

7. FLORA AND FAUNA

DIRECTOR-GENERAL'S REQUIREMENTS

The Environmental Assessment must:

1. Include an assessment of all project components (including the transmission easement through Canobolas State Forest) on flora and fauna and their habitat consistent with the *Draft Guidelines for Threatened Species assessment* (DEC, 2005), including details on the existing site conditions and quantity and likelihood of disturbance;
2. The EA must specifically consider impacts to threatened species and communities listed under both State and Commonwealth legislation that have been recorded on the site and surrounding land, impacts to riparian and/or instream habitat in the case of disturbance of waterways, and to biodiversity corridors. In addition, impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips, and alteration to movement patterns resulting from the turbines and transmission lines must be assessed, including demonstration of how the project has been sited to avoid and/or minimise such impacts;
3. Include details of how flora and fauna impacts would be managed during construction and operation including adaptive management and maintenance protocols; and
4. Include measures to avoid, mitigate or offset impacts consistent with "improve or maintain" principles. Sufficient details must be provided to demonstrate the availability of viable and achievable options to offset the impacts of the project.

7.1 Flyers Creek Wind Turbine Awareness Group objects to the proposal:

- 7.1.1 No **Soil and Water Management Plan** for either the construction or the operational phase of the project is presented as part of the Environmental Assessment. Leaving this plan to be developed as part of the Conditions of Consent has meant that there can be no public comment on this important aspect.
- 7.1.2 No **Construction Environmental Management Plan** (to include detailed design of site access points, tracks, underground cables etc) has been presented in the Environmental Assessment. The EA states that this will be developed in consultation with an ecologist. Again it appears that this plan will be developed as part of the Conditions of Consent and again there is no opportunity for public comment. It is assumed, but is not clear, that the Soil and Water Management Plan differs from the Construction Environmental Management Plan.
- 7.1.3 Deficiencies in the flora survey: The EA states that the exact loss of trees **cannot be quantified** at this time as the location of the infrastructure, particularly tracks and cable routes, has not been finalised. Why has the EA been presented for public

comment without this important aspect of the plan described? How can a determination be made on the FCWF proposal without specific details in place?

- 7.1.4 The Environmental Assessment does not make adequate provision for the preservation of tree hollows which are critical for parrot breeding, specifically important in the Flyers Creek area for the vulnerable **superb parrot** and **turquoise parrot**.
- 7.1.5 The presence of **raptors** – in particular the protected Wedge-tailed eagle – is noted and a plan for minimisation of collision mortality is proffered. This is inadequate.
- 7.1.6 Micro bats are very important to the ecology of the area which accommodates two vulnerable species (only one surveyed). Micro bats are susceptible to fatal barotrauma. The Environmental Assessment makes no mention of this and there are no plans suggested to mitigate this.
- 7.1.7 There does not appear to be any assessment of the effect of the transmission line through the Canobolas State Forest on flora and fauna as required by the DGRs.
- 7.1.8 There is some consideration of the impact of the project on birds and bats from blade strikes, low air pressure zones at the blade tips, and alteration to movement patterns resulting from the turbines and transmission lines. But the demonstration of how the project has been sited to avoid and/or minimise such impacts is sketchy, and apparently details will be decided later. FCWTAG do not believe the DGRs are adequately met.

7.2 FLORA

- 7.2.1 The Survey of Flora and Fauna was carried out by Kevin Mills and Associates (KMA). The survey found the remnants of a **critically endangered ecological community**, viz: the Commonwealth EPBC Act listed White Box (*E.albens*) – Yellow Box (*E. melliodora*) – Blakeley’s Red Gum (*E. Blakelyi*) and Derived Grasslands community. This is also listed under the NSW TSC Act. This community is commonly referred to as Box-Gum Woodland. The remnants in this report are dismissed as being of poor quality and, apart from micro siting the turbines in an attempt to avoid removing trees; little provision is planned for the preservation of these remnants. Remnants are important, especially for endangered communities, as they provide future seed banks and genetic repositories.
- 7.2.2 The survey of tree hollows was carried out on ridge tops only. 41 trees were surveyed (36 living, 5 dead) resulting the 70 hollows found. However significant mature trees in the valley areas were not surveyed and some of these are likely to be affected or removed to make room for access tracks, road construction and other sequelae of major infrastructure construction. It can take up to 150 years for eucalypts to develop nest-appropriate tree hollows which are critical to the

reproduction of bird species such as the parrots (eg. superb parrot – a vulnerable species).

- 7.2.3 No survey was conducted of roadside vegetation, often the location of vestigial native vegetation, despite the fact KMA states there are some “small patches of native grasses on rocky sites and road sides”. Some areas of roadside have significant mature trees, with hollows (Figures 7.1 and 7.2).
- 7.2.4 There are 80 kilometres of narrow, poorly maintained, often gravel roads that are expected to provide access to the proposed wind turbine sites. Many are less than 5 metres in width and it is axiomatic that these roads will require widening to accommodate a large number of over size, over long and over weight vehicles. Because of this almost all roadside vegetation and large trees will almost certainly be removed or cut back. This will have a significant impact on the number of tree hollows available for nesting as well as vegetative corridor destruction.
- 7.2.5 The statement contained in the KMA report that it is the ridge tops that retain the best remnants of the box grassland association and where remnants of native grasses best survive. Despite assurances that minimal trees will be removed both the construction of the turbines and power cables (both underground and overhead), the foot print of the turbines themselves and the access tracks and turning circles for over long vehicles, the substation and other infrastructure will have a cumulative effect on the remnant native trees and grasses found on the these very same ridgelines where the turbines are to be situated.
- 7.2.6 KMA state that only 1.1 Ha of native vegetation will be removed. There is no explanation as to how this figure was derived. If this is merely the addition of the areas of the estimated number of isolated trees to be removed this is not indicative of the area of fauna habitat and vegetative communities which are likely to be impacted. Moreover the report states: “The exact loss of trees cannot be quantified at this time as the location of the infrastructure, particularly tracks and cable routes, has not been finalised.” **The fact that this has not been finalised before the release of the Environmental Assessment is extremely poor and makes any assumptions made suspect.**
- 7.2.7 Mention is made that any removal of trees or vegetation can be made good by the use of biodiversity credits or offsets. There are no details. Does this mean simply the planting of a 1.1 Ha wood lot? This cannot compensate for the removal of mature trees especially if they have tree hollows
- 7.2.8 In the EA tabled Correspondence Forest NSW has requested that impact of the planned transmission lines on the plantations of **Canobolas State Forest** be surveyed and **investigated**. **This does not appear to be part of the Flora and Fauna Report by KMA and it is assumed this government departmental request has been ignored.**



Figure 7.1 GAP ROAD CARCOAR.

One of the main access roads for over long and over mass vehicles delivering turbines to the proposal site



Figure 7.2: ERROWANBANG ROAD CARCOAR

This road will access the proposed wind turbine sites from the Mid Western Highway

7.3 FAUNA (EXCLUDING BAT FAUNA)

- 7.3.1 Within the avifauna found in the Flyers Creek area are significant numbers of parrots. The **superb parrot** (*Neophema swainsonii*) (vulnerable under the NSW TSC Act and the Commonwealth EPBC Act) (Figure 7.3) is present particularly in the breeding season and requires tree hollows for nesting. The Flyers Creek area lies at the northern edge of the superb parrot's range and any interference in the breeding capabilities of this bird would **not comply with either Act**. It seems inevitable that some trees with hollows will be removed during the construction of the FCWF.
- 7.3.2 Although not endangered other species of parrots also use tree hollows for breeding. Thus the removal of trees with hollows will increase competition for nesting sites resulting in further pressure on the superb parrot population. Parrots found in the area that also use tree hollows include the **crimson rosella** (*Platycercus elegans*), **eastern rosella** (*Platycercus eximius*), **cockatiel** (*Nymphicus hollandicus*), **red-rumped parrot** (*Psephotus haematonotus*), and the vulnerable **turquoise parrot** (*Neophema pulchella*)⁷².
- 7.3.3 The **wedge tailed eagle** (*Aquila audax*) (Figure 7.4) – a climax avifauna species – was sighted in the fauna survey. Local knowledge confirms the presence of a nest in the northern sector of the FCWF area. The wedge-tailed eagle is so identifiable, powerful and omnipresent that it is hardly surprising that they have a strong presence in Aboriginal custom and mythology.⁴¹ As such any pressure on wedge-tailed eagle habitat, breeding or range can risk the threat of local extinction thereby affecting indigenous customs and beliefs. There is no suggestion that this is addressed in the Environmental Assessment.
- 7.3.4 Risk factors for birds, particularly those prone to fly at great heights such as the raptors are significant and include:
- Collision with moving turbine blades, with the turbine tower and associated infrastructure such as overhead power lines, or in the wake behind the rotors causing injury, leading to direct mortality;
 - Disturbance displacement from around the turbines or exclusion from the whole wind farm. Reduced breeding productivity or reduced survival may result if birds are displaced from preferred habitat and are unable to find suitable alternatives;
 - Barriers to movement disrupting ecological links between feeding, wintering, breeding and moulting areas and extended flights around wind clusters, leading to increased energy demand potentially reducing fitness;
 - Change to or loss of habitat due to wind turbines and associated infrastructure.
- 7.3.5 Thus wind energy facilities can have detrimental impacts on birds, bats and other fauna in four fundamental ways:

- Collision mortality
 - Loss or degradation of habitat
 - Disturbance and subsequent displacement from habitat
 - Disruption of ecological links
- 7.3.6 Raptors and other large birds of prey often soar where wind turbines are best sited and may be attracted to their deaths by vegetation and prey around the turbines. These birds cannot sustain big losses because they breed so slowly. International experience has shown that important raptor populations can be wiped out or significantly reduced.⁶⁵ Locally the ridgelines associated with the proposed FCWF are shrouded in mist, particularly in winter, which further endangers raptors flying at height near the turbines.
- 7.3.7 The following plan from KMA for overcoming the probability of blade strike is:
- the turbines should have no perching places;
 - dead animals (e.g. sheep carcasses) within 200 metres of a turbine should be removed as soon as possible;
 - lambing should not occur in paddocks with turbines;
 - road kills on site access tracks should be removed if they are within 200 metres of a turbine;
 - the turbine and other facilities should not have lights, other than safety lights for aircraft navigation as required by government authorities, to minimise attracting nocturnal birds and bats;
 - buildings, poles or other structures should not be constructed within 200 metres of turbines as they provide perching opportunities for birds of prey.
- 7.3.8 There is no indication in the Environmental Assessment that any of these recommendations will be put in place. For instance, who will remove dead animals and road kills? The host or the energy company? Who will monitor the effectiveness? Who will ensure that the farmer does not allow lambing beneath turbines? In any event these suggested above are unlikely to be sufficient to negate bird mortality.
- 7.3.9 The EA states that overseas experience is that collision mortalities are actually low and that this is not considered to be of great concern for FCWF. A recent review by Sprague et al⁶⁵ raises concerns that bird kills in Canada and the USA are greater than previously reported, and the potential for collision fatalities increases with increasing height and increasing rotor-swept area of the greater size of modern industrial wind turbines. Wind turbulence is also increased with turbine size and represents further danger for bird and bat flight. Problems with monitoring are also important which may affect the result of carcass surveys. Monitoring the impact of active turbines on birds typically involves regular searches for corpses beneath the turbines.

Monitoring is often a condition to project approvals, at least for the first few years of operation. Most wind energy producers do not publish the studies and methodologies use to arrive at their mortality estimates. **There is no indication in the EA of any methodology for monitoring bird and bat collisions and no indication that results will be publicly available.**



Figure 7.3 Superb Parrot (*Polytelis swainsonii*)
Flyers Creek is at the northern limit of the superb parrot's breeding range. Preservation of tree hollows for nesting is critical. (Photographed in the vicinity of Flyers Creek area)



Figure 7.4 Wedge-tailed Eagle (*Aquila audax*)
Raptors are vulnerable to collision mortality (blade strike) and to loss or destruction of habitat affecting breeding success. (Photographed in the vicinity of the Flyers Creek area).

7.4 BAT FAUNA

- 7.4.1 Greg Richards and Associates (GRA) have historically been involved in several assessments in association with Newcrest's Cadia Valley Operations, a gold and copper mine located in close proximity to the proposed Flyers Creek Wind Farm. GRA has been requested by Aurecon (for Infigen Energy) to look at the impact of wind turbines on bats. Bats found in the area are micro bats; macro bats are not indigenous to the area.
- 7.4.2 In previous studies carried out for Cadia Valley Operations^{12,13} GRA mentions **two vulnerable micro bats** (listed in the NSW TSC Act): the Yellow-Bellied Sheath-tail-bat (*Saccolaimus flaviventris*) and the Common Bentwing-bat (*Miniopterus schreibersii*).
- 7.4.3 In GRA's report to Aurecon only mentions the Yellow-Bellied Sheath-tail-bat as vulnerable, but not the Common Bentwing-bat. Presumably this is because the latter was not recorded on survey. However its presence will be very likely. The Common Bentwing-bat is migratory and has been used as a reason for not considering this species significant. There was only one period of observation and populations vary from year to year and season to season. The reported infrequency of observing these micro bats seems to be little justification for coming to the conclusion that any referral under the Act is not warranted.
- 7.4.4 Micro bats are largely insectivorous and consume enormous numbers of insects. Studies in the USA for instance have shown that a colony of just 100 small bats can consume a quarter of a million mosquitoes and other small insects per night which has significant consequences for insect control in Agriculture⁹. Savings to Agriculture can run to the 10's of millions of dollars. But with the advent of wind turbines the death of significant numbers of small bats has meant that costly insect control by chemical insecticides has been required. In 2010 in Pennsylvania it has been estimated that 420 wind turbines killed more than 10,000 small bats. This level of decimation, if extrapolated to Flyers Creek for instance, would result in a mortality rate of 1,000 micro bats per year.
- 7.4.5 Micro bats are nocturnal and therefore feed at night. Their vulnerability to wind turbines is exacerbated by aircraft navigational warning lights which are often required to be sited on wind turbines. The insects that are attracted to the lights in turn attract the bats. Rather than blade strike it has recently been found that the bats are affected by barotrauma due to the moving blades of the wind turbines causing a drop in pressure⁶. Bats have proportionally larger lungs and hearts than most other mammals, and have blood-gas barriers that suddenly expand and are also much thinner. This makes them much more susceptible to barotrauma resulting in pulmonary haemorrhage and ultimately death. The issue of navigational warning

lights is dealt with in Chapter 12. **This is an intractable problem around which the Environmental Assessment skirts.**



Figure 7.5 Micro Bat – Errowanbang

Micro Bats are susceptible to barotrauma and resultant fatalities

- 7.4.6 The EA does suggest that targeted monitoring at relevant times would reveal more information about the annual cycle of the Eastern (Common) **Bentwing bat** to confirm whether or not it is present in the project area at any time of the year. It also suggests monitoring birds and bats for collision mortalities after the turbines commence operation. This will apparently be looking at blade strike which in overseas reports has been shown not to be the reason for the reduction in micro bat populations, although it does seem to be more important with avian mortalities. **It seems unlikely that even if damage to local avifauna and bat fauna occurs that any realistic modification of the operation will occur.**