

Table 14: Species Requiring Targeted Survey

| Species Name | Common Name | Underwent Targeted Survey | Species Recorded in Study Area | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|--|--|---------------------------|--------------------------------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| <i>Circus assimilis</i> | Spotted Harrier | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Dichanthium setosum</i> | Bluegrass | Yes | Yes | Yes | Yes | Yes | Yes | Yes | | | | | | | Yes |
| <i>Diuris pedunculata</i> | Small Snake Orchid | Yes | No | | | | | | | | | Yes | Yes | Yes | |
| <i>Eucalyptus nicholii</i> | Narrow-leaved Black Peppermint | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Hieraaetus morphnoides</i> | Little Eagle | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Hoplocephalus bitorquatus</i> | Pale-headed Snake | Yes | No | Yes | Yes | Yes | Yes | | | | | | Yes | Yes | Yes |
| <i>Litoria booroolongensis</i> | Booroolong Frog | No (see expert report) | | Yes | Yes | | | | | | | | | Yes | Yes |
| <i>Lophoictinia isura</i> | Square-tailed Kite | Yes | No | Yes | Yes | Yes | | | | | | Yes | Yes | Yes | Yes |
| <i>Picris evae</i> | Hawkweed | Yes | No | Yes | Yes | | | | | | | Yes | Yes | Yes | Yes |
| <i>Poephila cincta cincta</i> | Black-throated Finch (southern subspecies) | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Polygala linearifolia</i> | Native Milkwort | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| <i>Pteropus poliocephalus</i> (Breeding Habitat) | Grey-headed Flying-fox (Breeding Habitat) | Yes | No | Yes | Yes | Yes | Yes | Yes | | | | Yes | Yes | Yes | Yes |
| <i>Thesium australe</i> | Austral Toadflax | Yes | Yes | Yes | Yes | | | | | | | Yes | Yes | Yes | Yes |
| <i>Underwoodisaurus sphyrurus</i> | Border Thick-tailed Gecko | Yes | No | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |



Survey January 2011
 Survey April and May 2009
 Survey October 2008
 Survey September to December 2008 and September to December 2010

2.9 CHANGE IN FUTURE SITE VALUE SCORES

Each vegetation zone has been split into several management zones reflecting whether the impact of the development is permanent (roads, turbine pads etc) or temporary (areas that will undergo revegetation works including road edges, batching plants and earthworks). For each of these areas several assumptions have been made when determining the future site value score.

During the planning and construction of the wind farm, areas of dense trees and mature trees have been avoided where possible. While it is recognised that some impact will be unavoidable, the impact will be less than complete clearing of the over-storey and therefore the future site value for over-storey cover has not been reduced to 0.

The maximum future scores for each of the 10 attributes are listed below, along with the assumptions that have been made (Table 15 and Table 16). Different scores are assigned to areas in low condition/native pasture than to the areas with trees as impacts are likely to be different between these areas (e.g. impacts on over-storey tree species will not occur in native pasture areas, but may occur in treed areas. Additional information on the future site value scores is contained in Appendix 3.

Table 15: Future Site Value Scores- Native Pasture and Low condition

| Attribute | Maximum Future Site Value-Permanent Loss | Reason | Maximum Future Site Value-Temporary Loss | Reason |
|--------------------------|--|---|--|--|
| Native Species Richness | 0 | Impact will be permanent for ground cover, which is the predominant cover in native pasture and grassland areas | 1 | Revegetation will provide some species richness after clearing |
| Native Over-Storey | 0 | No native over-storey cover | 0 | No native over-storey cover |
| Native Mid-Storey | 0 | No native mid-storey cover | 0 | No native mid-storey cover |
| Ground Cover-Grasses | 0 | Will be removed | 1 | Revegetation will return some ground cover- grasses |
| Ground Cover-Shrubs | 0 | Will be removed | 1 | Revegetation will return some ground cover- shrubs |
| Ground Cover-Other | 0 | Will be removed | 1 | Revegetation will return some ground cover- other |
| Exotic Cover | 0 | Will be removed | 1 | Revegetation and management will reduce exotic cover |
| Hollows | 1 | Very few hollows occur, however if they do they will be avoided where possible | 1 | Very few hollows occur, however if they do they will be avoided where possible |
| Over-storey Regeneration | 0 | Will be removed | 1 | Revegetation will return some over-storey regeneration |
| Fallen Logs | 0 | Will be removed | 1 | Fallen logs will be returned where initially present |

Table 16: Future Site Value Scores- Trees

| Attribute | Maximum Future Site Value-Permanent Loss | Reason | Maximum Future Site Value-Temporary Loss | Reason |
|--------------------------|--|--|--|---|
| Native Species Richness | 1 | Impact will be permanent for ground cover, however the development intends to avoid mature trees and these will be retained where possible | 2 | Impact will avoid mature trees, where possible, and revegetation will replace some ground cover species |
| Native Over-Storey | 1 | Mature trees are to be avoided, but some impact may occur | 1 | Mature trees are to be avoided, but some impact may occur |
| Native Mid-Storey | 1 | Mid-storey is to be avoided, but some impact may occur | 1 | Mid-storey is to be avoided, but some impact may occur |
| Ground Cover-Grasses | 0 | Will be removed | 1 | Revegetation will return some ground cover- grasses |
| Ground Cover-Shrubs | 0 | Will be removed | 1 | Revegetation will return some ground cover- shrubs |
| Ground Cover-Other | 0 | Will be removed | 1 | Revegetation will return some ground cover- other |
| Exotic Cover | 0 | Will be removed | 1 | Revegetation and management will reduce exotic cover |
| Hollows | 2 | Hollow trees will be avoided, but some impacts may occur | 2 | Hollow trees will be avoided, but some impacts may occur |
| Over-storey Regeneration | 0 | Will be removed | 1 | Revegetation will return some over-storey regeneration |
| Fallen Logs | 0 | Will be removed | 1 | Fallen logs will be returned where initially present |

2.10 THREATENED SPECIES SUB ZONES

Threatened species sub zones, which form the base units of vegetation zones, were mapped for the impact. The threatened species sub zones are the base units entered into the credit calculator, and allow the entry of data such as adjacent remnant area and patch size for individual vegetation polygons (Table 17). Different threatened species sub zones are also required for different assessment circles.

As the vegetation on and surrounding the site is predominantly in moderate/good condition, and generally patches are within 100m, the maximum Adjacent Remnant Area and Patch Size (including Low Condition) of 501 hectares has been entered into the credit calculator.

Table 17: Threatened Species Sub Zones

| TS Sub Zone ID | Vegetation Type | Condition | Ancillary Code | Adjacent Remnant Area (ha) | Patch Size (ha) | Assessment Circles | Area (ha) |
|----------------|---|-----------|----------------|----------------------------|-----------------|--------------------|-----------|
| 1 | Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | Low | | 0 | 501 | 0-10% | 5.5 |
| 2 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | Low | | 0 | 501 | 0-10% | 26.1 |
| 3 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | M/G | Native Pasture | 501 | 501 | 0-10% | 15.5 |
| 4 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | M/G | Trees | 501 | 501 | 0-10% | 22.8 |
| 5 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | Low | | 0 | 501 | 0-10% | 1.1 |
| 6 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | M/G | Native Pasture | 501 | 501 | 0-10% | 6.1 |
| 7 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | M/G | Trees | 501 | 501 | 0-10% | 2.4 |
| 8 | Black Cypress Pine - Tumbledown Gum - Narrow-leaved Ironbark open forest of northern parts of the Nandewar Bioregion | M/G | Native Pasture | 501 | 501 | 21-30% | 1.3 |
| 9 | Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | M/G | Native Pasture | 501 | 501 | 21-30% | 4 |
| 10 | Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | M/G | Trees | 501 | 501 | 21-30% | 0.5 |
| 11 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | Low | | 0 | 501 | 21-30% | 17.7 |
| 12 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | M/G | Native Pasture | 501 | 501 | 21-30% | 31.5 |

| TS Sub Zone ID | Vegetation Type | Condition | Ancillary Code | Adjacent Remnant Area (ha) | Patch Size (ha) | Assessment Circles | Area (ha) |
|----------------|---|------------|----------------|----------------------------|-----------------|--------------------|--------------|
| 13 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | M/G | Trees | 501 | 501 | 21-30% | 24.1 |
| 14 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | Low | | 0 | 501 | 21-30% | 3.2 |
| 15 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | M/G | Native Pasture | 501 | 501 | 21-30% | 3.5 |
| 16 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | M/G | Trees | 501 | 501 | 21-30% | 4 |
| 17 | Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | M/G | Native Pasture | 501 | 501 | 51-60% | 6.6 |
| 18 | Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | M/G | Trees | 501 | 501 | 51-60% | 1 |
| 19 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | Low | | 0 | 501 | 51-60% | 6.7 |
| 20 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | M/G | Native Pasture | 501 | 501 | 51-60% | 42.9 |
| 21 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | M/G | Trees | 501 | 501 | 51-60% | 53.6 |
| 22 | Tenterfield Woollybutt - Silvertop Stringybark open forest of the New England Tablelands | M/G | Trees | 501 | 501 | 51-60% | 1.1 |
| 23 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | M/G | Native Pasture | 501 | 501 | 51-60% | 4.7 |
| 24 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | M/G | Trees | 501 | 501 | 51-60% | 2.9 |
| Total | N/A | N/A | N/A | N/A | N/A | N/A | 288.8 |

2.11 MANAGEMENT ZONES AND SITE SCORES

Management zones combine the mapping of vegetation zones with the final development outcome on site (Table 18). They enable the assessor to increase, or decrease, the number of credits required depending on the final condition of the vegetation after development. As described in Section 2.9 two types of management zones have been identified for the project, including;

- Areas of permanent vegetation removal;
- Areas of temporary vegetation removal to be revegetated and managed as native vegetation.

Each management zone has received a current site value score calculated out of 100. This score has been determined using the transects/plots undertaken on site (including the data generated by the Paddock Tree Calculator). The future scores have then been calculated using the rules outlined in Section 2.9. The area of each management zone, the final management outcome and the site values scores allocated are listed in Table 18 below.

Table 18: Management Zone Site Value Scores

| Management Zone ID | Final Management Outcome | Vegetation Zone ID | Area (ha) | Current Site Value | Future Site Value | Loss in Site Value |
|--------------------|--------------------------|--------------------|--------------|--------------------|-------------------|--------------------|
| 1 | Permanent Loss | 1 | 0.9 | 33 | 4 | 29 |
| 2 | Temporary Loss | 1 | 0.4 | 33 | 18 | 15 |
| 3 | Temporary Loss | 2 | 5.5 | 5 | 5 | 0 |
| 4 | Permanent Loss | 3 | 6.1 | 13 | 4 | 9 |
| 5 | Temporary Loss | 3 | 4.5 | 13 | 12 | 1 |
| 6 | Permanent Loss | 4 | 1 | 51 | 14 | 37 |
| 7 | Temporary Loss | 4 | 0.5 | 51 | 30 | 20 |
| 8 | Permanent Loss | 5 | 14.3 | 14 | 5 | 9 |
| 9 | Temporary Loss | 5 | 36.2 | 14 | 12 | 1 |
| 10 | Permanent Loss | 6 | 33.3 | 29 | 5 | 24 |
| 11 | Temporary Loss | 6 | 56.6 | 29 | 19 | 10 |
| 12 | Permanent Loss | 7 | 68.6 | 71 | 19 | 52 |
| 13 | Temporary Loss | 7 | 31.9 | 71 | 40 | 31 |
| 14 | Permanent Loss | 8 | 0.6 | 33 | 7 | 26 |
| 15 | Temporary Loss | 8 | 0.5 | 33 | 22 | 10 |
| 16 | Permanent Loss | 9 | 2.7 | 10 | 4 | 6 |
| 17 | Temporary Loss | 9 | 1.6 | 10 | 10 | 0 |
| 18 | Permanent Loss | 10 | 7.9 | 21 | 4 | 17 |
| 19 | Temporary Loss | 10 | 6.4 | 21 | 16 | 5 |
| 20 | Permanent Loss | 11 | 5.2 | 53 | 14 | 39 |
| 21 | Temporary Loss | 11 | 4.1 | 53 | 30 | 22 |
| Total | N/A | N/A | 288.8 | N/A | N/A | N/A |

2.12 THREATENED SPECIES HABITAT

Fauna and flora survey methods and locations are shown in Figures 4 and 5 of ELA 2011a.

Seven threatened bird species and six threatened microbats were recorded within the study area:

- Brown Treecreeper (*Climacteris picumnus victoriae*);
- Hooded Robin (*Melanodryas cucullata cucullata*);
- Scarlet Robin (*Petroica boodang*);
- Diamond Firetail (*Stagonopleura guttata*);
- Little Lorikeet (*Glossopsitta pusilla*);
- Turquoise Parrot (*Neophema pulchella*);
- Speckled Warbler (*Pyrrholaemus saggitatus*);
- Eastern False Pipistrelle (*Falsistrellus tasmaniensis*);
- Common Bentwing-bat (*Miniopterus schreibersii*);
- Eastern Freetail-bat (*Mormopterus norfolkensis*);
- Yellow-bellied Sheath-tail-bat (*Saccolaimus flaviventris*);
- Greater Broad-nosed Bat (*Scoteanax rueppellii*); and
- Eastern Cave Bat (*Vespadelus troughtoni*).

The locations of these records are shown in Figures 8 of ELA 2011a. The woodland birds and bats listed above, although recorded on site, do not require species credits as they are considered during the calculation for ecosystem credits on site. .

The Regent Honey-eater and Border Thick-tailed Gecko were not recorded on site, however, given the seasonal and annual variation in the foraging nature of the Regent Honey-eater and the difficulty in detecting the cryptic Border Thick-tailed Gecko, expert opinion was used to define the area of suitable habitat for each species (Figures 9 and 10 of ELA 2011a).

Although not detected on site, potential and marginal potential habitat for the Border Thick-tailed Gecko (*Underwoodisaurus sphyrurus*) was identified and is to be impacted by the proposal (Table 19). As this species is highly cryptic, and difficult to detect during surveys, ELA have adopted the precautionary principle and calculated credits for impact on the potential habitat.

Three threatened flora species were identified on site and are shown in Figure 8 of ELA 2011a:

- *Dichanthium setosum*,
- *Eucalyptus mckieana*; and
- *Thesium australe*.

Species credits are not required for the above listed threatened flora species as all impacts on these species will be avoided during construction and operation of the wind farm.

Table 19: Border Thick-tailed Gecko Habitat Impacted

| Habitat Type | Total Habitat Mapped in Study Area (ha) | Area of Habitat Impacted (ha) | Percentage of Habitat Impacted |
|--------------------|---|-------------------------------|--------------------------------|
| Potential | 127.3 | 18.7 | 14.7 |
| Marginal Potential | 1,791.8 | 272.4 | 15.2 |
| Total | 1,919.1 | 291.1 | 15.2 |

2.13 INDIRECT IMPACTS

Due to the relatively low impact of the development over the study area, the mitigation measures proposed and the revegetation of some areas with local provenance, significant indirect impacts on the lands surrounding the study site are considered unlikely. Therefore the calculation of additional credits for indirect impacts was not required for the Sapphire wind farm site.

2.14 RED FLAGS

A red flag is triggered in Biobanking when there is an impact on any of the following:

- A vegetation type >70% cleared in the CMA for which it is mapped (not in Low condition);
- A critically endangered or endangered ecological community (EEC) listed under the TSC Act or EPBC Act (not in Low condition);
- A threatened species that cannot withstand further loss

Significant effort has been made to avoid impacts on vegetation and habitat, particularly in red flag areas resulting in a number of different turbine layouts during the planning phase. Where possible impacts have been moved to cleared land, or areas of lower condition, to minimise the effect of the development, and parts of the development, such as roads and turbine locations, will also be moved to avoid the removal of mature over-storey trees.

Two of the biometric vegetation types meet the definition of White Box - Yellow Box - Blakely's Red Gum grassy woodland EEC (listed on the schedules of the EPBC Act and TSC Act) are impacted by the proposal, including:

- Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands;
- White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions.

Another vegetation type (Manna Gum – Rough-barked Apple – Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast) meets the definition of the Ribbon Gum, Mountain Gum, Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion EEC, listed under the NSW TSC Act. Note that the Biobanking Credit Calculator did not allow this vegetation type to be selected as an EEC.

In total 122.1 hectares of red flagged vegetation is to be permanently cleared by the proposal, with a further 104.0 hectares to be temporarily cleared (Table 20 and Figure 6).

Table 20: Red Flag Vegetation

| Revised Biometric Vegetation Type | TSC Act EEC | EPBC Act EEC | Area Impacted-Permanent (ha) | Area Impacted-Temporary (ha) | Total Area Impacted (ha) | Reason for Red Flag |
|---|--|--|------------------------------|------------------------------|--------------------------|----------------------|
| Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) | White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box-Gum Woodland) | 7.1 | 5.0 | 12.1 | EEC and >70% cleared |
| Manna Gum – Rough-barked Apple – Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | Ribbon Gum, Mountain Gum, Snow Gum Grassy Forest/Woodland of the New England Tableland Bioregion | | 101.9 | 88.5 | 190.4 | EEC and >70% cleared |
| White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | White Box Yellow Box Blakely's Red Gum Woodland (Box-Gum Woodland) | White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland (Box-Gum Woodland) | 13.1 | 10.5 | 23.6 | EEC and >70% cleared |
| Total | N/A | N/A | 122.1 | 104.0 | 226.1 | N/A |

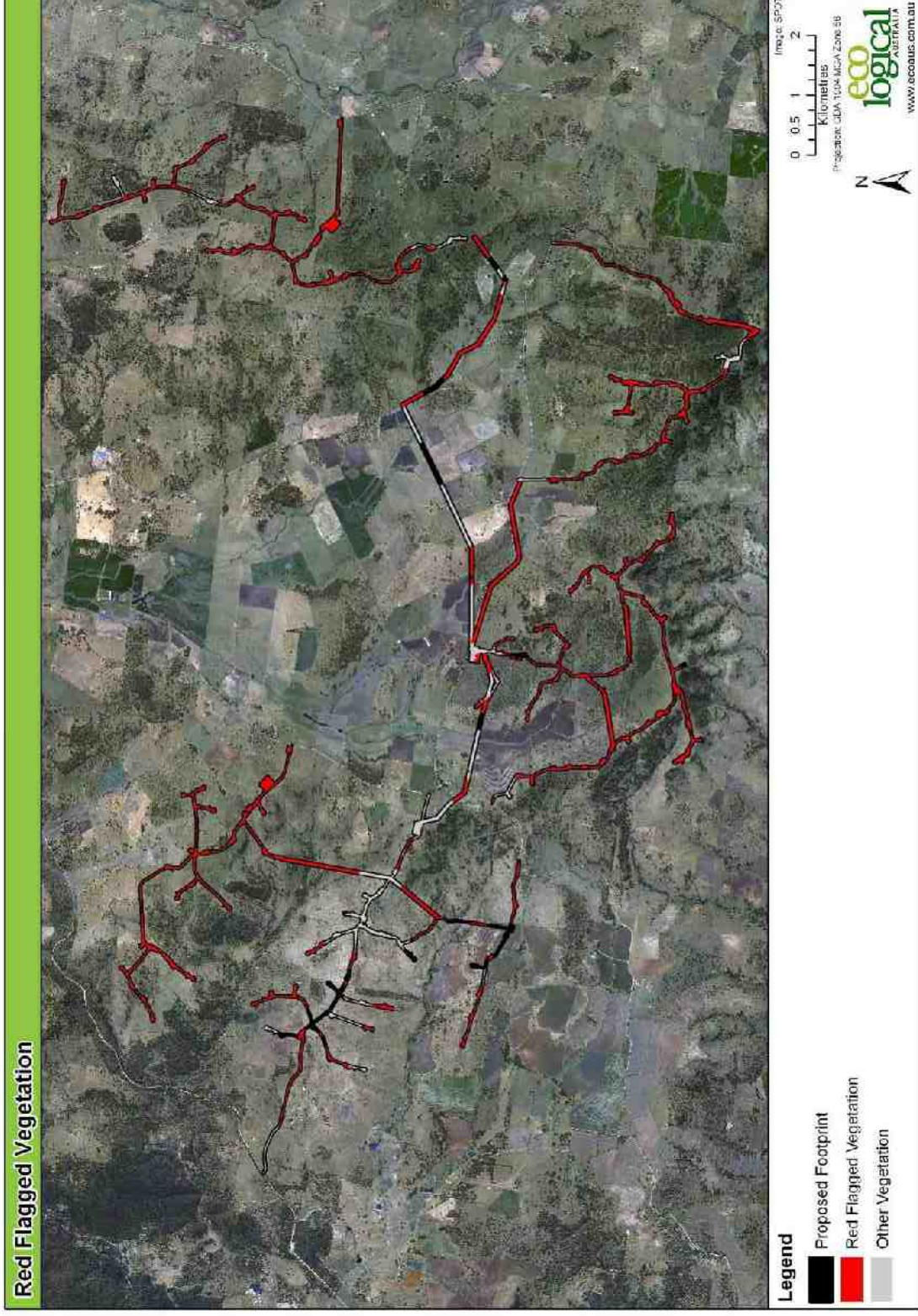


Figure 6: Red Flagged Vegetation

3 Credits Required

The results of the credit calculations, including the number of credits required and credit profile information, are summarised in the following sections. A copy of the credit report is provided in Appendix 4.

3.1 ECOSYSTEM CREDITS

A total of 5,464 ecosystem credits are required. Table 21 provides a summary of the credits required. In general credits can be obtained from a wide range of CMA Subregions and vegetation types for all vegetation communities impacted. The largest offsets will be required for Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast and White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions. The actual credit profile can be seen in Appendix 4.

Table 21: Ecosystem Credits Required and Credit Profile

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|--|----------------------------|---|--|
| 1 | Black Cypress Pine - Tumbledown Gum - Narrow-leaved Ironbark open forest of northern parts of the Nandewar Bioregion | 23 | <p>Border Rivers/Gwydir Binghi Plateau Bundarra Downs (Part A) Deepwater Downs Eastern Nandewars (Part B) Glen Innes-Guyra Basalts Inverell Basalts Moredun Volcanics Nandewar, Northern Complex Peel Severn River Volcanics Tingha Plateau</p> <p>Central West Pilliga</p> | <p>Border Rivers/Gwydir Black Cypress Pine - Tumbledown Gum - Narrow-leaved Ironbark open forest of northern parts of the Nandewar Bioregion (BR110) Narrow-leaved Ironbark shrubby woodland of the Brigalow Belt South bioregion (BR164) Rough-barked Apple - Silvertop Stringybark - Red Stringybark grassy open forest of south western New England Tablelands (BR198) Tumbledown Gum - Blakely's Red Gum - pine shrubby forest of the Nandewar Bioregion (BR228) White Box - White Cypress Pine - Silver-leaved Ironbark shrubby open forest of the Nandewar Bioregion (BR238) White Cypress Pine - Silver-leaved Ironbark - Tumbledown Red Gum shrubby open forest of the Nandewar and Brigalow Belt South Bioregions (BR243)</p> <p>Central West Long-leaved Box - Red Box - Red Stringybark sheltered open forest of the NSW South Western Slopes Bioregion (Benson 287) (CW149) Mugga Ironbark - Inland Grey Box - pine tall woodland of the NSW South Western Slopes Bioregion (Benson 217) (CW155) Mugga Ironbark - Inland Grey Box shrubby woodland of the Brigalow Belt South Bioregion (CW156) Narrow-leaved Ironbark shrubby woodland of the Brigalow Belt South bioregion (CW160) Slaty Gum woodland of the slopes of the southern Brigalow Belt South Bioregion (CW191) White Box - Tumbledown Gum woodland on fine-grained sediments on the NSW central western slopes (Benson 270) (CW212) White Box shrubby open forest on fine grained sediments on steep slopes in the Mudgee region of the of central western slopes of NSW (Benson 273) (CW217)</p> <p>Hawkesbury/Nepean Red Bloodwood - Grey Gum woodland on the edges of the Cumberland Plain, Sydney Basin (HN564)</p> <p>Hunter/Central Rivers Slaty Box - Grey Gum shrubby woodland on footslopes of the upper Hunter</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|---|----------------------------|--|--|
| | | | <p>Karuah Manning Kerrabee Upper Hunter Wollemi (Part A) Wollemi (Part B) Wollemi (Part C) Wyong Yengo</p> <p>Namoi Peel</p> | <p>Valley, Sydney Basin (HU618)</p> <p>Namoi Narrow-leaved Ironbark grassy woodland of the Brigalow Belt South bioregion (NA164) Narrow-leaved Ironbark shrubby woodland of the Brigalow Belt South bioregion (NA165) White Cypress Pine - Narrow-leaved Ironbark shrub/grass open forest of the western Nandewar Bioregion (NA228) White Cypress Pine - Silver-leaved Ironbark - Tumbledown Red Gum shrubby open forest of the Nandewar and Brigalow Belt South Bioregions (NA229) White Cypress Pine - Silver-leaved Ironbark shrubby open forest of the Nandewar Bioregion (NA231)</p> <p>Northern Rivers Western New England Blackbutt shrubby open forest of the New England Tablelands (NR277)</p> |
| 2 | Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | 18 | <p>Northern Rivers Armisdale Plateau Clarence Lowlands Clarence Sandstones Stanthorpe Plateau Wongwibinda Plateau</p> <p>Border Rivers/Gwydir Eastern Nandewars (Part B) Glen Innes-Guyra Basalts Moredun Volcanics</p> <p>Namoi Peel</p> <p>Northern Rivers</p> | <p>Border Rivers/Gwydir Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (BR116)</p> <p>Namoi Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NA113)</p> <p>Northern Rivers</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|---|----------------------------|--|---|
| | | | <p>Armidale Plateau Clarence Lowlands Clarence Sandstones Stanthorpe Plateau Wongwibinda Plateau</p> | <p>Black Sallee grassy woodland of the New England Tablelands (NR113) Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NR127) Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203) (NR165) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NR186) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214) Snow Gum - Black Sallee grassy woodland of the New England Tablelands (NR237) Snow Gum - Mountain Gum - Mountain Ribbon Gum open forest of the eastern New England Tablelands and North Coast (NR239) Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283)</p> |
| 3 | Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | 153 | <p>Border Rivers/Gwydir Eastern Nandewars (Part B) Glen Innes-Guyra Basalts Moredun Volcanics</p> <p>Namoi Peel</p> <p>Northern Rivers Armidale Plateau Clarence Lowlands Clarence Sandstones Stanthorpe Plateau Wongwibinda Plateau</p> | <p>Border Rivers/Gwydir Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (BR116)</p> <p>Namoi Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NA113)</p> <p>Northern Rivers Black Sallee grassy woodland of the New England Tablelands (NR113) Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NR127) Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203) (NR165) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NR186) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214) Snow Gum - Black Sallee grassy woodland of the New England Tablelands (NR237) Snow Gum - Mountain Gum - Mountain Ribbon Gum open forest of the eastern New England Tablelands and North Coast (NR239)</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|---|----------------------------|---|---|
| 4 | Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | 47 | <p>Border Rivers/Gwydir Eastern Nandewars (Part B) Glen Innes-Guyra Basalts Moredun Volcanics</p> <p>Namoi Peel</p> <p>Northern Rivers Armidade Plateau Clarence Lowlands Clarence Sandstones Stanthorpe Plateau Wongwibinda Plateau</p> | <p>Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283)</p> <p>Border Rivers/Gwydir Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (BR116)</p> <p>Namoi Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NA113)</p> <p>Northern Rivers Black Sallee grassy woodland of the New England Tablelands (NR113) Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NR127) Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203) (NR165) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NR186) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214) Snow Gum - Black Sallee grassy woodland of the New England Tablelands (NR237) Snow Gum - Mountain Gum - Mountain Ribbon Gum open forest of the eastern New England Tablelands and North Coast (NR239) Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283)</p> |
| 5 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | 589 | <p>Border Rivers/Gwydir Eastern Nandewars (Part B) Glen Innes-Guyra Basalts Moredun Volcanics Northeast Forest Lands Tenterfield Plateau</p> <p>Hawkesbury/Nepean</p> | <p>Border Rivers/Gwydir Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (BR116) Broad-leaved Stringybark - Blakely's Red Gum grassy woodlands of the New England Tablelands (BR121) Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203) (BR142) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (BR153)</p> <p>Hawkesbury/Nepean</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|-----------------|----------------------------|--|---|
| | | | Yengo | <p>Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin (HN528)</p> <p>Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin (HN529)</p> <p>Ribbon Gum - Yellow Box grassy woodland on undulating terrain of the eastern tablelands, South Eastern Highlands (HN573)</p> |
| | | | <p>Hunter/Central Rivers</p> <p>Ellerston</p> <p>Hunter</p> <p>Karuah Manning</p> <p>Liverpool Range</p> <p>Mummel Escarpment</p> <p>Pilliga</p> <p>Tomalla</p> <p>Upper Hunter</p> <p>Walcha Plateau</p> <p>Wollemi (Part A)</p> <p>Wollemi (Part B)</p> <p>Wollemi (Part C)</p> <p>Wyong</p> <p>Yengo</p> | <p>Hunter/Central Rivers</p> <p>Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (HU515)</p> <p>Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the North Coast and New England Tablelands (HU597)</p> <p>River Red Gum - Yellow Box riparian woodland in the Hunter Valley (Benson 42) (HU599)</p> |
| | | | <p>Namoi</p> <p>Peel</p> | <p>Namoi</p> <p>Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NA113)</p> <p>Broad-leaved Stringybark - Blakely's Red Gum grassy woodlands of the New England Tablelands (NA118)</p> <p>Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NA149)</p> |
| | | | <p>Northern Rivers</p> <p>Armidale Plateau</p> <p>Carrai Plateau</p> <p>Cataract</p> | <p>Northern Rivers</p> <p>Black Sallee grassy woodland of the New England Tablelands (NR113)</p> <p>Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NR127)</p> <p>Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203)</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|---|----------------------------|--|---|
| | | | <p>Chaelundi</p> <p>Clarence Lowlands</p> <p>Clarence Sandstones</p> <p>Coffs Coast & Escarpment</p> <p>Comboyne Plateau</p> <p>Dalmorton</p> <p>Ebor Basalts</p> <p>Glen Innes-Guyra Basalts (Part A)</p> <p>Guy Fawkes</p> <p>Macleay Gorges</p> <p>Macleay Hastings</p> <p>Nightcap</p> <p>Northeast Forest Lands</p> <p>Rocky River Gorge</p> <p>Stanthorpe Plateau</p> <p>Walcha Plateau</p> <p>Wongwibinda Plateau</p> <p>Woodenbong</p> | <p>(NR165)</p> <p>Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NR186)</p> <p>New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214)</p> <p>Snow Gum - Black Sallee grassy woodland of the New England Tablelands (NR237)</p> <p>Snow Gum - Mountain Gum - Mountain Ribbon Gum open forest of the eastern New England Tablelands and North Coast (NR239)</p> <p>Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283)</p> |
| 6 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | 1,219 | <p>Border Rivers/Gwydir</p> <p>Eastern Nandewars (Part B)</p> <p>Glen Innes-Guyra Basalts</p> <p>Moredun Volcanics</p> <p>Northeast Forest Lands</p> <p>Tenterfield Plateau</p> <p>Hawkesbury/Nepean</p> <p>Yengo</p> <p>Hunter/Central Rivers</p> | <p>Border Rivers/Gwydir</p> <p>Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (BR116)</p> <p>Broad-leaved Stringybark - Blakely's Red Gum grassy woodlands of the New England Tablelands (BR121)</p> <p>Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203) (BR142)</p> <p>Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (BR153)</p> <p>Hawkesbury/Nepean</p> <p>Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin (HN528)</p> <p>Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin (HN529)</p> <p>Ribbon Gum - Yellow Box grassy woodland on undulating terrain of the eastern tablelands, South Eastern Highlands (HN573)</p> <p>Hunter/Central Rivers</p> <p>Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|-----------------|----------------------------|--|---|
| | | | <p>Ellerston Hunter Karuah Manning Liverpool Range Mummel Escarpment Pilliga Tomalla Upper Hunter Walcha Plateau Wollemi (Part A) Wollemi (Part B) Wollemi (Part C) Wyong Yengo</p> <p>Namoi Peel</p> | <p>England Tablelands (HU515) Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the North Coast and New England Tablelands (HU597) River Red Gum - Yellow Box riparian woodland in the Hunter Valley (Benson 42) (HU599)</p> |
| | | | <p>Namoi Peel</p> <p>Northern Rivers Armida Plateau Carrai Plateau Cataract Chaelundi Clarence Lowlands Clarence Sandstones Coffs Coast & Escarpment Comboyne Plateau Dalmorton Ebor Basalts Glen Innes-Guyra Basalts (Part A) Guy Fawkes Macleay Gorges</p> | <p>Namoi Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NA113) Broad-leaved Stringybark - Blakely's Red Gum grassy woodlands of the New England Tablelands (NA118) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NA149)</p> <p>Northern Rivers Black Sallee grassy woodland of the New England Tablelands (NR113) Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NR127) Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203) (NR165) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NR186) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214) Snow Gum - Black Sallee grassy woodland of the New England Tablelands (NR237) Snow Gum - Mountain Gum - Mountain Ribbon Gum open forest of the eastern New England Tablelands and North Coast (NR239) Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283)</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|---|----------------------------|---|---|
| 7 | Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | 2,878 | <p>Macleay Hastings Nightcap Northeast Forest Lands Rocky River Gorge Stanthorpe Plateau Walcha Plateau Wongwibinda Plateau Woodenbong</p> <p>Border Rivers/Gwydir Eastern Nandewars (Part B) Glen Innes-Guyra Basalts Moredun Volcanics Northeast Forest Lands Tenterfield Plateau</p> <p>Hawkesbury/Nepean Yengo</p> <p>Hunter/Central Rivers Ellerston Hunter Karuah Manning Liverpool Range Mummel Escarpment Pilliga Tomalla Upper Hunter Walcha Plateau Wollemi (Part A)</p> | <p>Border Rivers/Gwydir Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (BR116) Broad-leaved Stringybark - Blakely's Red Gum grassy woodlands of the New England Tablelands (BR121) Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203) (BR142) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (BR153)</p> <p>Hawkesbury/Nepean Grey Box - Forest Red Gum grassy woodland on flats of the Cumberland Plain, Sydney Basin (HN528) Grey Box - Forest Red Gum grassy woodland on shale of the southern Cumberland Plain, Sydney Basin (HN529) Ribbon Gum - Yellow Box grassy woodland on undulating terrain of the eastern tablelands, South Eastern Highlands (HN573)</p> <p>Hunter/Central Rivers Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (HU515) Ribbon Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the North Coast and New England Tablelands (HU597) River Red Gum - Yellow Box riparian woodland in the Hunter Valley (Benson 42) (HU599)</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|---|----------------------------|---|--|
| | | | <p>Wollemi (Part B) Wollemi (Part C) Wyong Yengo</p> <p>Namoi Peel</p> <p>Northern Rivers Armidale Plateau Carrai Plateau Cataract Chaelundi Clarence Lowlands Clarence Sandstones Coffs Coast & Escarpment Comboyne Plateau Dalmorton Ebor Basalts Glen Innes-Guyra Basalts (Part A) Guy Fawkes Macleay Gorges Macleay Hastings Nightcap Northeast Forest Lands Rocky River Gorge Stanthorpe Plateau Walcha Plateau Wongwibinda Plateau Woodenbong</p> <p>Border Rivers/Gwydir Eastern Nandewars (Part B)</p> | <p>Namoi Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NA113) Broad-leaved Stringybark - Blakely's Red Gum grassy woodlands of the New England Tablelands (NA118) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NA149)</p> <p>Northern Rivers Black Sallee grassy woodland of the New England Tablelands (NR113) Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands (NR127) Fuzzy Box open forest of the New England Tableland Bioregion (Benson 203) (NR165) Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NR186) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214) Snow Gum - Black Sallee grassy woodland of the New England Tablelands (NR237) Snow Gum - Mountain Gum - Mountain Ribbon Gum open forest of the eastern New England Tablelands and North Coast (NR239) Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283)</p> <p>Border Rivers/Gwydir Bendemeer White Gum - Silvertop Stringybark grassy open forest of the</p> |
| 8 | Tenterfield Woollybutt - Silvertop Stringybark open forest of the New | 33 | | |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|--------------------|----------------------------|--|--|
| | England Tablelands | | <p>Glen Innes-Guyra Basalts Moredun Volcanics Northeast Forest Lands Tenterfield Plateau</p> <p>Hunter/Central Rivers Ellersston Hunter Karuah Manning Liverpool Range Macleay Hastings Pilliga Tomalla Upper Hunter Wollemi (Part A) Wollemi (Part B) Wyong Yengo</p> | <p>Kaputar area and southern New England Tableland edge of the Nandewar Bioregion (BR104) Broad-leaved Stringybark - Mountain Gum - Apple Box open forest of the New England Tablelands (BR122) Broad-leaved Stringybark grassy open forest of the eastern New England Tablelands (BR124) McKie's Stringybark - New England Blackbutt - Rough-barked Apple grassy open forest of the New England Tablelands (BR155) Mountain Gum - Broad-leaved Stringybark shrubby open forest of the eastern New England Tablelands (BR158) Narrow-leaved Peppermint - Mountain Ribbon Gum grassy open forest of the eastern New England Tablelands (BR165) Narrow-leaved Peppermint - Wattle-leaved Peppermint shrubby open forest of the New England Tablelands (BR166) New England Blackbutt grassy open forest of the eastern New England Tablelands (BR174) New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (BR175) New England stringybarks - peppermint open forest of the New England Tablelands (BR177) Tenterfield Woollybutt - Silvertop Stringybark open forest of the New England Tablelands (BR227)</p> <p>Hunter/Central Rivers Broad-leaved Stringybark - Mountain Ribbon Gum - Messmate open forest of escarpment ranges of the North Coast and New England Tablelands (HU518) Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (HU556) Narrow-leaved Peppermint - Wattle-leaved Peppermint shrubby open forest of the New England Tablelands (HU577)</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|-----------------|----------------------------|--|--|
| | | | <p>Namoi Eastern Nandewars Peel Walcha Plateau</p> | <p>Namoi Broad-leaved Stringybark grassy open forest of the eastern New England Tablelands (NA120) McKie's Stringybark - New England Blackbutt - Rough-barked Apple grassy open forest of the New England Tablelands (NA150) Mountain Gum - Broad-leaved Stringybark shrubby open forest of the eastern New England Tablelands (NA156) Narrow-leaved Peppermint - Mountain Ribbon Gum grassy open forest of the eastern New England Tablelands (NA166) Narrow-leaved Peppermint - Wattle-leaved Peppermint shrubby open forest of the New England Tablelands (NA167) New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NA172) New England stringybarks - peppermint open forest of the New England Tablelands (NA174) Rough-barked Apple - Silvertop Stringybark - Manna Gum shrub/grass open forest of the southern Nandewar Bioregion (NA195) Yellow Box - Broad-leaved Stringybark shrubby open forest of the New England Tablelands (NA238)</p> |
| | | | <p>Northern Rivers Armidale Plateau Carrai Plateau Cataract Chaelundi Clarence Lowlands Clarence Sandstones Dalmorton Ebor Basalts Glen Innes-Guyra Basalts (Part A) Glen Innes-Guyra Basalts (Part B) Guy Fawkes Macleay Gorges Nightcap Northeast Forest Lands Rocky River Gorge</p> | <p>Northern Rivers Broad-leaved Stringybark grassy open forest of the eastern New England Tablelands (NR135) New England Peppermint grassy woodland on granitic substrates of the New England Tablelands (NR213) New England stringybarks - peppermint open forest of the New England Tablelands (NR215)</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|--|----------------------------|---|---|
| | | | Round Mountain Stanthorpe Plateau Upper Manning Walcha Plateau Wongwibinda Plateau Woodenbong | |
| 9 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | 33 | <p>Border Rivers/Gwydir Eastern Nandewars (Part B) Glen Innes-Guyra Basalts</p> <p>Hunter/Central Rivers Hunter Karuah Manning Kerrabee Wyong</p> <p>Namoi Peel</p> <p>Northern Rivers Armistead Plateau Clarence Lowlands Clarence Sandstones Stanthorpe Plateau Wongwibinda Plateau</p> | <p>Border Rivers/Gwydir Inland Grey Box tall grassy woodland on clay soils in the Brigalow Belt South and Nandewar Bioregions (Benson 81) (BR150) White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions (BR240)</p> <p>Hunter/Central Rivers White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, Brigalow Belt South (HU654)</p> <p>Namoi White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions (NA226)</p> <p>Northern Rivers Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NR186) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214) Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283)</p> |
| 10 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | 226 | <p>Border Rivers/Gwydir Eastern Nandewars (Part B) Glen Innes-Guyra Basalts</p> | <p>Border Rivers/Gwydir Inland Grey Box tall grassy woodland on clay soils in the Brigalow Belt South and Nandewar Bioregions (Benson 81) (BR150) White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions (BR240)</p> |

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|--|----------------------------|---|---|
| | | | <p>Hunter/Central Rivers Hunter Karuah Manning Kerrabee Wyong</p> <p>Namoi Peel</p> <p>Northern Rivers Armidale Plateau Clarence Lowlands Clarence Sandstones Stanthorpe Plateau Wongwibinda Plateau</p> | <p>Hunter/Central Rivers White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, Brigalow Belt South (HU654)</p> <p>Namoi White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions (NA226)</p> <p>Northern Rivers Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast (NR186) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214) Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283)</p> |
| 11 | White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | 245 | <p>Border Rivers/Gwydir Eastern Nandewars (Part B) Glen Innes-Guyra Basalts</p> <p>Hunter/Central Rivers Hunter Karuah Manning Kerrabee Wyong</p> <p>Namoi Peel</p> <p>Northern Rivers Armidale Plateau</p> | <p>Border Rivers/Gwydir Inland Grey Box tall grassy woodland on clay soils in the Brigalow Belt South and Nandewar Bioregions (Benson 81) (BR150) White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions (BR240)</p> <p>Hunter/Central Rivers White Box - Yellow Box grassy woodland on basalt slopes in the upper Hunter Valley, Brigalow Belt South (HU654)</p> <p>Namoi White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions (NA226)</p> <p>Northern Rivers Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest</p> |

SAPPHIRE WIND FARM INDICATIVE BIOBANKING ASSESSMENT

| Vegetation Zone | Vegetation Type | Number of Credits Required | CMA Subregions able to receive offset | Vegetation Types able to receive offset (by CMA) |
|-----------------|-----------------|----------------------------|---|--|
| | | | Clarence Lowlands Clarence Sandstones Stanthorpe Plateau Wongwibinda Plateau | of the New England Tablelands and North Coast (NR186) New England Peppermint grassy woodland on sedimentary or basaltic substrates of the New England Tablelands (NR214) Yellow Box - Grey Box - Red Gum woodland of the central eastern parts of the New England Tablelands (NR283) |
| Total | N/A | 5,464 | N/A | N/A |

Further analysis has been conducted into the number of credits required for each vegetation type per hectare of impact (Table 22). The minimum number of credits required per hectare is 12.4, while the maximum is 29.7.

Table 22: Number of Credits Required Per Hectare

| Vegetation Type | Total Impact (ha) | Credits Required | Credits Required/ha |
|---|-------------------|------------------|---------------------|
| Black Cypress Pine - Tumbledown Gum - Narrow-leaved Ironbark open forest of northern parts of the Nandewar Bioregion | 1.3 | 23 | 17.9 |
| Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | 17.6 | 218 | 12.4 |
| Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | 240.9 | 4,686 | 19.5 |
| Tenterfield Woollybutt - Silvertop Stringybark open forest of the New England Tablelands | 1.1 | 33 | 29.7 |
| White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | 27.9 | 504 | 18.1 |
| Total | 288.8 | 5,464 | 18.9 |

3.2 SPECIES CREDITS

In total, 249 Border Thick-tailed Gecko species credits are required for the 18.7 hectares of potential habitat impact (Table 23).

Table 23: Number of Border Thick-tailed Gecko Species credits Required

| Habitat Type | Area Impacted by 12 m Layout (ha) | Credits Required |
|--------------|-----------------------------------|------------------|
| Potential | 18.7 | 249 |

4 Indicative Area of Offset Required

Average increases in site value, using the Biobanking Assessment Methodology, are provided below for both ecosystem and species credits. The analysis provides an indication of the potential offset size required depending on whether the offset is in either moderate-good condition, or within benchmark condition. Note that field work or on site assessment has not been undertaken for any offset sites at this stage. Offset estimates below have been calculated through a desktop approach, but provide an accurate indication of the area required.

4.1 ECOSYSTEM CREDITS

The assessed layout requires 5,464 ecosystem credits to offset the impact on the five impacted vegetation types. Two offset scenarios have been tested, including an offset site in benchmark condition (generating 7 credits per hectare) and an offset site in moderate/good condition (generating 9 credits per hectare). Based on these assumptions an offset with an area between 607-781 hectares is required to fully offset the impact and meet an IoM outcome (Table 24).

Table 24: Estimated Ecosystem Credit Offset

| Vegetation Type | Credits Req. | Total Impact (ha) | Credits/ha | Average No. Credits Generated/ha - M/G Site | Offset Required (ha) | Average No. Credits Generated/ha - Benchmark Site | Offset Required (ha) |
|---|--------------|-------------------|-------------|---|----------------------|---|----------------------|
| Black Cypress Pine - Tumbledown Gum - Narrow-leaved Ironbark open forest of northern parts of the Nandewar Bioregion | 23 | 1.3 | 17.9 | 9 | 3 | 7 | 3 |
| Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands | 218 | 17.6 | 12.4 | 9 | 24 | 7 | 31 |
| Manna Gum - Rough-barked Apple - Yellow Box grassy woodland/open forest of the New England Tablelands and North Coast | 4,686 | 240.9 | 19.5 | 9 | 521 | 7 | 669 |
| Tenterfield Woollybutt - Silvertop Stringybark open forest of the New England Tablelands | 33 | 1.1 | 29.7 | 9 | 4 | 7 | 5 |
| White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions | 504 | 27.9 | 18.1 | 9 | 56 | 7 | 72 |
| Total | 5,464 | 288.8 | 18.9 | 9 | 607 | 7 | 781 |

4.2 SPECIES CREDITS

In addition to the 607-781 hectares of offset required for the ecosystem credits, approximately 41.5 hectares of offset is required for the Border Thick-tailed Gecko potential habitat impacted by the proposal. This offset can be obtained from the same offset site as the ecosystem credits, or a different offset area should that be preferred or required (Table 25).

Table 25: Estimated Species Credit Offset

| Habitat Type | Area Impacted (ha) | Credits Required | Average No. Credits Generated/ha | Offset Required (ha) |
|--------------|--------------------|------------------|----------------------------------|----------------------|
| Potential | 18.7 | 249 | 6 | 41.5 |

References

DEC (2004) Threatened Biodiversity Survey and Assessment: Guidelines for Developments and Activities. Working Draft November 2004. Department of Environment and Conservation (NSW).

DECC (2009). BioBanking Assessment Methodology and Credit Calculator Operational Manual. Department of Environment and Climate Change (NSW), Sydney.

DECCW (2010) DECCW Interim Policy on assessing and offsetting biodiversity impacts of Part 3A developments. Department of Environment, Climate Change and Water, Sydney, 30 November 2010.

ELA (2011a). Sapphire Wind Farm Part 3A Ecological Assessment. Report prepared for Wind Prospect CWP. Eco Logical Australia Pty Ltd.

ELA (2011b). Request for Approval to Use Local Benchmark Data. Report prepared for Wind Prospect CWP. Eco Logical Australia Pty Ltd.

ELA (2011c). Biobanking Expert Report for Sapphire Wind Farm Booroolong Frog (*Litoria booroolongensis*). Report prepared for Wind Prospect CWP. Eco Logical Australia Pty Ltd.

Appendix 1: Plots

Vegetation Zone: 1

Vegetation Type: Black Cypress Pine - Tumbledown Gum - Narrow-leaved Ironbark open forest of northern parts of the Nandewar Bioregion

Condition: M/G Ancillary Code: Native Pasture

| Plot Name | NPS | NOS | NMS | NGCG | NGCS | NGCO | EPC | NTH | OR | FL | Longitude | Latitude | Zone |
|-----------|-----|-----|-----|------|------|------|-----|-----|----|----|-----------|----------|------|
| A | 34 | 0.6 | 0 | 74 | 0 | 20 | 40 | 1 | 1 | 54 | 342965 | 6714053 | 56 |
| TRGMGNP1 | 24 | 0.6 | 0 | 2 | 0 | 24 | 74 | 1 | 1 | 66 | 343653 | 6715715 | 56 |
| TRGMGNP2 | 18 | 0.6 | 0 | 16 | 0 | 6 | 78 | 1 | 1 | 42 | 342989 | 6714141 | 56 |

Vegetation Zone: 2

Vegetation Type: Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands

Condition: Low Ancillary Code:

| Plot Name | NPS | NOS | NMS | NGCG | NGCS | NGCO | EPC | NTH | OR | FL | Longitude | Latitude | Zone |
|-----------|-----|-----|-----|------|------|------|-----|-----|----|----|-----------|----------|------|
| BRGYBL1 | 0 | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 0 | 0 | 352866 | 6711465 | 56 |
| BRGYBL2 | 1 | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 0 | 0 | 352908 | 6711499 | 56 |

Vegetation Zone: 3

Vegetation Type: Blakely's Red Gum - Yellow Box grassy open forest or woodland of the New England Tablelands

Condition: M/G Ancillary Code: Native Pasture

| Plot Name | NPS | NOS | NMS | NGCG | NGCS | NGCO | EPC | NTH | OR | FL | Longitude | Latitude | Zone |
|------------|-----|-----|-----|------|------|------|-----|-----|----|----|-----------|----------|------|
| BRGYBMGNP1 | 12 | 0.6 | 0 | 38 | 0 | 0 | 44 | 0 | 0 | 0 | 357270 | 6718805 | 56 |
| BRGYBMGNP2 | 19 | 0.6 | 0 | 52 | 0 | 6 | 42 | 0 | 0 | 0 | 358747 | 6714465 | 56 |
| BRGMGNP1 | 23 | 0.6 | 0 | 14 | 0 | 2 | 84 | 0 | 0 | 0 | 344103 | 6715662 | 56 |
| B | 11 | 0.6 | 0 | 96 | 0 | 18 | 10 | 1 | 0 | 0 | 358107 | 6714248 | 56 |