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17SYD-8339

8 December 2017

Dear Kristin,

**Bango Wind Farm – additional vegetation (BioBanking) plots to inform the Project's offset liability**

CWP Renewables (CWP) are proposing to construct the Bango Wind Farm (the Project), consisting of up to 75 wind turbines (reduced from the originally proposed 122 turbines), located 30 km north of Yass. The Project Environmental Impact Statement (EIS) was exhibited in late 2016 and included a commitment to prepare a Biodiversity Offset Strategy (BOS) in accordance with the BioBanking Assessment Methodology (BBAM). In response to the EIS, Office of Environment and Heritage (OEH) requested further information, including quantitative vegetation data using BBAM and for the offsets to be re-calculated using the Framework for Biodiversity Assessment (FBA).

It is noted that Environmental Resource Management (ERM) commenced the Environmental Assessment for the project following the provision of the Director General's Requirements (DGRs) under the now repealed Part 3A provisions of the *Environmental Planning and Assessment Act 197*9 (EP&A Act). However, NSW Department of Planning and Environment (DP&E) issued Secretary's Environmental Assessment Requirements (SEARs) on 6 November 2015, which supersede the DGRs, as part of the conversion to a State Significant Development (SSD) under Part 4 of the EP&A Act. It is also noted that the Framework for Biodiversity Assessment (and the NSW Biodiversity Offsets Policy for Major Projects) was established in October 2014, after the vegetation surveys were completed for the Project.

Eco Logical Australia (ELA) on behalf of CWP completed additional vegetation surveys (12 plots / transects) to assess vegetation condition in response to OEH comments on the Project EIS and the vegetation condition present within the site. The additional vegetation plots conducted will be used to inform the Project's offset liability calculated by the FBA.

The surveys confirmed the low condition of the site; pasture improved paddocks dominated by exotic grasses with scattered paddock trees and very low native diversity. Grazing was a feature across the majority of the site. The limited additional surveys also noted potential irregularities with the mapped Plant Community Types (PCTs), which, with the biometric data are used to calculate the project offset liability. Where appropriate, and data supported a change, the vegetation zone boundaries were changed to reflect the field observations (ELA) and/or ERM plot data.

Following recent updates to regional vegetation mapping, it is likely that more than two PCTs exist within the study area, and a different selection of PCTs and/or vegetation zones more appropriate. However, it is acknowledged that at the time of the original surveys, the PCTs available for selection were likely to be the most suitable. Nevertheless, the final offset outcome (liability) is unlikely to change significantly with a different selection of PCTs. This is because the PCTs would be interchangeable within the offset rules, and the benchmark values (basis for the credit calculations) are likely to be similar, due to similarity in PCT structure (formation) and position across the landscape. In consideration of the above, it is proposed that agreement from OEH is sought to use the original PCTs selected by ERM, with the recent updated condition mapping to calculate the Project's offset liability.

We note that the Red Stringybark vegetation type mapped at Bango is also mapped in the Crudine Wind Farm offset property and any surplus credits from this site would thus be able to be used to meet the offset requirement for the Bango project. The White Box-Yellow Box at Crudine is a different PCT to that mapped at Bango but the same NSW and Commonwealth listed ecological community, and thus subject to the variation rules may be able to be used to meet the offset requirements at Bango. This will be confirmed once the offset calculations are completed.

Yours sincerely,

Matthew Dowle and Robert Humphries
Senior Ecologist (Accredited Assessor) and Manager, Biodiversity Offset Programs

## ATTACHMENT A – Vegetation Condition Plots

### Background

CWP Renewables (CWP) are proposing to construct the Bango Wind Farm (Project), consisting of up to 75 wind turbines (reduced from the originally proposed 122 turbines), located approximately 30 km north of Yass, in NSW. The Project Environmental Impact Statement (EIS) was exhibited in late 2016 and included a commitment to prepare a Biodiversity Offset Strategy (BOS) in accordance with the BioBanking Assessment Methodology (BBAM 2014).

In response to the EIS, OEH made a submission requesting further information, including quantitative vegetation data collection using the BBAM, to assess vegetation condition within the project footprint. Following the field surveys and vegetation condition data, offsets for the project were to be calculated in accordance with Framework for Biodiversity Assessment (FBA) and the NSW Biodiversity Offsets Policy for Major Projects 2014.

The Project is currently seeking approval under the State Significant Development (SSD) provisions (Division 4.1) of Part 4 of the NSW *Environmental Planning and Assessment Act 1979* (EP&A Act). The project will also be assessed with respect to Commonwealth legislation as part of the EIS under the EP&A Act, through the Bilateral Agreement with the NSW and Commonwealth Governments.

It is noted that Environmental Resource Management (ERM) commenced the Environmental Assessment for the project following the Projects announcement in 2011 and the provision of the Director General's Requirements (DGRs) under the now repealed Part 3A provisions of the EP&A Act. However, NSW Department of Planning and Environment (DP&E) issued Secretary's Environmental Assessment Requirements (SEARs) on 6 November 2015, which supersede the DGRs, as part of the conversion to a SSD under Part 4 of the EP&A Act.

It is also noted that the Framework for Biodiversity Assessment (and the NSW Biodiversity Offsets Policy for Major Projects) was established in October 2014, after the vegetation surveys were completed by ERM for the Project. However, the field survey methodologies are compatible, with data collected using the BBAM, applicable to the FBA and offset calculations (other than cover and abundance data that is not used in credit calculations but helps justify PCTs). The differences between the BBAM and FBA lay largely within the operation of the online calculator tool, and variation rules around red flags and offset thresholds related to vegetation condition.

This letter reports on the field surveys conducted by ELA. The information from the field surveys will be used to determine the final biodiversity impact of the project (offset liability), and to inform the BOS. It is noted that OEH requested the further survey of 25 vegetation plots / transects. However, through correspondence between DP&E and CWP, 12 plots were determined to be sufficient to assess and justify the vegetation condition, and are the subject of this letter report.

### Methodology

A desktop review of the EIS, it's supporting documentation, regulator comments and previous vegetation mapping undertaken by ERM was conducted prior to the field surveys. A 100 metre buffer around the revised potential impact footprint was developed. This was to provide context for the vegetation mapping, and to determine the ERM plots that would be most relevant for input into the updated offset credit calculations. It is important to acknowledge that the revised impact footprint is likely to represent a conservative impact, and will be subject to further alignment to avoid significant or important ecological features during the construction phase (if required), such as paddock trees.

The approximate survey locations for the additional plots (to assess condition of vegetation zones) were determined by ERM and shown in Figures 1a & 1b of ERM Responses to OEH (figures provided to ELA by CWP). The surveyed additional plot locations are shown in **Figure 1** and **Figure 2**. It should be noted that due to temporary access issues, one of the proposed plot locations was moved to another landowner's property within

the same vegetation zone, and not all impact areas were inspected due to the focus on additional plots and confirming vegetation condition.

All field surveys were conducted in accordance with the FBA, and build on the existing information collected as part of the EIS by ERM. At each survey site (plot) conducted by ELA, the following information was collected:

- site ID, plot photos, date and name of recorder(s)
- plot orientation, slope, and aspect
- easting and northing at either end of the 50 m transect
- a plot-based 400 $m^2$ (20 m x 20 m) full floristic survey, documenting each flora species cover and abundance
- a plot and transect survey (20 x 50), documenting canopy and mid-storey cover every 5 m along a 50 m transect, and ground cover every 1 m. Number of hollow bearing trees, length of fallen logs >10 cm width and proportion of regenerating canopy species was also recorded.

During the field surveys, if vegetation boundaries required updating, they were altered and used to inform the revised vegetation mapping (**Figure 1** and **Figure 2**) and offset calculations (to be conducted). The offset calculations are provided separate to this document.

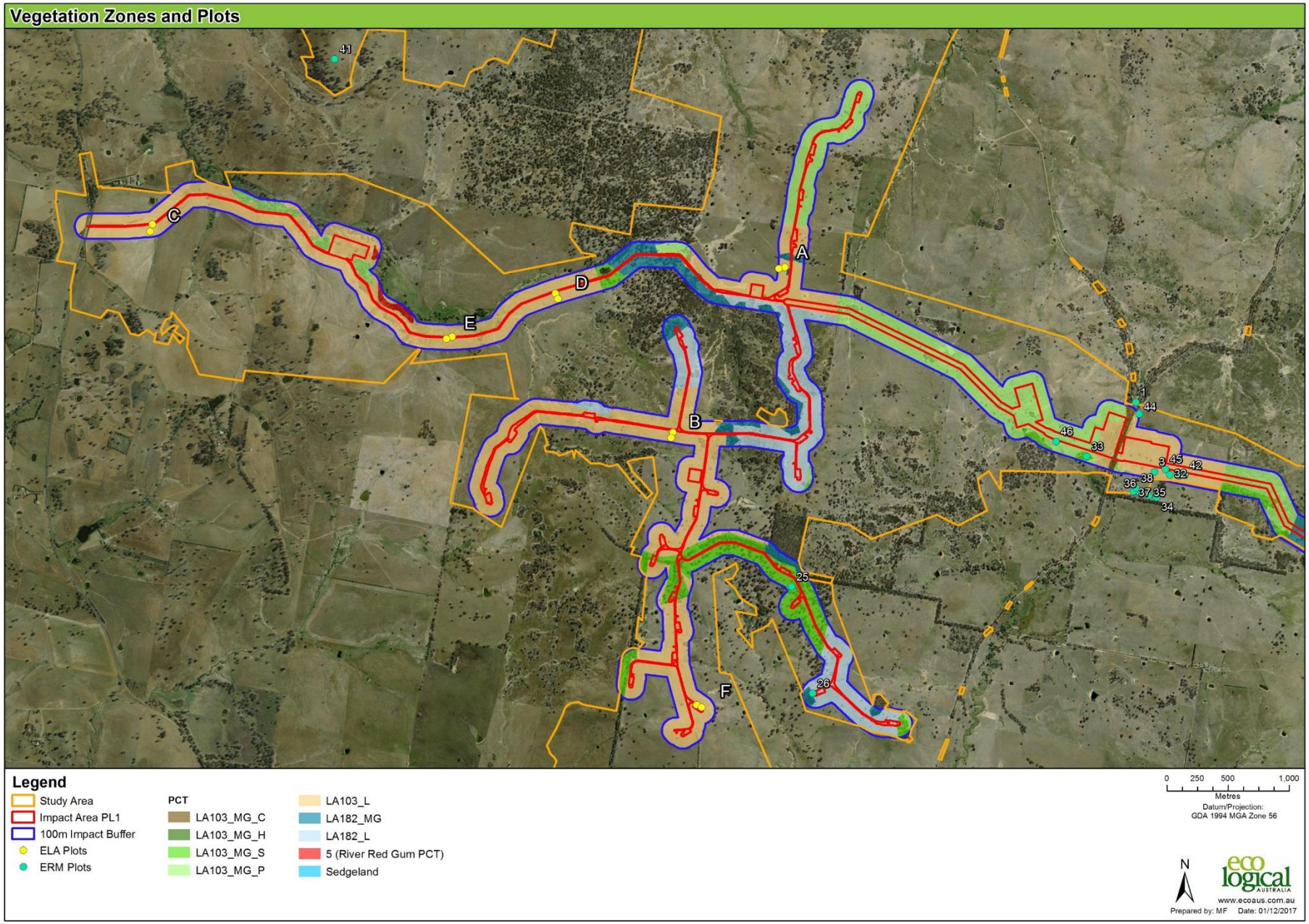


**Figure 1: Vegetation mapping and additional plot locations (west)**

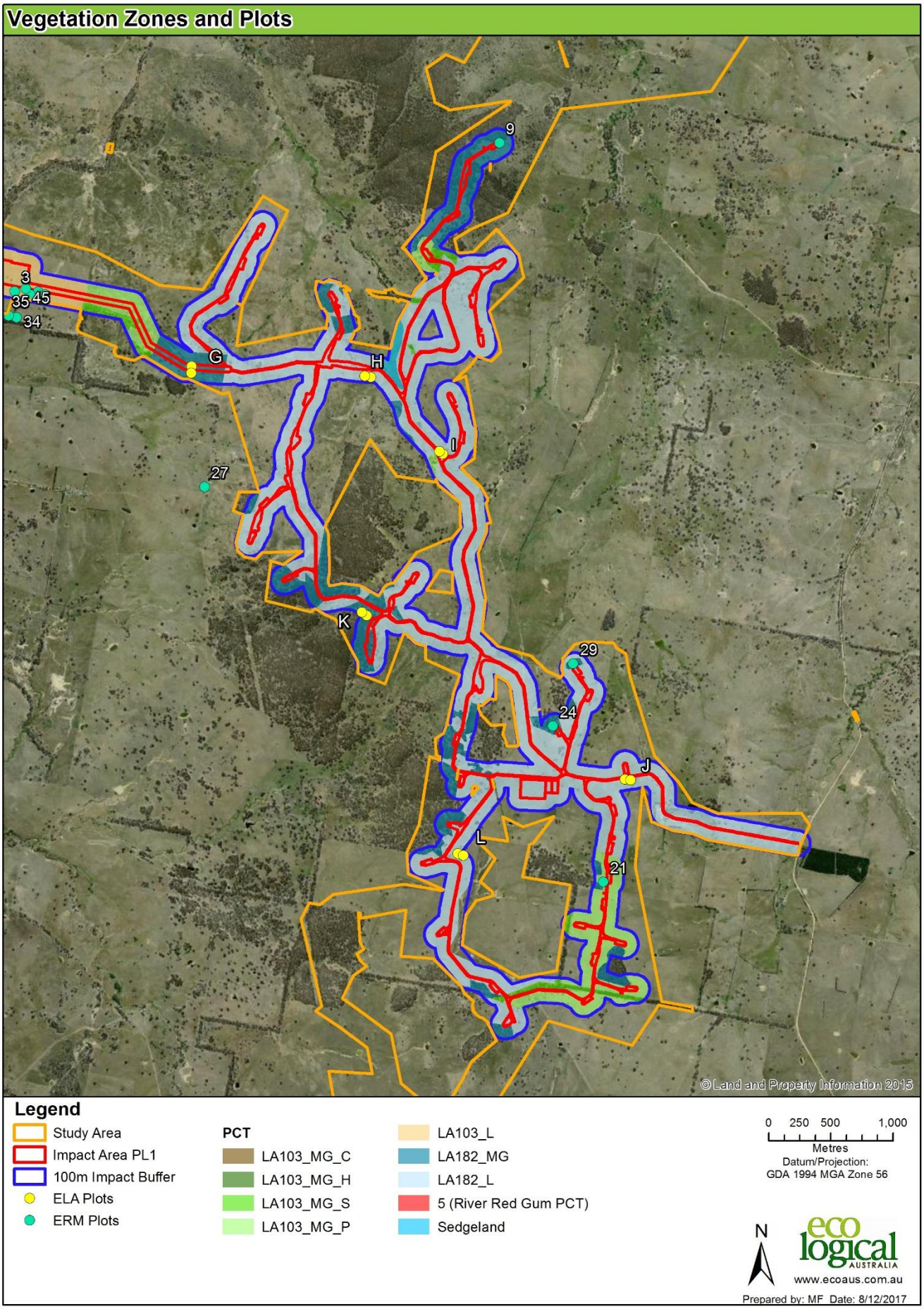


**Figure 2: Vegetation mapping and additional plot locations (east)**

**Results**

Field surveys confirmed the generally 'low' condition of the site; paddocks of exotic grasses and scattered paddock trees. Vegetation condition data was collected from twelve plots / transects. Locations of plots are shown in **Figure 1** and **Figure 2** and the biometric data shown below in **Table 1.**

The higher elevation areas of the site featuring skeletal and less fertile soils occurred on steep hill slopes, rocky slopes and crests, and were dominated by a Long-leaved Box (*Eucalyptus goniocalyx*) and Red Stringybark (*Eucalyptus macrorhyncha*) vegetation community. The lower lying areas, flats, lower hillslopes, drainage lines and gully channels were dominated by Yellow Box (*Eucalyptus melliodora*) and Blakely's Red Gum (*Eucalyptus blakelyi*), the majority of which represented the listed ecological community; Box-Gum Woodland (see below). However, Yellow Box and Blakely's Red Gum individuals were also scattered across the site in the higher areas.

Two Plant Community Types (PCTs – LA103 & LA182) were mapped by ERM within the study area and assigned to the vegetation described above. The ERM mapped PCTs were:

- LA103 (PCT 654) - *Apple Box - Yellow Box dry grassy woodland of the South-Eastern Highlands Bioregion.* Met the definition for Box-Gum Woodland when mapped in moderate to good condition.
- LA182 (PCT 290) - *Red Stringybark - Red Box - Long-leaved Box - Inland Scribbly Gum tussock grass - shrub low open forest on hills in the southern part of the NSW South Western Slopes Bioregion.*

PCT 5 (*River Red Gum herbaceous-grassy very tall open forest wetland on inner floodplains in the lower slopes sub-region of the NSW South Western Slopes Bioregion and the eastern Riverina Bioregion*) and PCT *335* (*Tussock grass - sedgeland fen - rushland - reedland wetland in impeded creeks in valleys in the upper slopes sub-region of the NSW South Western Slopes Bioregion*) were included in the revised vegetation mapping. However, these PCTs do not occur in the impact area, and no plots were conducted within the PCTs.

*Vegetation condition*

The surveys confirmed the study area's low condition across the majority of site (pasture improved exotic grass paddocks with scattered paddock trees), with grazing and agricultural practices a common feature. Areas previously mapped as cropping, pasture and low condition PCTs all contained an exotic understorey (exotic pasture species) comprising greater than 50% of the ground cover (typically >90% exotic), and consequently were mapped as exotic/cleared vegetation. These areas lacked a native canopy, and were determined as meeting the 'low condition' vegetation (or cleared land) definition under the FBA. They were combined in the revised mapping and assigned the low condition PCT that was likely to have been present prior to disturbances.

> *Vegetation in low condition:*
>
> *a) woody native vegetation with native over-storey percent foliage cover less than 25% of the lower value of the over-storey percent foliage cover benchmark for that vegetation type, and where either:*
> *– less than 50% of ground cover vegetation is indigenous species, or*
> *– greater than 90% of ground cover vegetation is cleared,*
> *OR*
> *b) native grassland, wetland or herbfield where either:*
> *– less than 50% of ground cover vegetation is indigenous species, or*
> *– more than 90% of ground cover vegetation is cleared*

Where woody vegetation and canopy trees were present, such as along road verges and boundary fences, native species were often observed in the ground layer, and the denser patches of vegetation contained native species in all structural layers. These areas represented vegetation in 'moderate to good condition' under the FBA. Other areas meeting the 'moderate to good' condition class included areas containing a native canopy, but were dominated by exotic grasses in the understorey, and areas with no canopy, but contained a native understorey. The definition of moderate to good vegetation in FBA is:

> *Vegetation in moderate to good condition: native vegetation that is not in low condition*

*Box-Gum Woodland*

*White Box Yellow Box Blakely's Red Gum Woodland* (Box-Gum Woodland) is listed as a critically endangered ecological community under the NSW *Biodiversity Conservation Act 2016* (BC Act – formerly the *Threatened Species Conservation Act 1995*) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). For further information regarding areas of Box-Gum Woodland within the Project, including listing under the TSC/BC Act and EPBC Act, refer to the EIS and supporting documentation.

In the revised mapping, LA103 generally met the definition for Box-Gum Woodland under the BC Act, where it was mapped in moderate to good condition (FBA definition). However, no vegetation plots conducted in LA103 in the recent surveys met the definition of Box-Gum Woodland under the EPBC Act. Areas mapped as low condition were limited to scattered paddock trees and did not meet the listing criteria for Box-Gum Woodland.

**Table 1: ELA Biobanking plot data**

| Plot | NPS | NOS | NMS | NGCG | NGCS | NGCO | EPC | NTH | OR | FL | Easting | Northing | Zone | Site Value | Condition |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A | 0 | 0 | 0 | 0 | 0 | 0 | 96 | 0 | 0 | 0 | 664732 | 6175244 | 55 | 0 | Low |
| B | 1 | 0 | 0 | 0 | 0 | 0 | 92 | 0 | 0 | 0 | 663846 | 6173791 | 55 | 6 | Low |
| C | 1 | 0 | 0 | 0 | 0 | 0 | 88 | 0 | 0 | 0 | 659776 | 6175614 | 55 | 6 | Low |
| D | 1 | 0 | 0 | 0 | 0 | 0 | 98 | 0 | 0 | 0 | 662831 | 6174998 | 55 | 6 | Low |
| E | 6 | 0 | 0 | 0 | 0 | 0 | 94 | 0 | 0 | 0 | 661970 | 6174639 | 55 | 6 | Low |
| F | 0 | 0 | 0 | 0 | 0 | 0 | 94 | 0 | 0 | 2 | 664050 | 6171646 | 55 | 0 | Low |
| G | 26 | 0 | 0 | 40 | 12 | 18 | 32 | 0 | 1 | 6 | 669051 | 6173176 | 55 | 34 | M/G |
| H | 3 | 0 | 0 | 0 | 0 | 0 | 98 | 0 | 0 | 0 | 670567 | 6172930 | 55 | 6 | Low |
| I | 2 | 20 | 0 | 0 | 0 | 0 | 94 | 1 | 0 | 33 | 671034 | 6172235 | 55 | 22 | Low[3] |
| J | 0 | 0 | 0 | 0 | 0 | 0 | 92 | 0 | 0 | 0 | 672632 | 6169644 | 55 | 0 | Low |
| K | 23 | 23 | 0 | 20 | 2 | 6 | 0 | 3 | 1 | 56 | 670486 | 6170758 | 55 | 77 | MM/G |
| L | 1 | 0 | 0 | 0 | 0 | 0 | 98 | 0 | 0 | 0 | 671285 | 6169029 | 55 | 6 | Low |

| **Vegetation Zones[1] and plots[2]** | | **Key** | | | |
|---|---|---|---|---|---|
| LA103_Poor | Plot E | *NPS* | Native plant species | *EPC* | Exotic plant cover (%) |
| LA103_Low | Plots A & B | *NOS* | Native over-storey cover (%) | *NTH* | Number of trees with hollows |
| LA182_M-G | Plot K | *NMS* | Native mid-storey cover (%) | *OR* | Proportion of over-storey regeneration |
| LA182_Low | Plots G & I | *NGCG* | Native ground cover grasses (%) | *LFL* | Length of fallen logs (>10cm width) (m) |
| Cropping | Plots C & F | *NGCS* | Native ground cover shrubs (%) | *Site Value* | Biometric score calculated within the offsets calculator |
| Pasture | Plots D, H, J, L | *NGCO* | Native ground cover other (%) | | |

[1] The 'LA103' and 'LA182' codes refer to the Biometric Vegetation Type of the PCT within the Lachlan Catchment (as used in the EIS).

[2] Original plot allocation was determined prior to field work. The revised mapping includes cropping and pasture into low categories PCTs, as all sites lacked canopy cover, and were dominated by an exotic ground layer.

[3] The plot met the definition for low condition vegetation. However, the HBT and fallen logs is contributing to the site value score >17.

Site value score was calculated using the biometric tool, which underpins the calculations in the offset calculator. As a qualitative measure, the site value score can provide an indication of the condition of the site, and can be used to inform the allocation of vegetation zones (relatively homogenous area of native vegetation on a development or biobank site that is the same PCT and broad condition state). Site value scores below 17 do not require offsets under the FBA and NSW Major Projects Offset Policy. It is noted that when the offset liability for the project is calculated, plots within a vegetation zone will be averaged, and the above scores may differ slightly. Furthermore, the offset tool will incorporate the landscape value score, which will influence the final offset liability.

**Table 2** provides the plot data collected by ERM over the original study area. A sub-set of these plots (**bold**) will be combined with the additional plots collected by ELA and entered in the credit calculator to determine the updated offset liability. Eleven of these plots (*italics*) were to be excluded by ERM due to the locations in close proximity to each other. The plot data below was provided by ERM, along with data sheets. It is noted that high cover scores were recorded for a number of attributes NOS, NMS, NGCG, NGCS, NGCO and EPC. These high scores were not reflected in the recent field surveys, and are possibly a result of seasonal / temporal differences, presence of exotic annuals, or survey techniques.

**Table 2: Plot data provided to ELA by ERM, broken down into vegetation zones and formatted for the calculator**

| Plot | NPS | NOS | NMS | NGCG | NGCS | NGCO | EPC | NTH | OR | FL | Easting | Northing | Zone | Veg # |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **1** | **13** | **4%** | **2%** | **40%** | **10%** | **10%** | **0%** | **5** | **1** | **33** | **667566** | **6174127** | **55** | **1** |
| **9** | **17** | **0%** | **0%** | **90%** | **2%** | **0%** | **6%** | **0** | **1** | **75** | **671622** | **6174752** | **55** | **5** |
| 13 | 7 | 0% | 0% | 62% | 0% | 0% | 74% | 0 | 0 | 21 | 661761 | 6178110 | 55 | 3 |
| **21** | **11** | **24%** | **0%** | **70%** | **0%** | **10%** | **100%** | **0** | **1** | **37** | **672458** | **6168801** | **55** | **3** |
| 22 | 4 | 26% | 0% | 0% | 0% | 14% | 78% | 0 | 1 | 11 | 661750 | 6178075 | 55 | 3 |
| **24** | **8** | **17%** | **0%** | **80%** | **0%** | **44%** | **100%** | **2** | **1** | **32** | **672052** | **6170057** | **55** | **5** |
| **25** | **8** | **35%** | **0%** | **18%** | **0%** | **0%** | **54%** | **2** | **1** | **37** | **664748** | **6172616** | **55** | **2** |
| **26** | **3** | **29%** | **0%** | **0%** | **0%** | **0%** | **96%** | **1** | **1** | **100** | **664921** | **6171742** | **55** | **5** |
| 27 | 29 | 28% | 0% | 94% | 68% | 92% | 100% | 1 | 1 | 36 | 669249 | 6171984 | 55 | 5 |
| **28** | **5** | **41%** | **1%** | **2%** | **2%** | **24%** | **96%** | **1** | **1** | **75** | **671470** | **6165037** | **55** | **5** |
| **29** | **7** | **10%** | **0%** | **36%** | **0%** | **14%** | **100%** | **1** | **0** | **12** | **672216** | **6170560** | **55** | 5 |
| **33** | **11** | **9%** | **0%** | **64%** | **0%** | **0%** | **18%** | **1** | **1** | **4** | **667164** | **6173685** | **55** | **2** |
| 39 | 10 | 5% | 0% | 82% | 0% | 0% | 12% | 0 | 0 | 6 | 661161 | 6180345 | 55 | 5 |
| 41 | 8 | 0% | 0% | 100% | 0% | 32% | 100% | 0 | 0 | 0 | 661007 | 6176938 | 55 | 3 |
| **43** | **4** | **19%** | **0%** | **0%** | **0%** | **0%** | **68%** | **3** | **1** | **79** | **661639** | **6178791** | **55** | **3** |
| 44 | 14 | 0% | 0% | 100% | 6% | 100% | 100% | 0 | 0 | 0 | 667593 | 6174032 | 55 | 3 |
| **46** | **6** | **0%** | **0%** | **84%** | **6%** | **0%** | **34%** | **0** | **1** | **0** | **666913** | **6173805** | **55** | **4** |
| Plots to be excluded from further assessment | | | | | | | | | | | | | | |
| *3* | *7* | *0%* | *0%* | *8%* | *0%* | *0%* | *78%* | *0* | *0* | *0* | *667719* | *6173557* | *55* | 3 |
| *30* | *11* | *0%* | *0%* | *50%* | *0%* | *0%* | *82%* | *0* | *0* | *0* | *667908* | *6173555* | *55* | 3 |
| *31* | *16* | *0%* | *0%* | *40%* | *0%* | *0%* | *80%* | *0* | *0* | *0* | *667920* | *6173524* | *55* | 3 |
| *32* | *11* | *0%* | *0%* | *46%* | *0%* | *0%* | *66%* | *0* | *0* | *0* | *667843* | *6173532* | *55* | 3 |
| *34* | *12* | *0%* | *0%* | *30%* | *0%* | *2%* | *70%* | *0* | *0* | *0* | *667736* | *6173348* | *55* | 3 |
| *35* | *11* | *0%* | *0%* | *32%* | *0%* | *0%* | *86%* | *0* | *0* | *0* | *667672* | *6173364* | *55* | 3 |
| *36* | *11* | *0%* | *0%* | *42%* | *0%* | *0%* | *76%* | *0* | *0* | *0* | *667601* | *6173382* | *55* | 2 |
| *37* | *10* | *0%* | *0%* | *12%* | *0%* | *0%* | *94%* | *0* | *0* | *0* | *667549* | *6173398* | *55* | 2 |
| *38* | *11* | *0%* | *0%* | *24%* | *0%* | *0%* | *76%* | *0* | *0* | *0* | *667569* | *6173425* | *55* | 2 |
| *42* | *10* | *0%* | *0%* | *38%* | *0%* | *0%* | *88%* | *0* | *0* | *0* | *667968* | *6173531* | *55* | 3 |
| *45* | *8* | *0%* | *0%* | *12%* | *0%* | *4%* | *100%* | *0* | *0* | *0* | *667809* | *6173579* | *55* | *3* |

| Veg # = Vegetation Zone (PCT in brackets), based on revised mapping | | | |
|---|---|---|---|
| 1 | LA103_MG_C (654) | 4 | LA182_MG (290) |
| 2 | LA103_MG_P (654) | 5 | LA182_Low (290) |
| 3 | LA103_Low (654) | | |

*Direct impacts to vegetation*

The predicted impacts and clearing required for the project is approximately 120.7 hectares. This will occur over two PCTs and five vegetation zones, as a result of the revised mapping. The vast majority of impacts (90 ha, or 75%) will occur in areas of exotic vegetation and lacking a native canopy; mapped as low condition (or cleared land) PCTs (**Table 3**). The next largest impact (20 ha or 17%) will occur in areas mapped as LA103 in poor condition; native canopy with an exotic or poorly diverse understorey. When the Biometric plot data is entered into the calculator, these poorer condition areas are likely to have a small (or zero in the case of low condition) offset requirements.

**Table 3: Project impacts and plots to be used for impact calculations**

| Vegetation type (PCT) | Impact area (ha) | Number of plots required under FBA | Plots to be used for calculations |
|---|---|---|---|
| 1 - LA103_MG_C (654) | 0.26 | 1 | 1 |
| 2 - LA103_MG_S (654) | 3.51 | 2 | 25, 33 |
| 3 - LA103_MG_P (654) | 28.36 | 4 | 13^, 21, 22^, 43 |
| 4 - LA103_Low (654) | 35.68 | 4 (or 3 for low condition) | 46, A, B, C, D, E, F |
| 5 - LA182_MG (290) | 9.21 | 3 | 9, 24, 26, 28, 29, G, K |
| 6 - LA182_Low (290) | 43.67 | 4 (or 3 for low condition) | H, I, J, L |
| **Total** | **120.71** | **18 (16)** | **25** |

**LA103_MG_S originally mapped by ERM has been included with LA103_MG_P in the revised mapping due to the similarity in plot data.*
*^ Outside 100 m buffer area, but within the original study area.*

## Discussion and implications

*Review of vegetation mapping*

The vegetation surveys amended some vegetation boundaries and noted potential irregularities with the previously mapped Plant Community Types (PCTs). The PCT, along with the biometric data and other landscape information are used to calculate the project offset liability. It is likely that more than two PCTs exist within the study area, and a different selection of PCTs and vegetation zones could be applicable to the project. For example, the latest available broad-scale desktop mapping (Central West / Lachlan Catchment – OEH 2017) is provided in **Figure 3**. However, it is acknowledged that at the time of the original surveys, the PCTs mapped were possibly the most appropriate, based on the PCTs available in the NSW Vegetation Information System (VIS) classification database and Biobanking calculator at the time.

Following a detailed desktop review of the original plot data, and combined where possible with the recent vegetation surveys, vegetation boundaries were amended and presented in **Figure 1** and **Figure 2**. The review of the original plot data (provided following the field surveys) noted irregularities, including (but not limited to):

- Plots located in higher condition vegetation containing data representing poorer condition vegetation. Furthermore, these plots were in lower condition than those mapped in the originally poor condition vegetation, and vice versa. For example:
    - Plots 13 & 22 (outside revised impact area and 100 metre buffer) were mapped as medium condition vegetation. However, both contained an understorey with a higher exotic cover than native cover and low native diversity (7 & 4 respectively). Plot 13 also had no canopy, suggesting it may meet the definition of low condition vegetation under the FBA.
    - Plot 33 (occurring outside the revised project footprint) was mapped in poor condition and contained a native canopy, moderate native diversity and native dominated understorey. On face value, this plot was close to meeting the EPBC Act definition for Box-Gum Woodland.
- A number of plots were located on the boundary of vegetation zones. For example:
    - Plot 9, 26, 44 & 46 are mapped on the boundary of vegetation zones, in the poorer condition vegetation than the data reflects.

- Data from the plots did not represent the vegetation mapping it was located in. For example:
    - Plot 25 was originally mapped as LA182, but the data sheet identified a dominant *Eucalyptus albens* (White Box) and *Eucalyptus blakelyi* (Blakely's Red Gum) vegetation community, with *Eucalyptus macrorhyncha* (Red Stringybark) also occurring. These dominant canopy species represent characteristic species for Box-Gum Woodland.

*Vegetation mapping implications*

Based on the revised mapping, the final offset outcome (liability) for the project is unlikely to increase, and in fact may have a lower offset liability. This is because the majority of the site represents exotic pastures with no canopy (or occasional paddock trees) and meets the definition of 'low condition' under the FBA. It is noted that more areas within the site have been mapped in moderate to good condition than depicted in the EIS (plots mapped in low condition vegetation but represent moderate to good vegetation have been re-allocated based on the plot data provided, and vice versa). These areas will require a higher offset than originally indicated. However, in the original Biodiversity Assessment Report for the EIS, offsets were calculated for 'low condition' areas'; but following the revised mapping, these areas under the FBA will most likely (and as shown in **Table 1**) have site value scores <17, and therefore no offsets would be required.

Furthermore, the final offset outcome (liability) for the project is unlikely to change significantly with a different selection of PCTs or vegetation zones. This is because the PCTs would be interchangeable within the offset rules, and the benchmark values (basis for the credit calculations) are likely to be comparable, due to the similarity in PCT formation, Keith class and position across the landscape. Furthermore, the majority of the site is in low condition and the selection of PCTs using the VIS classification database (as required by the FBA) can be problematic and difficult.

It is noted that PCTs have been added to the VIS database and FBA calculator since it was run by ERM (such as those in **Figure 3**). This is because PCTs are revised by OEH through broad-scale mapping projects and the new (or revised) PCTs, and their descriptions are added to the VIS database. However, the old PCTs are not always discontinued or removed. This creates a situation where a number of very similar and overlapping PCTs are available for selection. For example, PCT 352 identified in **Figure 3** does not contain any benchmark data from 2008, and therefore would not have been available in the calculator at the time of the original surveys.

In consideration of the above factors, it is proposed that following agreement by OEH, the originally selected PCTs by ERM and the information collected by both ERM and ELA continue to be used to calculate the Project's offsets. The vegetation mapping for the project has implications when considering suitable offsets, based on the selection of PCTs. It also has implications should OEH audit the data, with similar irregularities likely to be identified. Therefore, confirmation from OEH that the revised vegetation mapping is appropriate should be conducted prior to calculating the project offset liability.

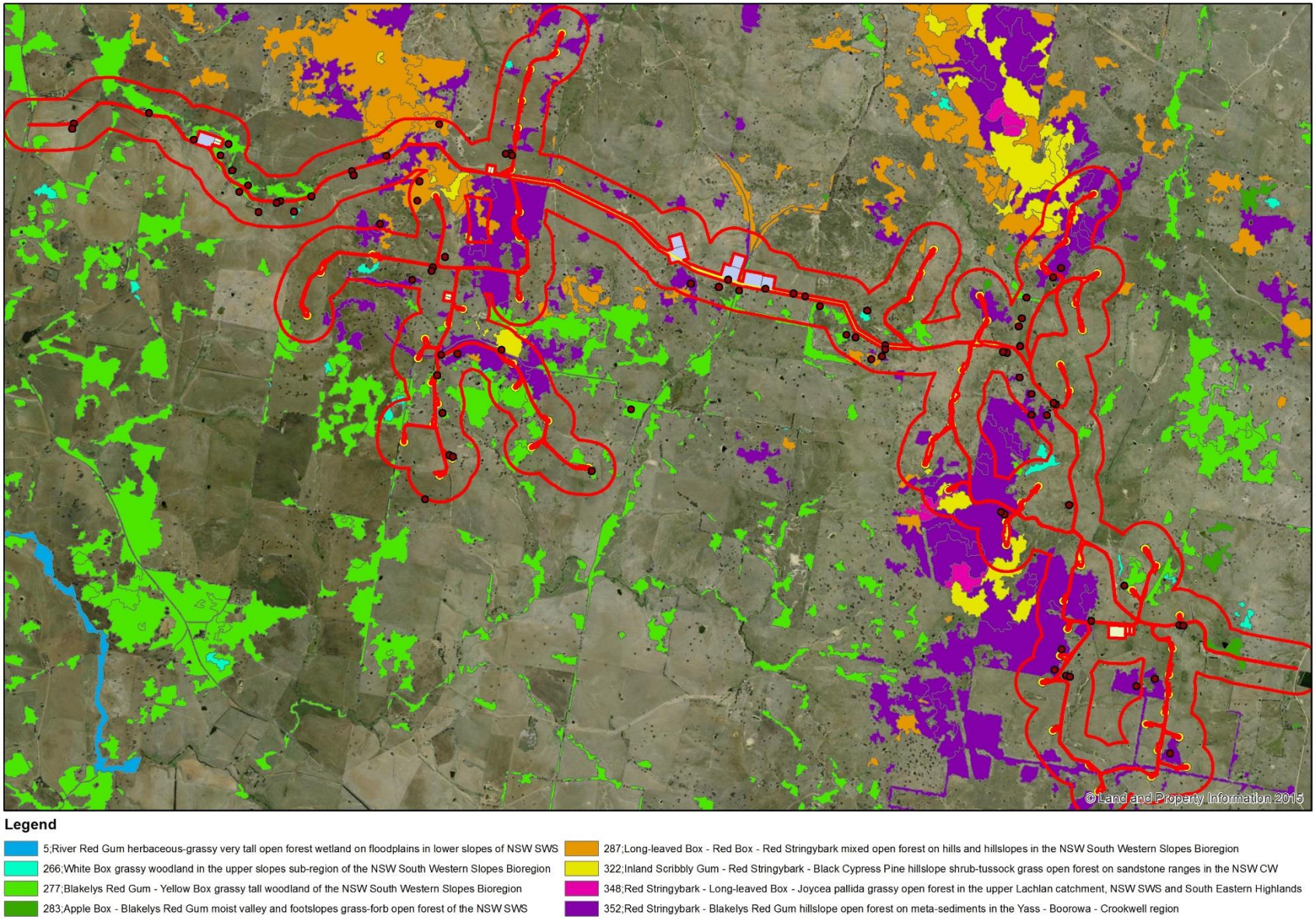


**Figure 3: 2017 broad-scale vegetation mapping (OEH 2017)**