

# Crookwell 3 Wind Farm Flora & Fauna

## Purpose

Anderson Environmental Consultants Pty Ltd was engaged to prepare an assessment of the potential flora and fauna impacts of the proposed Crookwell 3 Wind Farm. The report was updated in June 2012 to reflect the Draft NSW Wind Farm Planning Guidelines.

The assessment was undertaken to determine the presence or potential presence within the project site of any threatened species, populations or endangered ecological communities as listed under the Threatened Species Conservation Act 1995 and the Environment Protection and Biodiversity Conservation Act 1999.

Initial field investigations were undertaken from late February 2010 to early June 2010. A total of 6 days were spent surveying the site. Extensive targeted threatened species surveys were conducted in the spring/summer seasons from October 2010 to mid-January 2011.

Although no vegetation offset is required for the clearing of vegetation required for the project, an offset is proposed by the proponent.

## Proposed Vegetation Removal and Offsets

Some vegetation removal is an unavoidable consequence of the wind farm project.

The area of native vegetation required to be removed for the Crookwell 3 Wind Farm is approximately 2.34 hectares to allow for the development of:

- Turbines A12, A18, A19 (314sqm for each turbine location, 2,500sqm for each temporary crane hard stand area and approximately 6,000sqm for the combined access tracks for these 3 turbines).

- Greywood Siding Road entire access route (5,000 sqm of vegetation).
- Wollondilly access point and transmission line interconnection (4,000sqm in total).

The proponent has proposed to enter into an agreement with the Hawkesbury Nepean Catchment Management Authority (HNCMA) to provide an offset of 60 hectares for the clearing required for the project (15 ha in perpetuity and an additional 45 ha for the life of the wind farm).

HNCMA have provided their in-principal support for this proposed voluntary offset strategy.

## Key Findings and Impacts

The vegetation across the site is primarily represented by cleared grazing paddock, of which the majority is highly disturbed.

The wind turbines are proposed to be located primarily on cleared grazing lands, as are the access roads and other associated infrastructure.

A desktop review revealed that the following endangered ecological communities and threatened flora species listed in Table 1 had the potential to occur at the site.

The habitats are adjacent and similar to the Crookwell 2 Wind Farm and the ecological report for Crookwell 2 also found that there was unlikely to be any significant impacts on bird or bat species.

The assessment found that no potential bird or bat migratory species were detected on site and that the potential impacts would not interfere with any potential migratory corridors or areas.

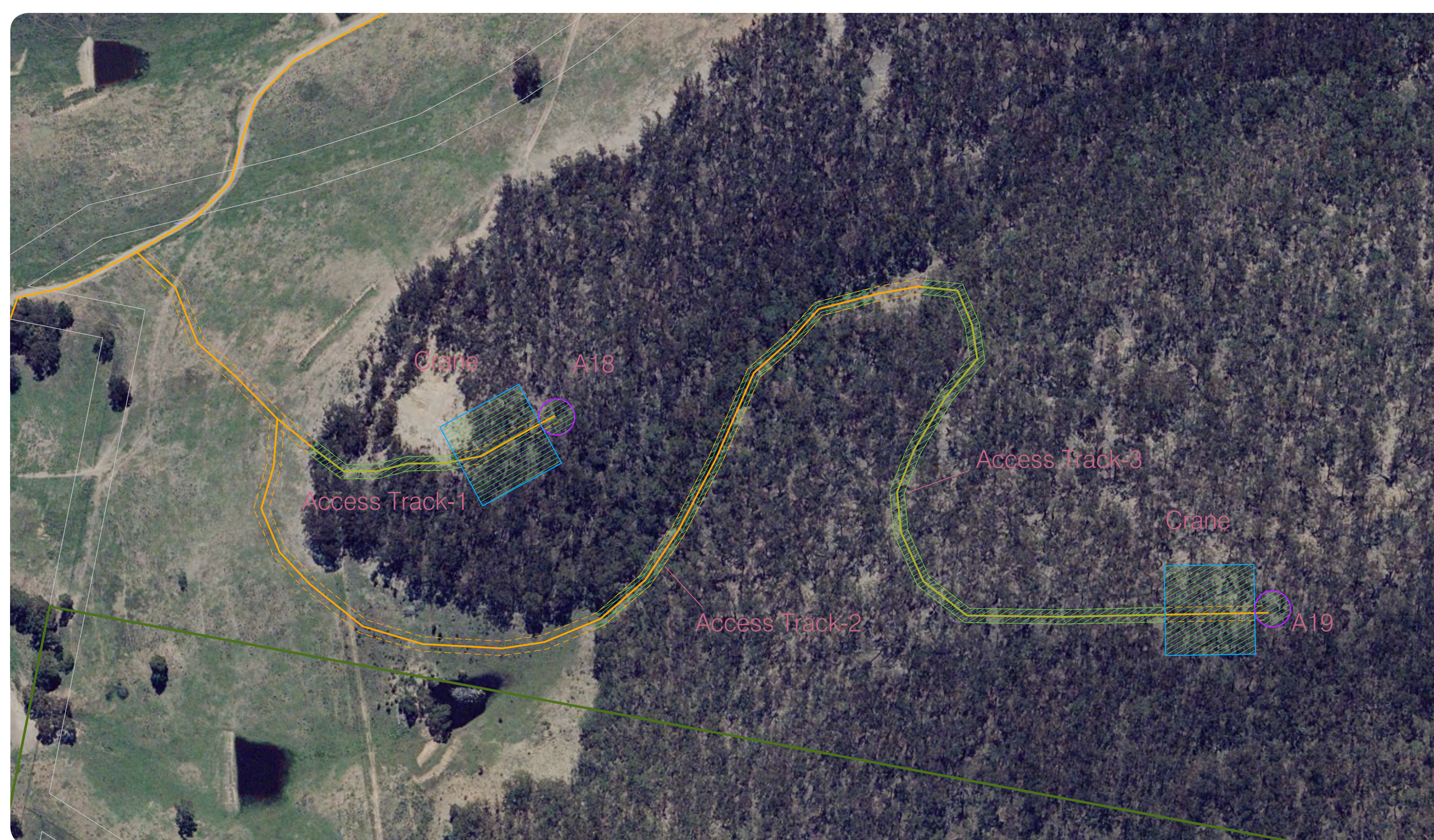
**Table 1:** Endangered ecological communities and threatened species with the potential to occur on site

Species listed under EPBC Act and TSC Act	EPBC	TSC
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	CE	E
Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South Eastern Australia	E	E
Native Temperate Grasslands of the Southern Tablelands of NSW and the Australian Capital Territory	E	Not listed
Tablelands Basalt Forest	Not listed	E
Tablelands Forest Hollow Grassy Woodlands	Not listed	E
Thick-lipped Spider-orchid	V	E
Buttercup Doubletail	V	E
Basalt Pepper-cress	E	E
Hoary Sunray	E	V
Button Wrinklewort	E	E
Kangaloon Sun Orchid	CE	Not listed
Small Purple Pea	E	E
Tarengo Leek Orchid	E	E
Regent Honeyeater	E	E
Swift Parrot	E	E
Australian Painted Snipe	V	E
Glossy Black Cockatoo	V	E
Booroolong Frog	E	E
Yellow-spotted Tree Frog	CE	E
Growling Grass Frog	V	E
Golden Sun Moth	CE	E
Tiger Quoll	E	V
Brush-tailed Rock Wallaby	V	E
Macquarie Perch	E	Not listed
Grassland Earless Dragon	E	E
Broad-headed Snake	V	E

Key: CE= Critically Endangered, E= Endangered, V= Vulnerable



**Figure 1:** Vegetation Removal Plan - Crookwell 3 East Area 1



**Figure 2:** Vegetation Removal Plan - Crookwell 3 East Area 2



**Figure 3:** Vegetation Removal Plan - Crookwell 3 South

*The results of both the initial field surveys and additional targeted surveys detected no Endangered Ecological Communities or individual threatened species listed under either the EPBC Act or the TSC Act within the site. Accordingly, the project is not considered, for this reason, to be a controlled action which requires approval under the EPBC Act. As many of the existing access roads within the site will be used for the project, the level of impact on the land is reduced. As the land is already fragmented there are considered to be no likely biodiversity corridor impacts.*

The assessment found that the potential losses of bats or raptors due to impacts with turbines to be 'extremely low', and losses of birds due to impacts with turbines to be 'low'.

No bird or bat species are likely to have their foraging areas or migratory patterns significantly disturbed by the proposal.

## Response to Findings

The following recommendations in relation to the implementation of the project are intended to minimise any potential impacts on flora and fauna:

### Bat Monitoring and Habitat Tree Inspections

Potential hollow habitat trees (that require removal) should be identified by ecological survey, and be stag watched at dusk to determine usage by any threatened microchiropteran bats. Accessible tree hollows that require removal should be inspected for fauna prior to removal to ensure that no species present in the hollow are harmed during removal. An Ecologist should be present on site when any hollow trees are removed to assist in relocating any fauna which may be found to occur.

### Bird Monitoring and Bat Strike Monitoring

An additional baseline pre-commissioning survey should be undertaken at each turbine site during the spring/summer season. This would provide baseline data for the bird and bat strike monitoring study which should be undertaken during the first year of the operation of the wind farm.

### Vegetation/Ecological Restoration Management Plan

A vegetation/ecological restoration plan should be undertaken for the areas that are disturbed as part of the construction works so they can be rehabilitated once construction is finalised. This would entail details for the management of any areas of native vegetation to be disturbed and the method and timing for their restoration along with specifics or habitat restoration for fauna and weed management.

### Riparian Vegetation Management Plan

A riparian vegetation management plan should be undertaken for the proposed creek crossings. This would only be required for areas where there is any native vegetation to be disturbed.