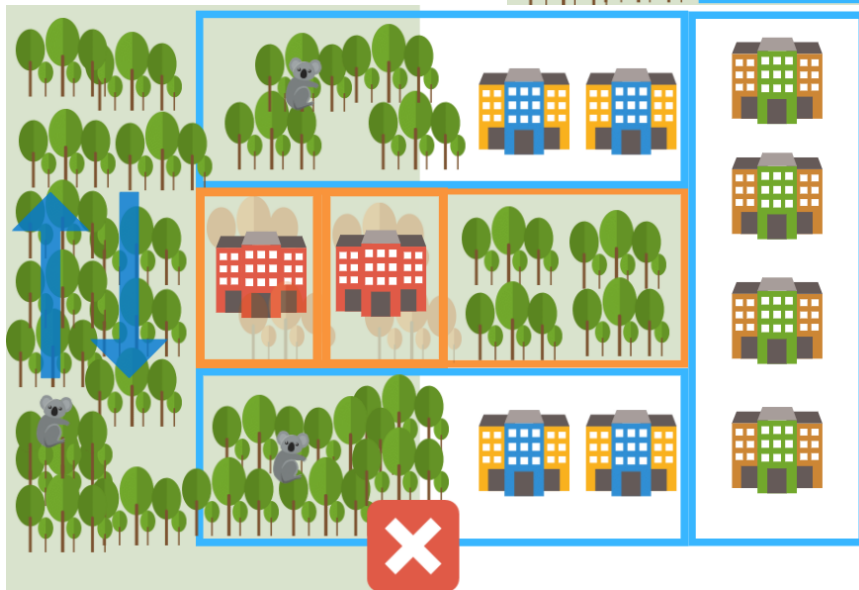
PO6 Trigger Consideration

If this PO does not apply to the proposed development, a statement that it is not applicable and sufficient supporting information to justify why it is not applicable is required. For example, if there are no highly connected patches (i.e., patches within 200m of one another) of koala habitat that will be impacted by interference with koala habitat, this PO may not apply. In this instance, supporting information may include a map that identifies the location of all mapped koala habitat in proximity to the site, including distance measurements that demonstrate none of the mapped koala habitat areas are within 200m of one another.



Example Scenario 3: An applicant seeks to reconfigure their lot (in orange) which is mapped as koala habitat area to build 2 residential structures on site. The site is located between an existing koala corridor to the east and an existing development to the west.

Mapped KHA
Proposed covenant



Avoid development that places structures in locations that provide safe movement opportunities for koalas or would fragment koala habitat areas.



Design development that avoids removing vegetation between highly connected patches of mapped koala habitat area. Design development that provides corridors to facilitate koala movement in undeveloped areas and propose mechanisms such as covenants to protect mapped koala habitat and ensure connectivity.

Performance Outcomes PO7

PO7 Interfering with koala habitat as a result of the development does not compromise safe koala movement by preventing fragmentation of patches of mapped koala habitat areas.

No acceptable outcome is prescribed.

Intent of PO7

PO7 seeks to ensure that interference with koala habitat that occurs as a result of development does not fragment patches of mapped koala habitat area or compromise safe koala movement. To achieve this outcome, any interference with koala habitat must be conducted in a manner that avoids the removal of vegetation between patches of mapped koala habitat areas; and provides opportunities for safe koala movement between patches of mapped koala habitat areas.

For example, if a development application proposes to remove an area of koala habitat that is located between two patches of mapped koala habitat area, the application will need to demonstrate that the removal of vegetation will not result in fragmentation of the mapped koala habitat areas

Example scenario 4 depicts an example to demonstrate how PO7 could be addressed.

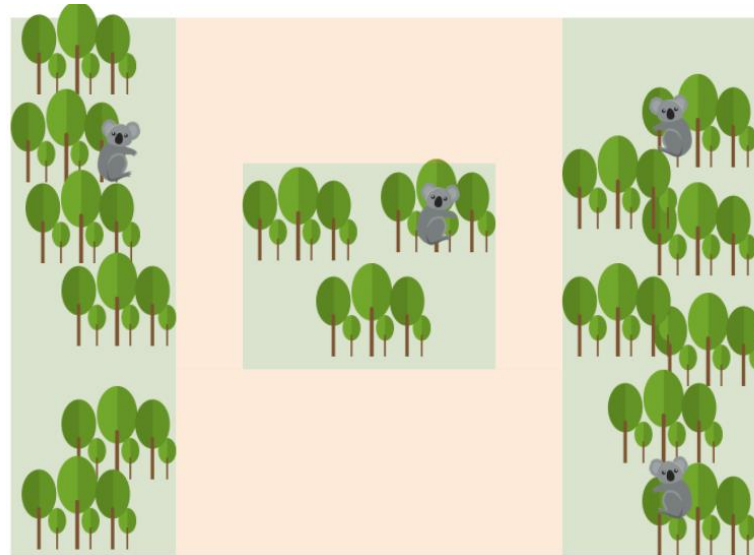
PO7 Information Requirements

Development applications must include a plan in digital (preferably GIS) format that:

- Identifies the location of koala habitat that will be interfered with as a result of the development, in relation to the location of other mapped koala habitat areas within the development site and on surrounding sites;
- Identifies where vegetation is to be retained or removed within the site context to ensure that any vegetation removed avoids fragmentation of mapped koala habitat;
- Identifies koala habitat areas on the site that are proposed to be impacted including those that could be impacted from the future use of the lots (e.g. infrastructure, excavation or fill) and as exempted development (as defined in Schedule 24 of the Planning Regulation 2017) which would apply as a natural and ordinary consequence of the development (fragmentation); and
- Identifies any remaining koala habitat areas where management actions are proposed that protect them from future exempted development clearing, for example via legal protection mechanism such as an environmental covenant.

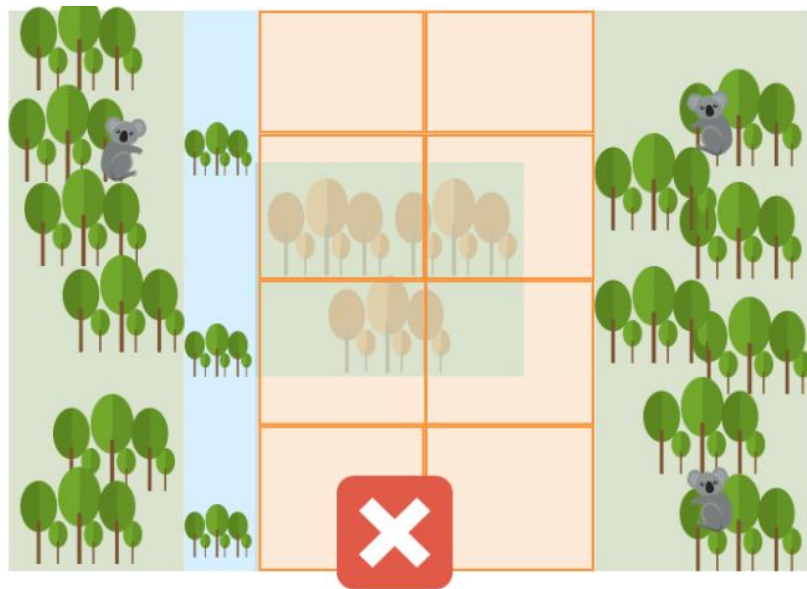
Development applications must include a report prepared by a suitably qualified ecologist that demonstrates how fragmentation caused by interference with koala habitat will be prevented. The report must identify:

- Details of any management actions or legal protection mechanisms (eg: covenants) to be undertaken that will prevent fragmentation on the site, resulting from the interference with mapped koala habitat;
 - Measures to be implemented to ensure safe koala movement is not compromised as a result of interference with koala habitat (e.g., retention of individual koala habitat trees to provide safe movement opportunities between patches of mapped koala habitat area); and
 - Mitigation activities should be undertaken on the lot(s) where the development is occurring. Mitigation activities such as rehabilitation of koala habitat trees should be undertaken to support and enhance connectivity and reduce fragmentation. Lots that mitigation activities will be undertaken on will need to be included as part of the development application to demonstrate compliance with this requirement, even if no development is to be undertaken on the lot (for further mitigation principles look at PO10).
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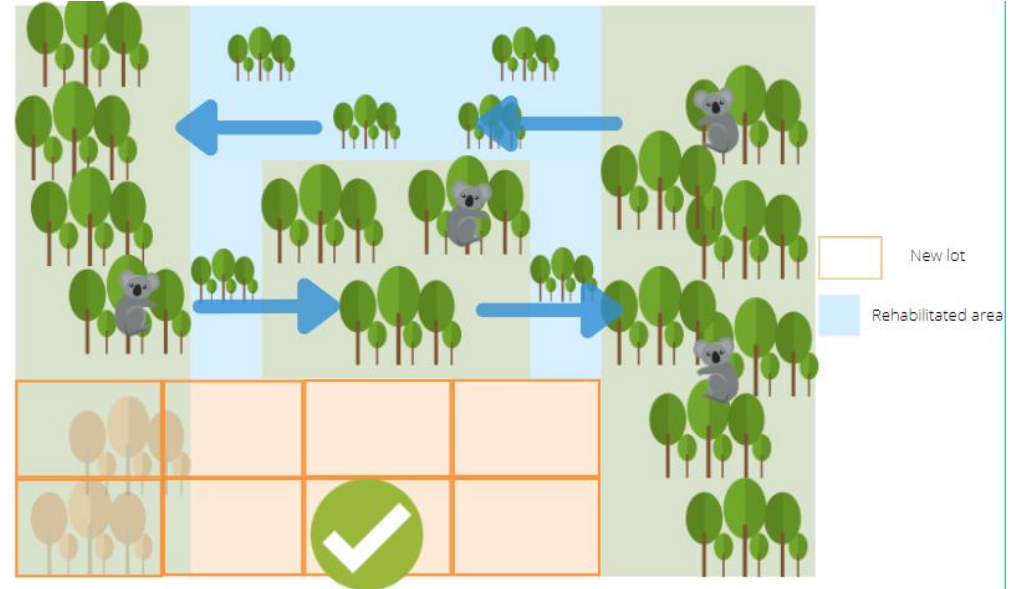


Example Scenario 4: An applicant seeks to reconfigure their lot which contains mapped koala habitat area. The development seeks to construct 8 buildings on the newly reconfigured lots.

Mapped KHA
Koala Habitat restoration area



New lot
Rehabilitated area



New lot
Rehabilitated area

Avoid interfering with mapped koala habitat that provides safe movement opportunities for koalas or could fragment mapped koala habitat areas. Avoid proposing rehabilitation in areas that do not facilitate safe koala movement.

Design development that ensures safe koala movement on site and prevents fragmentation. In this scenario the applicant has proposed rehabilitation to mitigate the interference to mapped koala habitat on the southwest of the site and support connectivity to the north of the site.

Performance Outcomes PO8

PO8 Interfering with koala habitat as a result of the development supports connectivity between highly connected patches of mapped koala habitat areas.

No acceptable outcome is prescribed.

Intent of PO8

Development that impacts habitat connectivity increases the risk of injury or death of koalas traversing between habitat patches. PO8 seeks to ensure that, where interference with koala habitat is proposed or occurs as a result of the development, connectivity between highly connected patches of mapped koala habitat areas is maintained.

PO8 seeks to ensure that, where interference with koala habitat is proposed or occurs as a result of the development, connectivity between highly connected patches of mapped koala habitat areas is maintained. To achieve this outcome, interference with koala habitat is to be conducted in a manner that:

1. avoids removing vegetation between highly connected patches of mapped koala habitat area; and
2. provides corridors to facilitate koala movement in undeveloped areas.

Example Scenario 5 depicts an example to demonstrate how PO8 could be addressed.

Information Requirements

Development applications must include a plan in digital (preferably GIS) format that identifies:

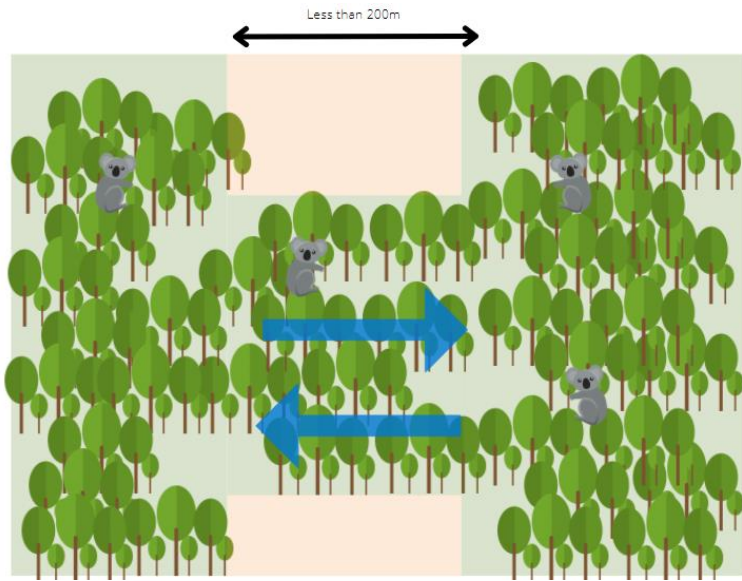
- The location of vegetation proposed to be retained to maintain connectivity between highly connected patches of mapped koala habitat area on the site; and
- The location of any individual habitat trees to be retained to maintain connectivity between highly connected patches of mapped koala habitat area.

Development applications must include a report prepared by a suitably qualified ecologist that must identify:

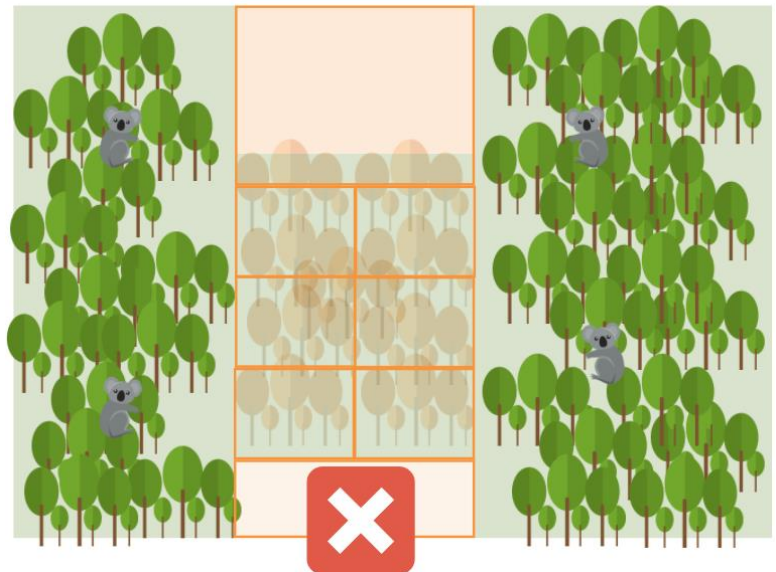
- Justification for how proposed retention of any vegetation (including individual koala habitat trees) will support connectivity between highly connected patches of mapped koala habitat area;
- Management actions or legal protection mechanisms (eg: covenants) to be undertaken that will prevent fragmentation of highly connected patches of mapped koala habitat areas on the site, resulting from interference with koala habitat;
- Measures to be implemented to ensure safe koala movement is not compromised as a result of interference with koala habitat (e.g., retention of individual koala habitat trees to provide safe movement opportunities between patches of mapped koala habitat area or rehabilitation opportunities); and
- Mitigation activities should be undertaken on the lot(s) where the development is occurring. Mitigation activities such as rehabilitation of koala habitat trees should be undertaken to support and enhance connectivity on the location of the development. Lots that mitigation activities will be undertaken on will need to be included as part of the development application to demonstrate compliance with this requirement, even if no development is to be undertaken on the lot (for further mitigation principles refer to PO10).

PO8 Trigger Consideration

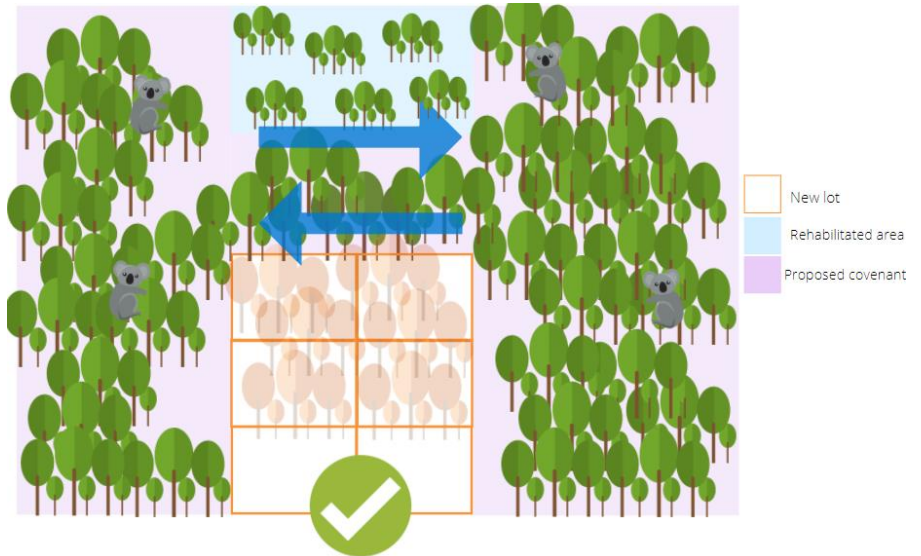
- If this PO does not apply to the proposed development, a statement that it is not applicable and sufficient supporting information to justify why it is not applicable is required. For example, if there are no highly connected patches (i.e., patches within 200m of one another) of koala habitat that will be impacted by interference with koala habitat, this PO may not apply. In this instance, supporting information may include a map that identifies the location of all mapped koala habitat in proximity to the site, including distance measurements that demonstrate none of the mapped koala habitat areas are within 200m of one another.
-



Example Scenario 5: An applicant seeks to reconfigure their lot which contains mapped koala habitat to build structures on site. The site is located between highly connected mapped koala habitat areas.



Avoid development that interferes with connectivity between highly connected patches of mapped koala habitat.



Ensure that any interference with mapped koala habitat is conducted in a way that supports connectivity between highly connected patches of mapped koala habitat areas. In this scenario the applicant has proposed rehabilitation and a covenant to mitigate the interference to mapped koala habitat and support connectivity on site to pre-developed levels.

Performance Outcomes PO9

PO9 Development supports **safe koala movement** by preventing **fragmentation** of patches of **mapped koala habitat areas**.

No acceptable outcome is prescribed.

Intent of PO9

PO9 seeks to avoid mapped koala habitat areas becoming fragmented from other mapped koala habitat areas. To achieve this outcome development is to be sited and designed to avoid fragmenting koala habitat areas by:

- avoiding removal of vegetation between patches of mapped koala habitat area;
- retaining or providing corridors to facilitate koala movement in undeveloped areas; and
- avoiding development that places structures in an area that provides safe movement opportunities or fragments mapped koala habitat areas.

Example Scenario 6 depicts an example to demonstrate how PO9 could be addressed.

PO9 Information Requirements

Development applications must include a plan in digital (preferably GIS) format that:

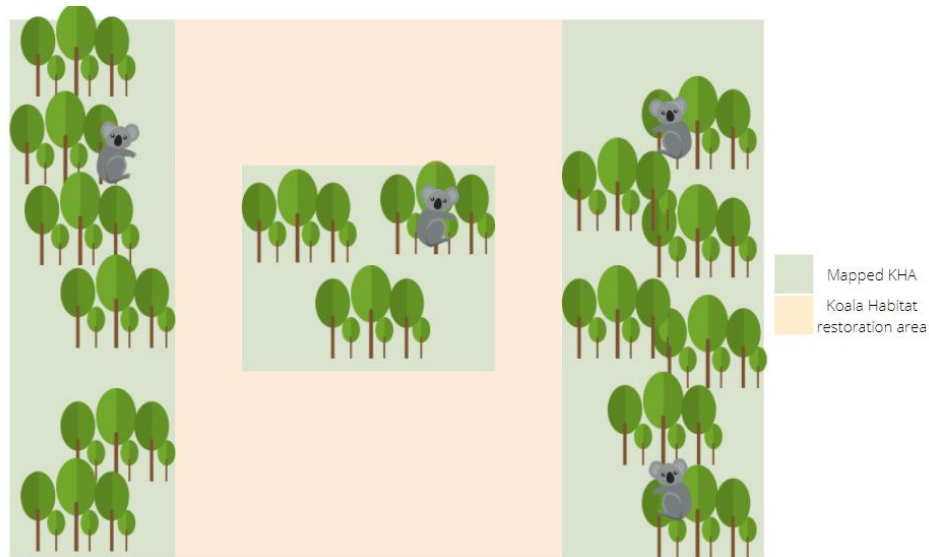
- Identifies the location of koala habitat that will be interfered with as a result of the proposed development, in relation to the location of other mapped koala habitat areas within the development site and on surrounding sites;
- Identifies any areas where actions will be undertaken on the site to reduce fragmentation between remaining koala habitat areas (e.g., retaining vegetated corridors, scattered trees and stepping stone vegetation, revegetating disconnected areas with koala habitat trees);
- identifies the koala habitat areas on the site that are proposed to be impacted including those that could be impacted from the future use of the lots (e.g. infrastructure, excavation or fill) and as exempted development (as defined in Schedule 24 of the Planning Regulation 2017) which would apply as a natural and ordinary consequence of the development.
- Identify any remaining koala habitat areas where management actions are proposed that protect from future exempted development clearing, for example via legal protection mechanism such as an environmental covenant.
- Incorporate koala sensitive design principles in the siting and design of the development for example:
 - the installation of koala exclusion fences that prevent koalas accessing dangerous parts of a site;
 - the installation of koala friendly fences, underpasses and overpasses that allow koalas to safely move through an area; and/or
 - reduced speed limits at times of the day where koalas are most active.
- The design must ensure that there is opportunity for koalas to move safely from one patch of koala habitat to another and not create barriers that prevents koala movement or makes it dangerous for koalas to move across a site. Further information on practical examples of how to achieve PO9 can be found in [the Koala-sensitive Design Guideline: A guide to koala-sensitive design measures for planning and development activities](#).

Development applications must include a report prepared by a suitably qualified ecologist that demonstrates how fragmentation caused by interference with koala habitat will be prevented. The report must:

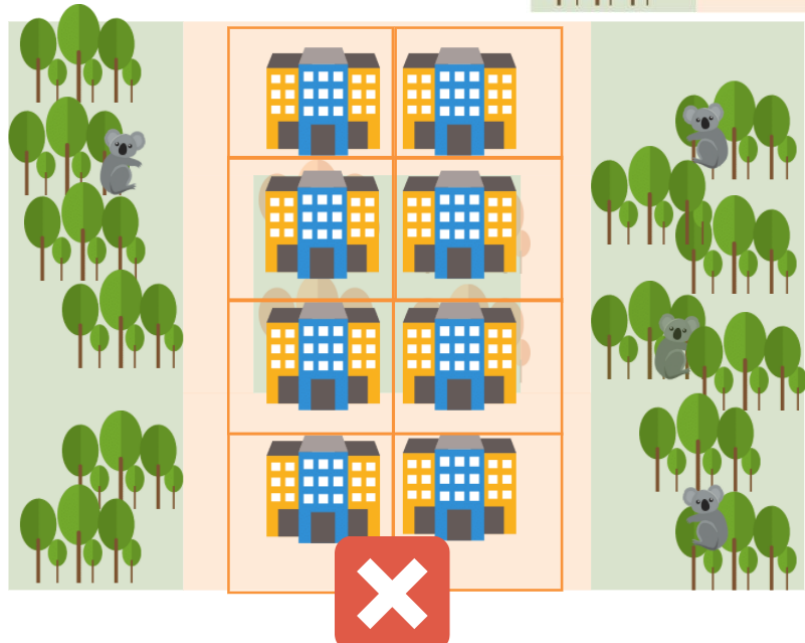
- Identify management actions or legal protection mechanisms (eg: covenants) to be undertaken on the site that will prevent fragmentation, resulting from the interference with mapped koala habitat.
- Identify measures to be implemented to ensure safe koala movement is not compromised as a result of interference with koala habitat (e.g., retention of individual koala habitat trees to provide safe movement opportunities between patches of mapped koala habitat area or rehabilitation opportunities).
- Identify barriers to movement that will be proposed by the development.
- include a justification for why impediments to movement could not be located elsewhere.
- Outline measures that will be undertaken to ensure koalas can move safely between highly connected patches of retained koala habitat area.
- Include justification for why the proposed measures are suitable for providing safe koala movement opportunities.

For roads that separate koala habitat areas, applications must identify:

- the width and length of the road section intersecting koala habitat areas; and
 - measures proposed to reduce koalas being injured or killed by cars (e.g. overpasses, underpasses, road design and lighting, speed limits, signage).
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Example Scenario 6: An applicant seeks to reconfigure their lot which contains mapped koala habitat area. The development seeks to construct 8 buildings on the newly reconfigured lots.



Avoid development that places structures in an area that provides safe movement opportunities or fragments mapped koala habitat areas.



Design development that ensures safe koala movement on site and prevents fragmentation. In this scenario the applicant has proposed rehabilitation to mitigate the interference to mapped koala habitat proposed to occur on the southwest of the site.

Performance Outcomes PO10

PO10 Development within a **mapped koala habitat area** is undertaken in a way that prevents the risk of injury or death of koalas.

No acceptable outcome is prescribed.

Intent of PO10

The intent of PO10 is to ensure koalas are not injured or killed as result of development. This includes clearing and subsequent construction activities that follow the reconfiguration of lots such as earthworks and building activities.

The risk to koalas can be higher in areas where clearing has previously occurred. Koalas will remain in or near their home range areas even after clearing has occurred. If koala habitat has been cleared on a site, it is possible that koalas will try to remain on the development site while it is being developed. Impacts to koalas on a development site may include:

- injury or death when trees are cleared while koalas are still in them or when trees fall on other trees that have koalas in them;
- falling into excavated pits and holes and become injured or trapped;
- koalas taking refuge in machinery at night and being injured when machinery starts the next day;
- being run over by heavy machinery;
- being stressed by dust, light or noise impacting on remaining adjacent koala habitat; or
- being attacked by security dogs or dogs bought on site by employees working on the development site at construction stage.

Impacts to koalas can be managed through excluding koalas from dangerous worksites, providing koala safe movement areas through a development site, excluding dogs on site and ensuring dust, light and noise do not affect adjacent koala habitat.

There are legal requirements for how koala habitat can be cleared safely under the Nature Conservation (Koala) Conservation Plan 2017 to ensure clearing minimises the risk of stress, injury or death to koalas. This includes sequential clearing requirements and having an experienced koala spotter on site when clearing occurs. For more information see sections 10 and 11 of the Nature Conservation (Koala) Conservation Plan 2017.

Risks to koalas at the construction phase and management practices to avoid those risks should be identified in a Koala Management Plan. Acceptable management measures to mitigate risks can include:

- installing koala exclusion fencing (temporary or permanent) in areas that may be dangerous to koalas (e.g., excavated pits, waterbodies, areas where guard dogs are present and areas with active machinery);
- checking machinery prior to use;
- ensuring a koala spotter with a [current rehabilitation permit](#) is present at any active clearing front;
- raising awareness of site workers to watch for koalas on site;
- install koala crossing signage on site roads;
- ensuring site worker's dogs are excluded from a site, on a leash or otherwise restrained; and
- following the sequential clearing requirements of the Nature Conservation (Koala) Conservation Plan 2017.

PO10 Information Requirements

Applications should include a Koala Management Plan that demonstrates compliance with the sequential clearing and koala spotter permit requirements of the Nature Conservation (Koala) Conservation Plan 2017 relevant to the development site. The plan would be developed by a suitably qualified and experienced person that has knowledge of koala ecology and experience developing management plans and should identify the following:

- all potential risks to koalas from the development, including clearing and construction activities, proposed on site;
 - all management measures that will be implemented to address those risks;
 - the process and measures to address accidental injury or death of koalas; and
 - the process for implementing the management plan including:
-

- o identifying the person responsible for implementing the plan (e.g., site supervisor, foreman); and
- o the process for training all contractors working on the site to comply with the plan.

Performance Outcomes PO11

<p>PO11 Development is designed and sited to:</p> <ol style="list-style-type: none"> 1. avoid impacts on matters of state environmental significance; or 2. minimise and mitigate impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and 3. provide an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development results in an acceptable significant residual impact on a matter of state environmental significance. <p>Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the Brisbane Port LUP precinct plan.</p>	<p>No acceptable outcome is prescribed.</p>
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Intent of PO11

The State Planning Policy (SPP) requires development to avoid impacts on all matters of state environmental significance (MSES). Where impacts cannot be avoided, impacts must be minimised and mitigated, including through offsets. The intent of this performance outcome is to achieve the SPP state interest by ensuring the siting, design, construction and operations of development will be undertaken to avoid, reduce and manage real or potential risks and impacts to MSES. It also aims to ensure that unavoidable impacts on MSES⁴ are counterbalanced through offsets.

The mitigation hierarchy is the framework that underpins Queensland's environmental impact assessment process requiring the development demonstrates the following.

1. Avoid

The development must avoid direct or indirect impact to MSES as much as reasonably possible, for example, through careful spatial and/or temporal placement (i.e. siting, design, time of day/year, duration of activity).

2. Mitigate

Where direct or indirect impacts to MSES cannot be completely avoided, impacts are carefully minimised and mitigated using measures that reduce the duration, intensity and or extent of direct or indirect impacts.

3. Offset (noting that offsets are not an option for all environmental matters)

Under the SPP and the Queensland Environmental Offsets Policy, impacts to all MSES must be avoided in the first instances and where avoidance cannot be achieved, impacts must be carefully managed and minimised (mitigated).

It is a legislative requirement under the SPP that all planning and development activities implement the avoid and mitigate components of the mitigation hierarchy with respects to MSES. The intent of the first two components of this performance outcome is to ensure that development avoids and mitigates impacts to MSES to the greatest extent possible through careful siting and design. This is also a requirement of the Queensland Environmental Offsets Framework.

The third component of this performance outcome is to ensure that where development will likely result in a significant residual impact to MSES that are prescribed environmental matters, despite all reasonable avoidance and mitigation, an environmental offset is provided in accordance with the Queensland Environmental Offset

⁴ The koala is a MSES.

Policy. Section 5(2), section 5(3) and schedule 2 of the Environmental Offsets Regulation list the MSES that are prescribed environmental matters.

It is important to note that some MSES are not prescribed environmental matters where they occur in urban areas. *The Information sheet: Resources for assessing environmental offset obligations, Environmental Offsets Act 2014. Resources for matters of state environmental significance* (<https://environment.des.qld.gov.au/assets/documents/pollution/management/offsets/resources-for-mses-information-sheet.pdf>) Table 1, Column 2 outlines the MSES that are prescribed environmental matters outside of urban areas. Column 3 of Table 1 outlines the MSES that are prescribed environmental matters inside of urban areas. Regardless of whether a MSES is a prescribed environmental matter, impacts must be avoided and mitigated to satisfy the legislative requirements of the State Planning Policy and Queensland Environmental Offsets Framework.

Most MSES are spatially identified on the Development Assessment System (DAMS), State Planning Policy (SPP) Interactive Mapping System and Queensland Globe.

A suitably qualified ecologist must undertake an assessment against the Significant Residual Impact criteria in Chapter 2A of the Environmental Offsets Policy Guideline to determine whether any residual impacts prescribed environmental matters are likely to be 'significant'. The results of this assessment should be provided to support an application. Where this assessment identifies that there will be a significant residual impact to MSES that are prescribed environmental matters, an environmental offset in accordance with the Queensland Environmental Offset Policy may be required to fully counterbalance this impact.

As SARA places an emphasis on the avoidance and mitigation of adverse impacts on MSES, it should not be assumed that offsets will be automatically supported. Applicants must be able to demonstrate that all reasonable steps have been or will be undertaken to avoid and mitigate impacts to MSES and that an offset is a suitable outcome. There are instances where an offset would not be a suitable outcome, for example where the risk of the offset failing to achieve a conservation outcome is too high. This may be the case if the MSES is extremely threatened, highly localised, or efforts to restore or offset the value have proven to be unsuccessful.

If offsetting is being considered as part of the application, a pre-lodgement meeting with SARA is recommended to determine whether offsetting is a feasible option. Where an offset is considered to not be a suitable outcome, further an avoidance and mitigation will be required to ensure there will be no significant residual impact on a MSES that is a prescribed environmental matter.

PO11 Information Requirements

Development applications must include a plan in digital (preferably GIS) format identifying the extent of MSES on the impact site and within close proximity to the impact site with respect to the location of proposed development footprint or boundary realignment.

To determine the extent of MSES⁵ on site, refer to:

- the DAMS (<https://dams.dsdip.esriaustraliaonline.com.au/damappingsystem/>) and SPP Interactive Mapping System (<https://spp.dsdip.esriaustraliaonline.com.au/geoviewer/map/planmaking>) on the DSDMIP website; or
- Queensland Globe (<https://qldglobe.information.qld.gov.au/>); or
- Environmental Reports Online (MSES) from the Queensland Government website: (<https://apps.des.qld.gov.au/report-request/environment/>).

MSES mapping is indicative. Site specific survey and mapping is recommended to confirm the extent of MSES on-site.

Submission of an ecological assessment undertaken by a suitably qualified ecologist and prepared to the standards specified in Part 6 Supporting information of the State Planning Policy Guideline Biodiversity is required if:

- detailed site surveys confirm the development site is at a location where the presence or extent of on-site MSES differs from the current MSES mapping;

⁵ For MSES that is koala habitat area, applicants must provide the information requirements identified in PO1 and address the PO5 “avoid, minimise, mitigate” framework, Significant Residual Impact and offsets information requirements.

- development is located within MSES on-site or adjoins MSES (on or off the site) and may cause an impact on MSES.

Applications for development located close to MSES (on or off site) must demonstrate how the development has been sited and designed to avoid impacts to MSES to the greatest extent possible. Where avoidance is not reasonably possible, applications must demonstrate why this was not reasonably possible and demonstrate how the development has been sited and designed to minimise and mitigate impacts to MSES to the greatest extent possible.

Where there will be any residual impact to MSES, applications must demonstrate why further avoidance and mitigation was not reasonably possible. To assist assessment of PO11 it is recommended that ecological assessments address the 'avoid, minimise and mitigate' framework, in particular, how the development proposal reduces impacts on MSES through location and design measures.

If there is an impact on MSES, applicants must submit a report by a suitably qualified person that provides an assessment against the Significant Residual Impact criteria justifying whether the residual impact is likely to be significant or not. This report will provide sufficient information to supporting the assessment findings.

SARA will advise in writing whether SRI on MSES are acceptable and, if so, an offset condition will be imposed on the development approval requiring that an environmental offset is undertaken in accordance with the Queensland Environmental Offsets Framework.

Development which does not provide sufficient justification or evidence as to how impacts on MSES have been avoided or minimised may not be approved.

Applicants should refer also to the Checklist: Assessing environmental offset obligations, Environmental Offsets Act 2014. Avoid and mitigate assessment checklist (<https://environment.des.qld.gov.au/assets/documents/pollution/management/offsets/avoid-and-mitigate-assessment-checklist.docx>).

4.0 Supporting references

[Checklist Assessing environmental offset obligations](#) *Environmental Offsets Act 2014 Avoid and mitigate assessment checklist* Department of Environment and Science June 2018 (<https://environment.des.qld.gov.au/assets/documents/pollution/management/offsets/avoid-and-mitigate-assessment-checklist.docx>)

[Environmental Offsets Regulation 2014](#) (Qld). (<https://www.legislation.qld.gov.au/view/html/inforce/current/sl-2014-0145>)

[Information sheet Resources for assessing environmental offset obligations](#) *Environmental Offsets Act 2014 Resources for matters of state environmental significance* Department of Environment and Science June 2018 (<https://environment.des.qld.gov.au/assets/documents/pollution/management/offsets/resources-for-mses-information-sheet.pdf>)

[Nature Conservation Act 1992](#) (legislation.qld.gov.au)

[Nature Conservation \(Koala\) Conservation Plan 2017](#) (legislation.qld.gov.au)

Koala habitat mapping, [Department of Environment and Science, Queensland \(des.qld.gov.au\)](#). <https://environment.des.qld.gov.au/wildlife/animals/living-with/koalas/mapping/koalamaps#toc-5> and <https://qldglobe.information.qld.gov.au/>

[Koala-sensitive Design Guideline: A guide to koala-sensitive design measures for planning and development activities](#), Queensland Government 2020.

[Planning guideline for koala conservation and recovery, A guide to best planning practice](#), Clive McAlpine, Jonathan Rhodes, Ann Peterson, Hugh Possingham, John Callaghan, Dan Lunney. 2007 (https://espace.library.uq.edu.au/view/UQ:124088/mcalpine_et_al_2007.pdf)

Property reports, Koala habitat and vegetation mapping.

<https://www.qld.gov.au/environment/land/management/vegetation/maps/map-request>

Queensland Environmental Offsets Policy. Department of Environment and Science.
<https://www.qld.gov.au/environment/pollution/management/offsets/legislation>

[Queensland Environmental Offsets Policy and General Guide](#). Department of Environment and Science, [General guide for the Queensland Environmental Offsets Framework \(des.qld.gov.au\)](#).