Assessments of Impact Significance

NSW *Biodiversity Conservation Act 2016*

Section 7.3 of the BC Act outlines the 'test of significance' that is to be undertaken to assess the likelihood of significant impact upon threat-listed species, populations or ecological communities listed under the BC Act. As a new guideline has not been produced by the OEH, these tests of significance have been undertaken in accordance with the guidelines provided in the *Threatened Species Test of Significance Guidelines* (Office of Environment and Heritage, 2018) which outlines a set of guidelines to help applicants/proponents of a development or activity with interpreting and applying the factors of assessment. The guidance provided by the Office of Environment and Heritage has been used here in preparing these tests of significance and in determining whether there is likely to be a significant effect to a threatened species, population or ecological community listed under the BC Act.

Shale Sandstone Transition Forest

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Not applicable.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Some native trees and a few shrubs, that represent small highly disturbed patches of the Shale Sandstone Transition Forest critically endangered ecological community listed under the BC Act, would be impacted. The extent of this impact is small at about 3,417 square metres (0.34 hectares). This small impact will not have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction. The local occurrence of Shale Sandstone Transition Forest will remain in the locality in its current form as street trees.

The proposal is not likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction. The composition of the Shale Sandstone Transition Forest critically endangered ecological community to be impacted is already heavily impacted by edge effects and past disturbance which has substantially modified the condition, structure and function of the community and no further impact is expected form the proposal.

(c) in relation to the habitat of a threatened species or ecological community—

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

Some native trees and a few shrubs, that represent small highly disturbed patches of the Shale Sandstone Transition Forest critically endangered ecological community listed under the BC Act, would be impacted. The extent of this impact is small at about 3,417 square metres (0.34 hectares).

The proposal does not involve breaking apart large high-quality blocks of Shale Sandstone Transition Forest, so no further fragmentation or isolation is expected.

These street trees and scattered shrubs are not considered to be of importance to the long-term survival of the species or ecological community in the locality. These trees and shrubs are poor quality remnants of vegetation that once was present in the area and provide little value in terms of habitat. There us no recovery potential for the vegetation.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

There will be no impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposal involves clearing of native vegetation which is listed as a Key Threatening Process under the BC Act.

Conclusion

Due to the very small impact on the Shale Sandstone Transition Forest critically endangered ecological community and the poor quality of the vegetation to be removed there is unlikely to be a significant impact.

Planted threatened trees (*Eucalyptus scoparia*)

Eucalyptus scoparia specimens have been planted as street trees within the study area. These trees are not in their natural habitat and are outside their natural range.

Eucalyptus scoparia occurs in only three known locations within NSW, all near Tenterfield in the far northern New England Tableland Bioregion. It does not naturally occur in the Sydney region.

While this species has been planted in the study area, it is listed as threatened species under the BC Act and as such, impacts to these planted trees must be assessed.

The factors to be considered when determining whether an action, development or activity is likely to significantly affect threatened species or their habitats are outlined below:

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The *Eucalyptus scoparia* trees within the study area have been planted and are not in their natural habitat. The trees are not in an environment that allows for all the normal elements of their life cycle to occur. These trees are likely to flower, may be pollinated and disperse seed into the adjacent environment. It is unlikely, however, that seedlings would develop as the habitat is maintained by mowing and natural processes that stimulate and/or promote seed germination in eucalypts are not occurring. This species is unlikely to ever reproduce in the study area and once the trees become

senescent and die or are replaced by the local council if they become hazardous to the public, they would be lost from the study area. These trees are currently not able to complete their natural life cycles as they have been planted in an urban environment outside of their natural range.

The proposal would impact on some *Eucalyptus scoparia* trees. However, the removal of trees would be determined during detailed design and it is likely that many trees can be retained. If the trees are removed it is not predicted to place this species at risk of extinction. The proposal would not have an effect on the natural occurrences of this species. Many specimens of these two species are planted as street trees in Sydney and as such the local occurrence is expected to continue to exist. Furthermore, nursery stock could be planted in the locality to replace the removed trees.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The proposal may impact on *Eucalyptus scoparia* trees. However, the removal of trees would be determined during detailed design and it is likely that many trees can be retained. The habitat is not natural so the extent of habitat for this species that is to be impacted is not applicable.

There would not be any fragmentation of habitat for this species as a result of the proposal.

The habitat is not natural and is not considered important for *Eucalyptus scoparia*.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

There will be no impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposal is considered unlikely to contribute to the operation of a key threatening process considered likely to affect this species.

Conclusion

The proposal would result in the removal of two planted *Eucalyptus scoparia* trees. No natural habitats would be affected and the natural occurrences of the species would not be affected. The

recovery of the species would not be affected. After consideration of the factors above, an overall conclusion has been made that the proposal is unlikely to result in a significant effect on *Eucalyptus scoparia*.

Powerful Owl (*Ninox strenua*)

While no Powerful Owls were recorded in the study area during the field survey, this species is considered moderately likely to occur based on the presence of suitable foraging habitat and nearby records. These birds are likely to utilise trees within parks and the street plantings in the locality, and potentially the study area, as roosting habitat. The birds are likely to occasionally forage on possums in the area. Breeding is unlikely to occur in the study area as no suitable nesting trees are present.

The factors to be considered when determining whether an action, development or activity is likely to significantly affect threatened species or their habitats are outlined below:

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

Optimal habitat for the Powerful Owl includes a tall shrub layer and abundant hollows supporting high densities of arboreal marsupials (Department of Environment and Conservation, 2006). For roosting, this species prefers groves of dense mid-canopy trees or tall shrubs in sheltered gullies, typically on wide creek flats and at the heads of minor drainage lines (Department of Environment and Conservation 2006). This species nests in old hollow eucalypts in unlogged, unburnt gullies and lower slopes within 100 m of streams or minor drainage lines, with hollows greater than 45 cm diameter and greater than 100 cm deep; surrounded by canopy trees and sub canopy or understorey trees or tall shrubs (Department of Environment and Conservation 2006).

The study area contains some marginal foraging habitat for the Powerful Owl consisting of planted street trees that provide habitat for prey animals such as ringtail possums. No suitable breeding habitat is present in the study area. The birds that may use the study area as foraging habitat are likely to be the birds that roost and nest in nearby reserves and forested gullies. These birds are likely to utilise the vegetation in the study area as part of a home range.

The loss of vegetation within the study area would affect the opportunity for these species to feed in the area. However, the study area is not considered an important area for the Powerful Owl. The proposal would remove approximately 20 trees of potential foraging habitat. The proposal would not result in the removal of any large hollow bearing trees which may be suitable as roosting habitat as none are present. The current potential for this species to occur based on the presence of potential foraging habitat is expected to remain after completion of the project such that foraging, movement and other life-cycle attributes would not be impacted. The proposal is unlikely to reduce the population size of the viable local population of the Powerful Owl or decrease the reproductive success of this species.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—

> **(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or**
>
> **(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,**

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The potential habitat of the Powerful within the study area is limited to some marginal foraging habitat. The extent of habitat for the Powerful Owl would be reduced by approximately 20 trees. No hollow bearing trees suitable for nesting would be impacted. This amount of habitat removal is small when the amount of available foraging habitat in the locality is considered. The habitat to be affected by the proposal is not an important or limiting resource for the Powerful Owl.

Importantly, the proposal would not result in fragmentation of habitat for the Powerful Owl. No large blocks of high-quality habitat for this species would be broken apart by the proposal. The Powerful Owl is a highly mobile species that occupies a large home range and can persist in areas where small scale disturbances occur (as evidenced by the birds persistence in the suburbs of Sydney). The proposal would not affect the movement of the Powerful Owl between habitat patches.

The loss of foraging habitat would directly affect this species opportunities to feed in the area; however, the study area is not considered a critical area for the Powerful Owl. The habitat to be affected by the proposal is not important or limiting and this species is only predicted to utilise the habitat in the study area intermittently for foraging. Extensive areas of similar habitats occur elsewhere in the locality and the current potential for the species to occur based on the presence of potential foraging habitat is expected to remain after completion of the project. It is unlikely that the proposal would impact on foraging, movement and other life-cycle attributes of the Powerful Owl.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

There will be no impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposal involves clearing of native vegetation which is listed as a Key Threatening Process under the BC Act.

Conclusion

The Powerful Owl would suffer a small reduction in extent of marginal foraging habitat from the proposal. No nesting habitat would be impacted by the proposal. The proposal is unlikely to reduce the population size of this species or decrease its reproductive success. The proposal would not interfere with the recovery of this species. After consideration of the factors above, an overall conclusion has been made that the proposal is unlikely to result in a significant effect to the Powerful Owl.

Threatened microbats

While no threatened microbats were recorded in the study area during the field survey, the following four species are considered moderately likely to occur based on the presence of suitable foraging habitat and nearby records:

- Eastern Bentwing-bat - *Miniopterus orianae oceanensis*
- Eastern Freetail-bat - *Micronomus norfolkensis*
- Yellow-bellied Sheathtail-bat - *Saccolaimus flaviventris*
- Southern Myotis – *Myotis macropus.*

These threatened microbats are likely to forage occasionally around the street trees within the study area.

The factors to be considered when determining whether an action, development or activity is likely to significantly affect threatened species or their habitats are outlined below:

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

No known threatened microbat breeding sites are known in close proximity to the study area and the proposal would not impact on likely breeding habitat as no hollows were observed in the trees to be removed. As such, the impacts of the proposal to the threatened microbats would be limited to loss of foraging habitat caused by direct clearing or damage to street and garden trees during the construction phase.

The proposal would remove approximately 25 trees of potential foraging habitat. The proposal will would not act alone in causing impacts to biodiversity, as very large areas of vegetation within the locality have already been removed, predominately for urban and industrial development in the recent past. The proposal would add to the loss of street trees in the locality. Foraging habitat mainly comprises insects associated with planted native trees and shrubs. The affected area of foraging habitat would represent a small percentage of the total extent of foraging vegetation types present within the locality. The study area is not considered important habitat for this species and it is made up of planted roadside vegetation. Given the relatively widespread nature of similar planted vegetation in the locality and abundance of higher quality foraging habitat within the locality, the project is not expected to significantly affect the life cycle of the species.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The potential habitat of the threatened microbats within the study area is limited to foraging habitat and includes all trees and shrubs and associated air spaces. The extent of habitat for the threatened microbats would be reduced by approximately 25 trees. This amount of habitat removal is small when the amount of available foraging habitat in the locality is considered.

Importantly, the proposal would not result in fragmentation of habitat for the threatened microbats. These species are highly mobile and would freely fly long distances over open areas including urbanised city centres to move between foraging sites and roost sites. The proposal would not affect the movement of the threatened microbats between habitat patches.

Importantly, the proposal would not impact on the most important habitats for threatened microbats within the locality. The most important habitats for the local threatened microbat sub-populations are the remnant areas of native vegetation in larger reserves. The vegetation to be affected is planted roadside vegetation and would only form a small proportion of available habitat for these species. The foraging habitat within the study area is unlikely to be of critical importance for the survival of the threatened microbats within the locality.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

There will be no impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposal involves clearing of native vegetation which is listed as a Key Threatening Process under the BC Act.

Conclusion

The threatened microbats would suffer a small reduction in extent of suitable foraging habitat from the proposal. No likely breeding sites or other important habitat would be impacted. The proposal is unlikely to reduce the population size of the threatened microbats or decrease the reproductive success of these species. The proposal would not interfere with the recovery of the threatened microbats and would not contribute to the key threats to these species. After consideration of the factors above, an overall conclusion has been made that the proposal is unlikely to result in a significant effect on the threatened microbats.

Little Lorikeet (*Glossopsitta pusilla*)

While no Little Lorikeet were recorded in the study area during the field survey, this species is considered moderately likely to occur based on the presence of suitable foraging habitat and nearby records. The Little Lorikeet is likely to forage occasionally in the street trees within the study area.

The factors to be considered when determining whether an action, development or activity is likely to significantly affect threatened species or their habitats are outlined below:

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The Little Lorikeet (*Glossopsitta pusilla*) occurs in open eucalypt forest and woodland as well as isolated flowering trees in open country, e.g. paddocks, roadside remnants and urban trees. Breeding sites are generally located in hollows of large old eucalypts, often smooth barked species and are commonly found in riparian areas.

No known Little Lorikeet breeding sites are known in close proximity to the study area and the proposal would not impact on likely breeding habitat as no hollows were observed in the trees to be removed. As such, the impacts of the proposal to the Little Lorikeet would be limited to loss of foraging habitat caused by direct clearing or damage to street and garden trees during the construction phase. Flowering tree resources would be impacted.

The proposal would remove approximately 20 trees of potential foraging habitat. The proposal will would not act alone in causing impacts to biodiversity, as very large areas of vegetation within the locality have already been removed, predominately for urban and industrial development in the recent past. The proposal would add to the loss of street trees in the locality. Foraging habitat mainly comprises nectar resources from planted native trees and shrubs. The affected area of foraging habitat would represent a small percentage of the total extent of foraging vegetation types present within the locality. The study area is not considered important habitat for this species and it is made up of planted roadside vegetation. Given the relatively widespread nature of similar planted vegetation in the locality and abundance of higher quality foraging habitat within the locality, the project is not expected to significantly affect the life cycle of the species.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The potential habitat of the Little Lorikeet within the study area is limited to foraging habitat and includes all native flowering trees and shrubs. The extent of habitat for the Little Lorikeet would be reduced by approximately 20 trees. This amount of habitat removal is small when the amount of available foraging habitat in the locality is considered.

Importantly, the proposal would not result in fragmentation of habitat for the Little Lorikeet. This species is highly mobile and would freely fly long distances over open areas including urbanised city centres to move between foraging sites. The proposal would not affect the movement of the Little Lorikeet between habitat patches.

Importantly, the proposal would not impact on the most important habitats for Little Lorikeet within the locality. The most important habitats for the local Little Lorikeet sub-populations are the remnant areas of native vegetation in larger reserves. The vegetation to be affected is planted roadside vegetation and would only form a small proportion of available habitat for this species. The foraging habitat within the study area is unlikely to be of critical importance for the survival of the Little Lorikeet within the locality.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

There will be no impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposal involves clearing of native vegetation which is listed as a Key Threatening Process under the BC Act.

Conclusion

The Little Lorikeet would suffer a small reduction in extent of suitable foraging habitat from the proposal. No likely breeding sites or other important habitat would be impacted. The proposal is unlikely to reduce the population size of the Little Lorikeet or decrease the reproductive success of this species. The proposal would not interfere with the recovery of the Little Lorikeet and would not contribute to the key threats to this species. After consideration of the factors above, an overall conclusion has been made that the proposal is unlikely to result in a significant effect to the Little Lorikeet.

Grey-headed Flying Fox (*Pteropus poliocephalus*)

While no Grey-headed Flying Fox were recorded in the study area during the field survey, this species is considered highly likely to occur based on the presence of suitable foraging habitat and nearby records. The Grey-headed Flying-fox is likely to forage in the street trees within the study area.

The factors to be considered when determining whether an action, development or activity is likely to significantly affect threatened species or their habitats are outlined below:

(a) in the case of a threatened species, whether the proposed development or activity is likely to have an adverse effect on the life cycle of the species such that a viable local population of the species is likely to be placed at risk of extinction

The Grey-headed Flying-fox (*Pteropus poliocephalus*) occurs in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 kilometres of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Annual mating commences in January and conception occurs in April or May; a single young is born in October or November.

No flying-fox camps occur in close proximity to the study area and the proposal would not impact on any camp. As such, the impacts of the proposal to the Grey-headed Flying-fox would be limited to loss of foraging habitat caused by direct clearing or damage to street and garden trees during the construction phase. Flowering tree resources would be impacted.

The proposal would remove approximately 20 trees of potential foraging habitat. The proposal will would not act alone in causing impacts to biodiversity, as very large areas of vegetation within the locality have already been removed, predominately for urban and industrial development in the recent past. The proposal would add to the loss of street trees in the locality. Foraging habitat mainly comprises nectar resources from planted native trees and shrubs as well as fruit resources from some exotic trees. The affected area of foraging habitat would represent a small percentage of the total extent of foraging vegetation types present within the locality. The study area is not considered an important habitat for this species and it is made up of planted roadside vegetation. Given the relatively widespread nature of similar planted vegetation in the locality and abundance of

higher quality foraging habitat within the feeding range of the camps located near the study area, the project is not expected to significantly affect the life cycle of the species.

(b) in the case of an endangered ecological community or critically endangered ecological community, whether the proposed development or activity—

(i) is likely to have an adverse effect on the extent of the ecological community such that its local occurrence is likely to be placed at risk of extinction, or

(ii) is likely to substantially and adversely modify the composition of the ecological community such that its local occurrence is likely to be placed at risk of extinction,

Not applicable.

(c) in relation to the habitat of a threatened species or ecological community—

(i) the extent to which habitat is likely to be removed or modified as a result of the proposed development or activity, and

(ii) whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed development or activity, and

(iii) the importance of the habitat to be removed, modified, fragmented or isolated to the long-term survival of the species or ecological community in the locality,

The potential habitat of the Grey-headed Flying-fox within the study area is limited to foraging habitat and includes all native flowering trees and shrubs. The extent of habitat for the Grey-headed Flying-fox would be reduced by approximately 20 trees. This amount of habitat removal is small when the amount of available foraging habitat in the locality is considered.

Importantly, the proposal would not result in fragmentation of habitat for the Grey-headed Flying-fox. This species is highly mobile and would freely fly long distances (up to 50 kilometres) over open areas including urbanised city centres to move between roost camps and foraging sites. The proposal would not affect the movement of the Grey-headed Flying-fox between habitat patches.

Importantly, the proposal would not impact on the most important habitats for Grey-headed Flying-fox within the locality. The most important habitats for the local Grey-headed Flying Fox sub-populations are the remnant areas of native vegetation in larger reserves. The vegetation to be affected is planted roadside vegetation and would only form a small proportion of available habitat for this species. The foraging habitat within the study area is unlikely to be of critical importance for the survival of the Grey-headed Flying-fox within the locality.

(d) whether the proposed development or activity is likely to have an adverse effect on any declared area of outstanding biodiversity value (either directly or indirectly),

There will be no impact on any declared area of outstanding biodiversity value.

(e) whether the proposed development or activity is or is part of a key threatening process or is likely to increase the impact of a key threatening process.

The proposal involves clearing of native vegetation which is listed as a Key Threatening Process under the BC Act.

Conclusion

The Grey-headed Flying-fox would suffer a small reduction in extent of suitable foraging habitat from the proposal. No camps or other important habitat would be impacted. The proposal is unlikely to reduce the population size of the Grey-headed Flying-fox or decrease the reproductive success of this species. The proposal would not interfere with the recovery of the Grey-headed Flying-fox and would not contribute to the key threats to this species. After consideration of the factors above, an overall conclusion has been made that the proposal is unlikely to result in a significant effect to the Grey-headed Flying-fox.

Environment Protection and Biodiversity Conservation Act 1999 assessment

For threatened biodiversity listed under the EPBC Act, significance assessments have been completed in accordance with the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (Department of Environment, 2013). Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment that is affected, and upon the intensity, duration, magnitude and geographic extent of the impacts (Department of Environment, 2013). Importantly, for a 'significant impact' to be 'likely', it is not necessary for a significant impact to have a greater than 50% chance of happening; it is sufficient if a significant impact on the environment is a real or not remote chance or possibility (Department of Environment, 2013).

Eucalyptus scoparia

Eucalyptus scoparia has been planted as street trees within the study area. This species is not in its natural habitat and is outside of its natural range. *Eucalyptus scoparia* occurs in only three known locations within NSW, all near Tenterfield in the far northern New England Tableland Bioregion. It does not naturally occur in the Sydney region. While this species has been planted in the study area, it is listed as threatened species under the EPBC Act. Genetics are an important component of biodiversity and as such, impacts to this planted species must be assessed.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it would:

Lead to a long-term decrease in the size of an important population of a species

The *Eucalyptus scoparia* plants in the study area do not form part of an important population as defined under the *EPBC Act Policy Statement 1.1 Significant Impact Guidelines* (Department of Environment, 2013). An 'important population' is a population that is necessary for a species' long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

The *Eucalyptus scoparia* plants in the study area are not part of a key source population, they are not necessary for maintaining genetic diversity (but may provide a good example of genetic variation) and are not near the limit of the species range as the plants are planted street trees far away from the natural occurrence. The *Eucalyptus scoparia* plants in the study area are not considered part of an important population and therefore the proposal is not considered likely to lead to a long-term decrease in the size of an important population of this species.

Reduce the area of occupancy of an important population

The *Eucalyptus scoparia* plants in the study area are not considered part of an important population.

Fragment an existing important population into two or more populations

The proposal is considered unlikely to result in any further fragmentation of habitat. No naturally occurring habitat with be affected and the proposal does not involve breaking apart of large habitat patches. The proposal would not introduce further fragmentation or fragmentation of the local population. Pollinators and seed dispersal agents are likely to be able to function in their normal capacity once the proposal has been completed.

Adversely affect habitat critical to the survival of a species

Habitat critical to the survival of a species refers to areas that are necessary for activities such as:

- Breeding or dispersal.
- For the long-term maintenance of the species including the maintenance of other species essential to the survival of the species, such as pollinators.
- To maintain genetic diversity and long-term evolutionary development.
- For the reintroduction of populations or recovery of the species.

The habitat within which *Eucalyptus scoparia* exists in the study area is not considered important for the survival of this species. The trees have been planted in the study area and the habitat is not natural. Work in this habitat would not affect the survival of this species.

Disrupt the breeding cycle of an important population

The proposal is considered unlikely to result in an impact to any pollination vectors or seed dispersal agents. The breeding capacity of *Eucalyptus scoparia* in the study area is already restricted as this species is not in its natural environment. This species is not expected to produce offspring in the present environment, as there are limited chances for

The current breeding cycle of *Eucalyptus scoparia* is predicted to remain after the road widening has occurred.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

This species is not in its natural habitat and is outside of its natural range. *Eucalyptus scoparia* occurs in only three known locations within NSW, all near Tenterfield in the far northern New England Tableland Bioregion. It does not naturally occur in the Sydney region. The proposal would not impact habitat for this species.

Result in invasive species that are harmful to a vulnerable species becoming established in the Vulnerable species' habitat

The potential for weed invasion was considered possible with a proposal of this nature and appropriate controls are required during construction and operation of the road to reduce this threat. The management of invasive species would be managed under the construction environmental management plan. Weed management measures proposed are provided in Section 5.

Introduce disease that may cause the species to decline, or

There are no known disease issues affecting this species in relation to the proposal. The proposal would be unlikely to increase feral animal abundance or the potential for significant disease vectors to affect local populations.

Infection of native plants by *Phytophthora cinnamomi* has been identified as being spread by construction machinery. This is a potential indirect impact to the species through the transmission of pathogens into retained habitat near the road. This can be mitigated through the development and implementation of suitable control measures for vehicle and plant hygiene and is unlikely to have a

significant impact. It is the intention to use current best practice hygiene protocols as detailed in Section 5 on this proposal as part of the CEMP to prevent the introduction or spread of pathogens.

Interfere substantially with the recovery of the species

The approved conservation advice for *Eucalyptus scoparia* contains research and regional priority actions to assist the recovery of the species. These actions include (Threatened Species Scientific Committee, 2008b):

- Undertake survey work in suitable habitat and potential habitat to locate any additional populations/occurrences/remnants.
- Undertake seed germination and/or vegetative propagation trials to determine the requirements for successful establishment.
- Investigate formal conservation arrangements such as the use of covenants, conservation agreements or inclusion in reserve tenure.
- Raise awareness of Wallangarra White Gum within the local community, particularly among developers and bushwalkers.
- Investigate options for enhancing or establishing additional populations.
- Implement national translocation protocols (Vallee et al., 2004) if establishing additional populations is considered necessary and feasible.

These identified recovery actions would not be interfered with by the proposal.

Conclusion

Eucalyptus scoparia trees that may be impacted by the proposed works are planted roadside trees and are not part of a key source populations. These trees are outside of their natural occurrence range and the proposal is unlikely to impact an important population or habitat critical to the survival of this species. The proposal would not interfere with the recovery of *Eucalyptus scoparia* and would not contribute to the key threats to this species. After consideration of the factors above, an overall conclusion has been made that the proposal is unlikely to result in a significant impact to *Eucalyptus scoparia*.

Grey-headed Flying-fox (*Pteropus poliocephalus*)

While the Grey-headed Flying-fox was not recorded in the study area during the field survey it is considered moderately likely to occur based on the presence of suitable foraging habitat.

An action is likely to have a significant impact on a vulnerable species if there is a real chance or possibility that it would:

Lead to a long-term decrease in the size of an important population of a species

An ‘important population’ is a population that is necessary for a species’ long-term survival and recovery. This may include populations identified as such in recovery plans, and/or that are:

- key source populations either for breeding or dispersal
- populations that are necessary for maintaining genetic diversity, and/or
- populations that are near the limit of the species range.

There have been no roost camps identified in the study area and the project would not impact on any known breeding / maternity site. Therefore, it is likely that the impacts of construction and operation of the project would be confined to loss of feeding habitat caused by direct clearing or damage to native vegetation during the construction phase.

The project would directly remove up to 20 trees of potential foraging habitat comprising planted vegetation. Foraging habitat comprises nectar resources from planted native trees and shrubs. This area of habitat may be defined as a portion of the potential area of occupancy for feeding life-cycle attributes of the population. The affected area of foraging habitat would represent a small percentage of the total extent of important foraging vegetation types present foraging range of the local occurrence of the species. Given the relative widespread nature of similar planted vegetation in the locality and abundance of higher quality foraging habitat within the feeding range of regional populations, the project is not expected to lead to a long-term decrease in the size of an important population.

Reduce the area of occupancy of an important population

The project would directly remove up to 20 trees of foraging habitat comprising planted vegetation. Foraging habitat comprises nectar resources from planted native trees and shrubs. This area of habitat may be defined as a portion of the potential area of occupancy for feeding life-cycle attributes of the population. The project would reduce the area of habitat available to the species; however, the area occupied by this species would remain the same.

Fragment an existing important population into two or more populations

There is currently a high degree of habitat fragmentation across the study area. Highly mobile species such as bats are expected to be less impacted by fragmentation and the grey-headed flying-fox is particularly well adapted to accessing widely spaced habitat resources given its mobility and preference for seasonal fruits and blossom. The project would not fragment an important population of the Grey-headed Flying-fox.

Adversely affect habitat critical to the survival of a species

Habitat critical to the survival of a species refers to areas that are necessary for activities such as:

- Foraging, breeding, roosting, or dispersal
- For the long-term maintenance of the species including the maintenance of other species essential to the survival of the species, such as pollinators
- To maintain genetic diversity and long-term evolutionary development
- For the reintroduction of populations or recovery of the species.

The proposed area of habitat loss represents a small percentage of the potential foraging habitat for the local occurrence of the Grey-headed Flying-fox. This species typically exhibits very large home ranges and Grey-headed Flying-fox are known to travel distances of at least 50 kilometres from roost sites to access seasonal foraging resources (Eby, 1991). No evidence of a camp site has been identified from the study area.

The draft recovery plan for the Grey-headed Flying-fox identifies critical foraging habitat for this species as:

- Productive during winter and spring, when food bottlenecks have been identified
- Known to support populations of >30,000 individuals, within an area of 50-kilometre radius
- Productive during the final weeks of gestation, and during the weeks of birth, lactation and conception (Sept-May)
- Productive during the final stages of fruit development and ripening in commercial crops affected by Grey-headed Flying-foxes
- Known to be continuously occupied as a camp site.

The project would directly remove up to 20 trees of foraging habitat. The affected area of foraging habitat would represent a small percentage of the total extent of important foraging vegetation types present within a 50-kilometre radius of the study area. Given the relatively widespread nature of similar planted vegetation in the locality and abundance of higher quality foraging habitat within the feeding range of the local occurrence of the species, the proposal is not expected to adversely affect habitat critical to the survival of the species.

Disrupt the breeding cycle of an important population

As stated above there would be a minor impact on foraging habitat identified as important during the breeding cycle of the species. The proposal would not directly impact on a roost camp / breeding or maternity site.

Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline

There would be a relatively minor impact on foraging habitat. This impact is not expected to lead to a decline in the species in this region.

Result in invasive species that are harmful to a vulnerable species becoming established in the Vulnerable species' habitat

The potential for weed invasion was considered possible with a project of this nature and appropriate controls are required during construction and operation of the road to reduce this threat. The management of invasive species would be managed under the construction environmental management plan and during operation of the highway using best practice methods as outlined in RTA (2011).

Introduce disease that may cause the species to decline, or

There are no known disease issues affecting this species in relation to the project. The project would be unlikely to increase feral animal abundance or the potential for significant disease vectors to affect local populations.

Interfere substantially with the recovery of the species.

The *Draft National Recovery Plan for the Grey-headed Flying-fox* (*Pteropus poliocephalus*) (Department of Environment, Climate Change and Water NSW. 2009) outlines the following actions:

- Identify and protect foraging habitat critical to the survival of Grey-headed Flying-foxes across their range
- Enhance winter and spring foraging habitat for Grey-headed Flying-foxes
- Identify, protect and enhance roosting habitat critical to the survival of Grey-headed Flying-foxes
- Significantly reduce levels of deliberate Grey-headed Flying-fox destruction associated with commercial horticulture
- Provide information and advice to managers, community groups and members of the public that are involved with controversial flying-fox camps
- Produce and circulate educational resources to improve public attitudes toward Grey-headed Flying-foxes, promote the recovery program to the wider community and encourage participation in recovery actions
- Monitor population trends for the Grey-headed Flying-fox
- Assess the impacts on Grey-headed Flying-foxes of electrocution on powerlines and entanglement in netting and barbed wire, and implement strategies to reduce these impacts

- Oversee a program of research to improve knowledge of the demographics and population structure of the Grey-headed Flying-fox
- Maintain a National Recovery Team to oversee the implementation of the Grey-headed Flying-fox National Recovery Plan

The recovery actions listed above are largely not applicable to the proposal as they focus on priority conservation lands which are outside of the study area.

Given the relative widespread nature of similar planted vegetation in the locality and abundance of higher quality foraging habitat within the feeding range of regional populations, the project is not expected to interfere substantially with the recovery of the species.

Conclusion

The Grey-headed Flying-fox would suffer a small reduction in extent of suitable foraging habitat from the proposal. No breeding camps or other important habitat would be impacted. The proposal is unlikely to reduce the population size of the Grey-headed Flying-fox or decrease the reproductive success of this species. The proposal would not interfere with the recovery of the Grey-headed Flying-fox and would not contribute to the key threats to this species. After consideration of the factors above, an overall conclusion has been made that the proposal is unlikely to result in a significant impact to the Grey-headed Flying-fox

Type of animal	Species name	Common name	EPBC Act	BC Act	Distribution and habitat	No. records in locality	Likelihood of occurrence
Mammals	*Micronomus norfolkensis*	Eastern Coastal Free-tailed Bat		V	The Eastern Freetail-bat is found along the east coast from south Queensland to southern NSW. Preferred habitat is dry sclerophyll forest, woodland, swamp forest and mangrove forests east of the Great Divide Range. Roosts mainly in tree hollows but will also roost under bark or in man-made structures.	39	Moderate
Mammals	*Mormopterus norfolkensis*	Eastern Freetail-bat	-	V	Occur in dry sclerophyll forest and woodland east of the Great Dividing Range. Roosts mainly in tree hollows but will also roost under bark or in human-made structures.	28	Moderate
Mammals	*Myotis macropus* (*Myotis adversus*)	Southern Myotis	-	V	Generally, roost in groups close to water in caves, mine shafts, hollow-bearing trees, and storm water channels, buildings, under bridges and in dense foliage. Forages over streams and pools catching insects and small fish.	17	Moderate
Mammals	*Petauroides volans*	Greater Glider	V	-	The Greater Glider occurs in eucalypt forests and woodlands along the east coast of Australia from north east Queensland to the Central Highlands of Victoria from sea level to 1200 m altitude. It feeds exclusively on eucalypt leaves, buds, flowers and mistletoe and favours forests with a diversity of eucalypt species, due to seasonal variation in its preferred tree species. It roosts in tree hollows, with a selection for large hollows in large, old trees. Individuals use multiple hollows and a relatively high abundance of tree hollows (at least 4-8 suitable hollows per hectare) seems to be needed for the species to persist. Individuals occupy relatively small home ranges with an average size of 1 to 3 ha, but the species has relatively low persistence in small forest fragments and disperses poorly across vegetation that is not native forest. Forest patches of at least 160 km^2 may be required to maintain viable populations.	P	Low
Mammals	*Petrogale penicillata*	Brush-tailed Rock-wallaby	V	E	Range extends from south-east Queensland to the Grampians in western Victoria, roughly following the line of the Great Dividing Range. Occupy rocky escarpments, outcrops and cliffs with a preference for complex structures with fissures, caves and ledges, often facing north. Browse on vegetation in and adjacent to rocky areas eating grasses and forbs as well as the foliage and fruits of shrubs and trees.	P	Low
Mammals	*Phascolarctos cinereus*	Koala	V	V	In NSW it mainly occurs on the central and north coasts with some populations in the west of the Great Dividing Range. Inhabit eucalypt woodlands and forests. Feed on the foliage of more than 70 eucalypt species and 30 non-eucalypt species, but in any one area will select preferred browse species.	1, P	Low
Mammals	*Pseudomys novaehollandiae*	New Holland mouse	V	-	Distribution is fragmented across all eastern states of Australia, where it inhabits open heath lands, open woodlands with heath understorey and vegetated sand dunes.	P	Low
Mammals	*Pteropus poliocephalus*	Grey-headed Flying-fox	V	V	Generally found within 200 km of the eastern coast of Australia, from Rockhampton in Queensland to Adelaide in South Australia. In times of natural resource shortages, they may be found in unusual locations. Occur in subtropical and temperate rainforests, tall sclerophyll forests and woodlands, heaths and swamps as well as urban gardens and cultivated fruit crops. Roosting camps are generally located within 20 km of a regular food source and are commonly found in gullies, close to water, in vegetation with a dense canopy. Individual camps may have tens of thousands of animals and are used for mating, and for giving birth and rearing young.	405, P	High

Type of animal	Species name	Common name	EPBC Act	BC Act	Distribution and habitat	No. records in locality	Likelihood of occurrence
Mammals	*Saccolaimus flaviventris*	Yellow-bellied Sheathtail-bat	-	V	Wide-ranging species found across northern and eastern Australia. Roosts singly or in groups of up to six, in tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.	8	Moderate
Mammals	*Scoteanax rueppellii*	Greater Broad-nosed Bat	-	V	Utilises a variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest. Although this species usually roosts in tree hollows, it has also been found in buildings.	21	Low
Mammals	*Vespadelus troughtoni*	Eastern Cave Bat	-	V	The Eastern Cave Bat is found in a broad band on both sides of the Great Dividing Range from Cape York to Kempsey, with records from the New England Tablelands and the upper north coast of NSW. The western limit appears to be the Warrumbungle Range, and there is a single record from southern NSW, east of the ACT. Usually found in dry open forest and woodland, near cliffs or rocky overhangs. It has been recorded roosting in disused mine workings.	1	Low

Notes:

* Distribution and habitat requirement information adapted from the Australian Government *http://www.environment.gov.au/biodiversity/threatened/index.html* and NSW Government *http://www.environment.nsw.gov.au/threatenedspecies/*

+ Data source includes Number of records from the BioNet Atlas of NSW Wildlife and identified from the Protected Matters Search Tool (PMST).

Key:

EP = endangered population
CE = critically endangered
E = endangered
V = vulnerable
M = migratory
P = Predicted
** = record accuracy reduced to 10 km
* = record accuracy reduced to 1 km

Australian Government
Department of the Environment and Energy

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

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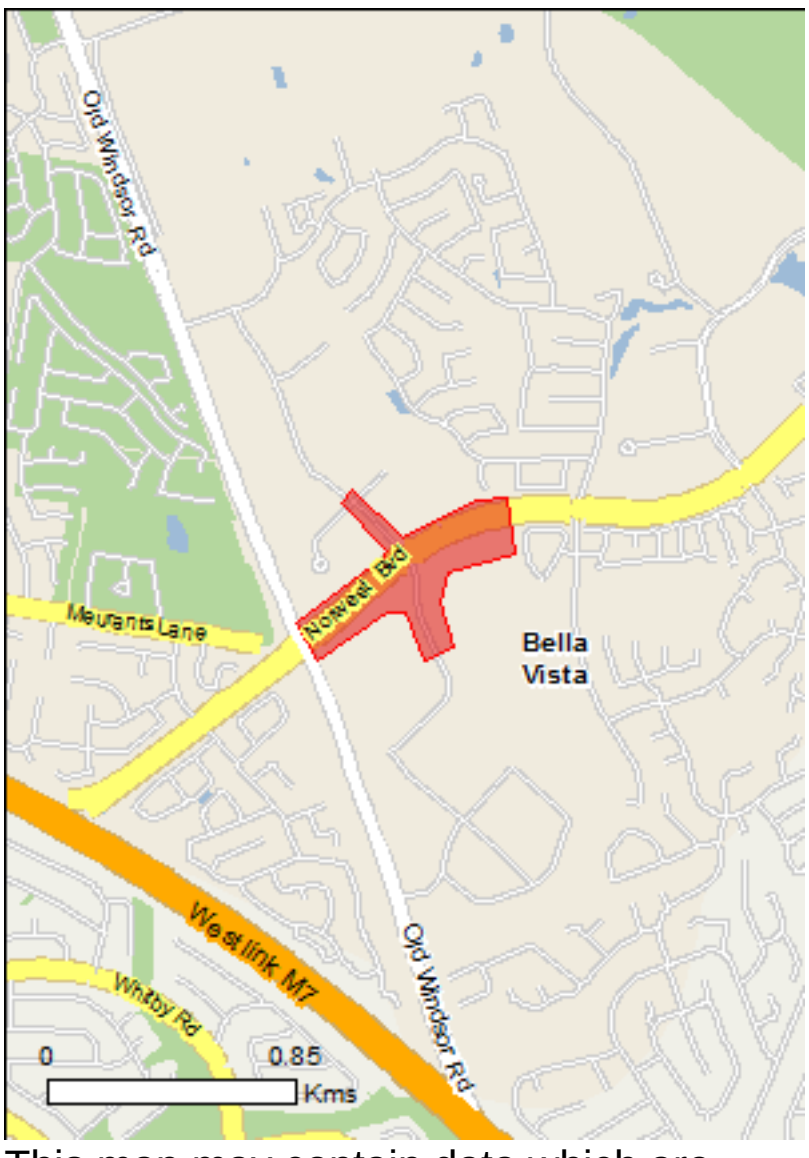

This map may contain data which are ©Commonwealth of Australia (Geoscience Australia), ©PSMA 2010

Coordinates

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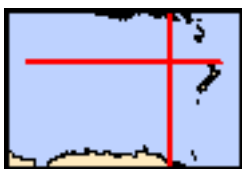

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	5
Listed Threatened Species:	31
Listed Migratory Species:	16

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	1
Commonwealth Heritage Places:	None
Listed Marine Species:	22
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Commonwealth Reserves Marine:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	None
Regional Forest Agreements:	None
Invasive Species:	53
Nationally Important Wetlands:	None
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	Endangered	Community may occur within area
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	Community may occur within area
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	Community likely to occur within area
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	Critically Endangered	Community may occur within area
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat may occur within area
Fish		
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species

Name	Status	Type of Presence
		habitat may occur within area
[Prototroctes maraena](#) Australian Grayling [26179]	Vulnerable	Species or species habitat may occur within area
Frogs		
[Heleioporus australiacus](#) Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
[Litoria aurea](#) Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat likely to occur within area
[Mixophyes balbus](#) Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area
Mammals		
[Chalinolobus dwyeri](#) Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
[Dasyurus maculatus maculatus (SE mainland population)](#) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area
[Petauroides volans](#) Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
[Petrogale penicillata](#) Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
[Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)](#) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat may occur within area
[Pseudomys novaehollandiae](#) New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area
[Pteropus poliocephalus](#) Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Other		
[Pommerhelix duralensis](#) Dural Land Snail [85268]	Endangered	Species or species habitat likely to occur within area
Plants		
[Acacia bynoeana](#) Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat likely to occur within area
[Acacia pubescens](#) Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat likely to occur within area
[Allocasuarina glareicola](#) [21932]	Endangered	Species or species habitat may occur within area
[Genoplesium baueri](#) Yellow Gnat-orchid [7528]	Endangered	Species or species habitat likely to occur within area
[Pimelea curviflora var. curviflora](#) [4182]	Vulnerable	Species or species habitat may occur within

Name	Status	Type of Presence
		area
Pimelea spicata		
Spiked Rice-flower [20834]	Endangered	Species or species habitat likely to occur within area
Pterostylis gibbosa		
Illawarra Greenhood, Rufa Greenhood, Pouched Greenhood [4562]	Endangered	Species or species habitat may occur within area
Pterostylis saxicola		
Sydney Plains Greenhood [64537]	Endangered	Species or species habitat may occur within area
Syzygium paniculatum		
Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe		
Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus		
Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Migratory Terrestrial Species		
Cuculus optatus		
Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat known to occur within area
Hirundapus caudacutus		
White-throated Needletail [682]		Species or species habitat known to occur within area
Monarcha melanopsis		
Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus		
Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava		
Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca		
Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons		
Rufous Fantail [592]		Species or species habitat likely to occur within area
Migratory Wetlands Species		
Actitis hypoleucos		
Common Sandpiper [59309]		Species or species habitat may occur within area
Calidris acuminata		
Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea		
Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land - Telstra Corporation Limited

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species habitat likely to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area
Cuculus saturatus Oriental Cuckoo, Himalayan Cuckoo [710]		Species or species habitat known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Species or species

Name	Threatened	Type of Presence
		habitat may occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely to occur within area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat may occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area
Pandion haliaetus Osprey [952]		Species or species habitat may occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat may occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat likely to occur within area

Extra Information

Invasive Species [Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos Mallard [974]		Species or species habitat likely to occur within area
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat likely to occur within area
Mammals		

Name	Status	Type of Presence
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Asparagus scandens Asparagus Fern, Climbing Asparagus Fern [23255]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Protasparagus densiflorus Asparagus Fern, Plume Asparagus [5015]		Species or species habitat likely to occur within area
Protasparagus plumosus Climbing Asparagus-fern, Ferny Asparagus [11747]		Species or species habitat likely to occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-33.737222 150.948325,-33.736918 150.948647,-33.738132 150.950213,-33.737168 150.952509,-33.737079 150.953367,-33.738489 150.953582,-33.739006 150.951565,-33.739738 150.951307,-33.740933 150.951737,-33.741219 150.950792,-33.740005 150.950235,-33.740023 150.94972,-33.741219 150.947531,-33.740309 150.94693,-33.738578 150.949591,-33.738435 150.949677,-33.737222 150.948325

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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