

Appendix H

Assessments of Significance

Assessment of Significance – Commonwealth Environmental Protection and Biodiversity Conservation Act 1999

Vulnerable Species

Grey-headed Flying Fox (*Pteropus poliocephalus*)

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

The Grey-headed Flying Fox occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. However, only a small proportion of this range is used at any one time, as the species selectively forages where food is available. As a result, patterns of occurrence and relative abundance within its distribution vary widely between seasons and between years. At a local scale, the species is generally present intermittently and irregularly.

This species roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast. Roost vegetation includes rainforest patches, stands of *Melaleuca*, mangroves and riparian vegetation, but colonies also use highly modified vegetation in urban and suburban areas. The species can maintain fidelity to roost sites for extended periods, although new sites have been colonised.

The Grey-headed Flying-Fox has a diverse native diet, which it supplements with introduced plants. Nectar and pollen from the flowers of eucalypts (genera *Eucalyptus*, *Corymbia* and *Angophora*), *melaleucas* and *banksias* are the primary food for the species. Most eucalypts have regular seasonal flowering schedules but do not flower every year, and there are a few areas within the range of the Grey-headed Flying-fox where nectar is available continuously. The species has no adaptations for withstanding food shortages, and migrates in response to changes in the amount and location of flowering.

The OEH Atlas of NSW Wildlife Database reports a total 66 sightings of this species in the area. There is a local camp that reside around two kilometres away in Burdekin Park in Singleton and two more camps at Cranky Corner and Lambs Valley (around 40 kilometres). Grey-headed Flying Foxes usually commute within 15 km of their roost site nightly for foraging, though they are capable of going 50 kilometres in search of seasonally available food. It is likely that this species utilises the Eucalypts present around the study site for foraging when in flower and the removal of these trees would reduce potential habitat and food availability. However, considering the small number of trees that may be cleared as a result of the proposed works (around 15 *Eucalyptus* and 15 *Melaleuca*), on a local and regional scale the loss of habitat represents a relatively minor impact in the context of the foraging range of the local population and habitat available. In relation to the available habitat in adjacent surrounding areas, the proposal is not considered likely to affect this species at the local level. The proposal is unlikely to affect the feeding, breeding or gestation lifecycles of local Grey-headed Flying-fox populations.

The three important aspects considered in assessing the impacts on this population from the proposal relate to relevant actions as listed in the draft National Recovery Plan for the Grey-headed Flying-fox and whether the proposal is consistent with these actions. These considerations are:

1. Identify and protect foraging habitat critical to the survival of the Grey-headed Flying-fox across their range
2. To protect and increase the extent of key winter and spring foraging habitat of Grey-headed Flying-foxes
3. To identify roosting habitat critical to the survival of Grey-headed Flying-foxes.

The proposal is considered consistent with the third objective, in that the proposed activity will not directly impact on an identified roost camp. In terms of objectives 1 and 2, the nectar and pollen from *Eucalyptus* and *Melaleuca* trees is their primary food source. Forests that contain winter flowering species are considered critical foraging habitat due to the flowering period which coincides with the final weeks of gestation, and during the weeks of birth, lactation and conception of the Grey-headed Flying-fox (September to May). Mugga Ironbark and Lemon-scented Gum flower during the winter and are both present in the proposal area. However the trees in the proposal area are in very low abundance and not considered part of a forest. It is unlikely that the removal of these would lead to a long-term decrease in the size of the local Singleton populations.

Reduce the area of occupancy of an important population

As stated, based on the 'worst case' proposal footprint for the proposed works, around 15 eucalypt (*E. sideroxylon*, *E. molucanna*, *E. amplifolia* and *E. citriodora*) and another 15 paperbark (*Melaleuca armillaris* and *M. linarifolia*) could potentially be removed or impacted. There is a local camp (important population) that reside around 2 kilometres away in Burdekin Park in Singleton and two more camps at Cranky Corner and Lambs Valley (around 40kilometre). Grey-headed Flying Foxes usually commute within 15 kilometre of their roost site, though they are capable of going 50kilometre. It is likely that this species utilises the Eucalypts present around the study site and the removal of these trees would reduce potential habitat and food availability.

Considering the highly modified, urban environment, these trees are unlikely to be important habitat for Grey-headed Flying Foxes and their removal will not cause further fragmentation or isolation to the species habitat. The proposal would reduce the available foraging habitat for local populations by a very small percentage when considering the total known area of these resources. The proposal is not expected to significantly impact on food resources available for local populations of the Grey-headed Flying-fox. This species is wide ranging and capable of exploiting seasonally available and widespread food resources. The proposal will not intercept a roost site, not reduce the area of occupation.

Fragment an existing important population into two or more populations

The proposal would not fragment an important population of the Grey-headed Flying-fox. This is a highly mobile species capable of moving large distances and the proposal will not encroach on a roost site.

Adversely affect habitat critical to the survival of the species

The following information regarding critical habitat is taken from the Draft National Recovery Plan (2009).

In order to survive, Grey-headed Flying-foxes require a continuous sequence of productive foraging habitats, the migration corridors or stopover habitats that link

them, and suitable roosting habitat within nightly commuting distance of foraging areas.

Foraging Habitat critical to survival

Based on current knowledge, foraging habitat that meets at least one of the following criteria can be explicitly identified as habitat critical to survival, or essential habitat, for Grey-headed Flying-foxes. Natural foraging habitat that is:

1. Productive during winter and spring, when food bottlenecks have been identified
2. Known to support populations of > 30 000 individuals within an area of 50 kilometre radius (the maximum foraging distance of an adult)
3. Productive during the final weeks of gestation, and during the weeks of birth, lactation and conception (September to May)
4. Productive during the final stages of fruit development and ripening in commercial crops affected by Grey-headed Flying-foxes (months vary between regions)
5. Known to support a continuously occupied camp.

Roosting Habitat critical to survival

Based on current knowledge, roosting habitat that meets at least one of the following criteria can be explicitly identified as habitat critical to survival, or essential habitat, for Grey-headed Flying-foxes. Roosting habitat that:

- Is used as a camp either continuously or seasonally in > 50% of years
- Has been used as a camp at least once in 10 years (beginning in 1995) and is known to have contained > 10 000 individuals, unless such habitat has been used only as a temporary refuge, and the use has been of limited duration (i.e. in the order of days rather than weeks or months)
- Has been used as a camp at least once in 10 years (beginning in 1995) and is known to have contained > 2 500 individuals, including reproductive females during the final stages of pregnancy, during lactation, or during the period of conception (i.e. September to May).

Based on this information, vegetation within the proposal area does not meet the criteria for critical roosting or foraging habitat. Based on the 'worst case' proposal footprint for the proposed works, around 15 planted Eucalyptus (*E. sideroxylon*, *E. molucanna*, *E. amplifolia* and *E. citriodora*) and another 15 *Melaleuca* (*M. armillaris* and *M. linarifolia*) could potentially be removed or impacted. Considering the small number of trees to be cleared, on a local and regional scale the loss of habitat is minor and the proposal is not likely to have an adverse impact on critical foraging habitat.

Disrupt the breeding cycle of an important population

No evidence of a roosting colony of the Grey-headed Flying-fox occurs on the study site and critical foraging habitat would not be removed. Furthermore, the species is adapted to moving nomadically through the landscape in search of seasonally available resources and is not expected to be negatively affected.

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

As stated, based on the 'worst case' proposal footprint for the proposed works, around 15 eucalypt (*E. sideroxylon*, *E. molucanna*, *E. amplifolia* and *E. citriodora*) and another 15 paperbark (*M. armillaris* and *M. linarifolia*) could potentially be removed or impacted and are expected to provide potential food resources for local populations of the Grey-headed Flying-fox. The proposal is not expected to isolate access to the remaining habitat on site for this wide-ranging and highly mobile species. It is unlikely that this proposal would directly lead to the decline of the species in the broader locality, although it will contribute to the cumulative loss of foraging habitat.

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

Considering the modified and disturbed nature of the proposal site, the threat of weed invasion is considered unlikely to be harmful to Flying Fox habitat. However, appropriate controls are required during the construction and operation of the proposal to reduce this threat from spreading. The management of invasive species should be managed under the guidance of an Environmental Management Plan.

Introduce disease that may cause the species to decline

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

Interferes substantially with the recovery of the species

The proposal would not conflict with the recovery of this species.

Conclusion

There are extensive areas of potential foraging habitat for the species throughout the broader locality and the clearing of potential foraging habitat including around 15 *Eucalyptus* (*E. sideroxylon*, *E. molucanna*, *E. amplifolia* and *E. citriodora*) and another 15 *Melaleuca* (*M. armillaris* and *M. linarifolia*) represents a relatively minor impact in the context of the foraging range of the local population. In relation to the available habitat in adjacent surrounding areas, the proposal is not considered likely to affect this species at the local level. The proposal is unlikely to affect the feeding, breeding or gestation lifecycles of local Grey-headed Flying-fox populations. The proposal is not expected to significantly impact on food resources available for local populations of the Grey-headed Flying-fox. This species is wide ranging and capable of exploiting seasonally available and widespread food resources.

Migratory Species

Rainbow Bee-eater (*Merops ornatus*)

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

(a) substantially modify (including by fragmenting, altering fire regimes, altering nutrient cycles or altering hydrological cycles), destroy or isolate an area of important habitat for a migratory species

An area of 'important habitat' for a migratory species is:

- a. *Habitat utilised by a migratory species occasionally or periodically within a region that supports an ecologically significant proportion of the population of the species, and/or*
- b. *Habitat that is of critical importance to the species at particular life-cycle stages, and/or*
- c. *Habitat utilised by a migratory species which is at the limit of the species range, and/or*
- d. *Habitat within an area where the species is declining.*

The vegetation within the proposal area does not meet any of the above criteria and therefore is not considered important habitat for the Rainbow Bee-eater.

b) result in an invasive species that is harmful to the migratory species becoming established in an area of important habitat for the migratory species, or

This proposal will not result in the establishment of an invasive species. There is potential for the spread of weeds outside of the proposal area during construction. This can be controlled with appropriate mitigation measures.

c) seriously disrupt the lifecycle (breeding, feeding, migration or resting behaviour) of an ecologically significant proportion of the population of a migratory species.

It is not known if the total population of Rainbow Bee-eater in Australia is divided into a series of discrete subpopulations. The overall population trend of the Rainbow Bee-eater in Australia has not been quantified. This species is only seen in populations when migrating. Considering the proposal area does not contain important habitat, the proposal is unlikely to seriously disrupt the lifecycle of an ecologically significant population.

Assessment of Significance (Environmental Planning and Assessment Act 1979)

Grey-headed Flying Fox (*Pteropus poliocephalus*)

(a) In the case of a threatened species, whether the action proposed 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.

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This species roosts in aggregations of various sizes on exposed branches. Roost sites are typically located near water, such as lakes, rivers or the coast. Roost vegetation includes rainforest patches, stands of Melaleuca, mangroves and riparian vegetation, but colonies also use highly modified vegetation in urban and suburban areas. The species can maintain fidelity to roost sites for extended periods, although new sites have been colonised.

The Grey-headed Flying-Fox has a diverse native diet, which it supplements with introduced plants. Nectar and pollen from the flowers of eucalypts (genera Eucalyptus, Corymbia and Angophora), melaleucas and banksias are the primary food for the species. Most eucalypts have regular seasonal flowering schedules but do not flower every year, and there are a few areas within the range of the Grey-headed Flying-fox where nectar is available continuously. The species has no adaptations for withstanding food shortages, and migrates in response to changes in the amount and location of flowering.

The OEH Atlas of NSW Wildlife Database reports a total 66 sightings of this species in the area. There is a local camp that reside around 2 kilometres away in Burdekin Park in Singleton and two more camps at Cranky Corner and Lamb Valley (around 40 kilometres). Grey-headed Flying Foxes usually commute within 15 kilometres of their roost site, though they are capable of going 50 kilometres. It is likely that this species utilises the Eucalypts present around the study site and the removal of these trees would reduce potential habitat and food availability on a very small scale. However, considering the small number of trees that may be cleared as a result of the proposed works, on a local and regional scale the loss of habitat represents a relatively minor impact in the context of the foraging range of the local population. In relation to the available habitat in adjacent surrounding areas, the proposal is not considered likely to affect this species at the local level. The proposal is unlikely to affect the feeding, breeding or gestation lifecycles of local Grey-headed Flying-fox populations placing it at risk of extinction.

(b) In the case of an endangered population, whether the action proposed is likely to have an adverse effect on the life cycle of the species that constitutes the endangered population such that a viable local population of the species is likely to be placed at risk of extinction.

N/A

(c) In the case of an endangered ecological community, whether the action proposed:

- ***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***
- ***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.***

N/A

(d) In relation to the habitat of a threatened species, population or ecological community:

- ***the extent to which habitat is likely to be removed or modified as a result of the action proposed, and***
- ***whether an area of habitat is likely to become fragmented or isolated from other areas of habitat as a result of the proposed action; and***
- ***the importance of the habitat to be removed, modified fragmented or isolated to the long-term survival of the species, population or ecological community in the locality.***

The Grey-headed Flying-Fox has a diverse native diet, which it supplements with introduced plants. Nectar and pollen from the flowers of eucalypts (genera *Eucalyptus*, *Corymbia* and *Angophora*), melaleucas and banksias are the primary food for the species. Based on the 'worst case' proposal footprint for the proposed works, around 15 *Eucalyptus* (*E. sideroxylon*, *E. molucanna*, *E. amplifolia* and *E. citriodora*) and another 15 *Melaleuca* (*M. armillaris* and *M. linarifolia*) could potentially be removed or impacted. These trees are all planted and most are not native to the area. Considering the highly modified, urban environment, these trees are unlikely to be important habitat for Grey-headed Flying Foxes and their removal will not cause further fragmentation or isolation to the species habitat.

(e) whether the action proposed is likely to have an adverse effect on critical habitat (either directly or indirectly).

There are no areas of critical habitat for this species listed under the TSC Act.

(f) whether the action proposed is consistent with the objectives or actions of a recovery plan or threatened abatement plan

The proposal does not relate to the recovery of the species.

(g) whether the action proposed constitutes or is part of a threatening process or is likely to result in the operation of, or increase the impact of, a key threatening process.

Clearing of vegetation:

Of the key threatening processes listed under the TSC Act, the clearing of native vegetation probably has the most potential to impact on the Grey-headed Flying-fox, particularly where this may involve impacts on roosting colonies and loss of foraging habitat. The loss of around 15 Eucalyptus (*E. sideroxylon*, *E. molucanna*, *E. amplifolia* and *E. citriodora*) and another 15 Melaleuca (*M. armillaris* and *M. linarifolia*) is considered to impose only minimal impact on the total extent of potential food resources present throughout the region that could be accessed by local flying-fox populations.

Conclusion

There are extensive areas of potential foraging habitat for the species throughout the broader locality and the clearing of potential foraging habitat including around 15 Eucalyptus (*E. sideroxylon*, *E. molucanna*, *E. amplifolia* and *E. citriodora*) and another 15 Melaleuca (*M. armillaris* and *M. linarifolia*) represents a relatively minor impact in the context of the foraging range of the local population. In relation to the available habitat in adjacent surrounding areas, the proposal is not considered likely to affect this species at the local level. The proposal is unlikely to affect the feeding, breeding or gestation lifecycles of local Grey-headed Flying-fox populations.