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Our Ref: 3606/JM/AR/RP/20180412

12 April 2018

Sarah Harris
Environment Manager P2N
Australian Rail Track Corporation
Level 15, 60 Carrington Street
Sydney NSW 2000

Dear Sarah

**Re: Addendum to the Inland Rail – Parkes to Narromine Biodiversity Assessment Report comprising vegetation mapping amendments and inclusion of temporary impacts**

At the request of the Office of Environment and Heritage (OEH) Umwelt has amended the vegetation map and associated BioBanking Credit Calculator assessments for the Parkes to Narromine (P2N) section of the Melbourne to Brisbane Inland Rail project (the proposal). Outlined below is the methodology used to address the comments made by OEH in relation to the mapping of derived native grassland communities within the development site, as specified in correspondence from Peter Christie of OEH in letters dated 2 and 16 March 2018, and subsequent discussions between OEH, ARTC and Umwelt.

In addition to the amendments to the vegetation mapping, ARTC has committed to the re-assessment of all native vegetation within the development site in order to determine a maximum potential impact associated with the proposal. Therefore the BioBanking Credit Calculator has been updated to add in those areas of the development site that were previously mapped as temporary impacts and not subject to credit generation.

## 1.0 Approach

The correspondence from OEH dated 16 March 2018 required a methodology for reviewing areas previously mapped as non-native grassland and where relevant re-mapping these areas as native vegetation.

As agreed with OEH, the remapping was undertaken using a desktop approach comprising the following steps:

- Review of regional vegetation mapping products, including the Central West Lachlan State Vegetation Map (2016) prepared by OEH and the NSW Landuse Map (2013). The 2016 OEH regional mapping was overlaid on the site specific mapping to identify areas where the regional mapping product maps native vegetation in areas mapped by Umwelt as non-native.

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These areas were then cross-checked with the NSW Landuse Map (2013). This identified areas where a change from non-native to native vegetation may have been required.

- Each of these areas were then reviewed against the site specific data held by Umwelt including:
    - Review of existing field data including plot/transects, rapid vegetation assessments and annotated maps with field notes
    - Aerial photography interpretation (API)
    - Where the above steps identify potential native grassland, the vegetation mapping was updated to reflect this change.
    - Where there was any uncertainty due to lack of site specific data, or any other uncertainty, as directed by OEH, the vegetation mapping was by default mapped according to the 2016 regional mapping undertaken by OEH. In the case of native grasslands, where a derived form of native grassland was mapped by the 2016 regional mapping, these areas were attributed to one of the five derived native grassland vegetation zones already mapped by Umwelt.

The revised mapping was then provided to OEH for review and approval, with Renee Shepherd (OEH Senior Conservation Planning Officer) confirming acceptance of the updated vegetation mapping on 11 April 2018. The revised vegetation zones were then entered into the BioBanking Credit Calculator, with the entire development site adopted as the area of direct impact. The development site was previously divided into areas of permanent impacts and proposed temporary impacts, however, in the revised assessment it was conservatively assumed that all areas would be fully cleared / impacted. This process determined the maximum quantum of credits that would be required to offset the proposal. The BioBanking Credit Calculator assessment follows the methods described in Section 2 of the Inland Rail – Parkes to Narromine Biodiversity Assessment Report (BAR) (Umwelt 2017) in accordance with the *Framework for Biodiversity Assessment – NSW Biodiversity Offsets Policy for Major Projects* (FBA).

In addition to changes to the vegetation mapping, the complete removal of the site values has been assumed across the development site within the BioBanking Credit Calculator.

Due to the above described amendments, as discussed with OEH, there was a minor shortfall in the number of plots/transects required by the FBA methodology for two vegetation zones. As agreed with OEH, the relevant plots/transects with the highest site values for these vegetation zones were duplicated to meet this shortfall, including:

- **Assessment Area 1 - Lachlan CMA/Lower Slopes IBRA SR** – Zone 13 – CW213, LA218– White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion– Moderate to Good Condition – Derived Native Grassland required three plots/transects, of which one has been completed. P41 was duplicated twice to meet the minimum survey effort requirements of the FBA methodology.
- **Assessment Area 3 - Central West CMA/Bogan Macquarie IBRA SR** – Vegetation Zone 5 – CW104, LA105– Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions – Moderate to Good – Derived Native Grassland requires four plots/transects, of which three have been completed. P15 was considered to have the highest site values and was duplicated to meet the minimum survey effort requirements of the FBA methodology.

## 2.0 Results

The below sections detail the changes to the ecosystem credit and species credit requirements as a result of the vegetation mapping amendments and inclusion of temporary impacts in the assessment of direct impacts.

### 2.1 Ecosystem Credits

**Table 1** below provides a comparison of the Development Footprint impacts according to the original BAR (Umwelt 2016) and this Addendum. The revised mapping GIS files have been provided to OEH.

**Table 1 –BAR (Umwelt 2016) and Addendum Impact Areas**

| Veg Zone | PCT ID (BVT IDs) and PCT Name | Condition Class | TEC | Area in Development Footprint (ha) | |
|---|---|---|---|---|---|
| | | | | BAR | Addendum |
| 1 | PCT26 (CW205, LA212) Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | *Moderate to Good* | Yes | 3.47 | 4.74 |
| 2 | PCT36 (CW183, LA193) River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion | *Moderate to Good* | Not listed | 0.87 | 0.87 |
| 3 | PCT36 (CW183, LA193) River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion | *Low_Regeneration* | Not listed | 0.62 | 0.62 |
| 4 | PCT55 (CW104, LA105) Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions | *Moderate to Good* | Not listed | 1.12 | 1.11 |
| 5 | PCT55 (CW104, LA105) Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions | *Moderate to Good_DNG* | Not listed | 7.12 | 28.29 |
| 6 | PCT70 (CW220, LA223) White Cypress Pine woodland on sandy loams in central NSW wheatbelt | *Moderate to Good* | Not listed | 1.95 | 1.95 |
| 7 | PCT76 (CW145, LA154) Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | *Moderate to Good* | Yes | 10.13 | 10.19 |
| 8 | PCT76 (CW145, LA154) Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | *Moderate to Good_DNG* | Yes | 32.06 | 51.97 |
| 9 | PCT244 (CW172, LA178) Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt) | *Moderate to Good* | Not listed | 3.38 | 3.38 |
| 10 | PCT244 (CW172, LA178) Poplar Box grassy woodland on alluvial clay-loam soils mainly | *Moderate to Good_DNG* | Not listed | 14.45 | 20.08 |

| Veg Zone | PCT ID (BVT IDs) and PCT Name | Condition Class | TEC | Area in Development Footprint (ha) | |
|---|---|---|---|---|---|
| | | | | BAR | Addendum |
| | in the temperate (hot summer) climate zone of central NSW (wheatbelt) | | | | |
| 11 | PCT201 (CW138, LA145) Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion | *Moderate to Good* | Yes | 1.88 | 1.88 |
| 12 | PCT267 (CW213, LA218) White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | *Moderate to Good* | Yes | 3.24 | 3.87 |
| 13 | PCT267 (CW213, LA218) White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | *Moderate to Good_DNG* | Yes | 0.57 | 4.56 |
| 14 | PCT276 (CW226, LA226) Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion | *Moderate to Good* | Yes | 7.16 | 7.16 |
| 15 | PCT276 (CW226, LA226) Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion | *Moderate to Good_DNG* | Yes | 13.96 | 19.80 |
| - | Cleared/Non-native vegetation | - | - | 820.76 | 762.26 |
| **Total** | | | | **922.74** | **922.74** |

**Table 2** includes the areas of threatened ecological communities (TECs) under the NSW *Biodiversity Conservation Act 2016* (BC Act) and Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) associated with each vegetation zone.

**Table 2 – Plant community types recorded in the development site and the corresponding impacts on threatened ecological communities listed under the BC Act and EPBC Act**

| Veg Zone | PCT ID (BVT IDs) and PCT Name | Condition Class | Disturbance Area (ha) and Listing Status |
|---|---|---|---|
| 1 | PCT26 (CW205, LA212) Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | *Moderate to Good* | 4.74 ha of *Myall Woodland in the Darling Riverine Plains, Brigalow Belt South, Cobar Peneplain, Murray-Darling Depression, Riverina and NSW South Western Slopes bioregions* EEC listed under the BC Act to be impacted<br>1.69 ha *Weeping Myall Woodlands* EEC listed under the EPBC Act |
| 2 | PCT36 (CW183, LA193) River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion | *Moderate to Good* | Not listed under the BC Act or EPBC Act |

| Veg Zone | PCT ID (BVT IDs) and PCT Name | Condition Class | Disturbance Area (ha) and Listing Status |
|---|---|---|---|
| 3 | PCT36 (CW183, LA193) River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion | *Low_Regeneration* | Not listed under the BC Act or EPBC Act |
| 4 | PCT55 (CW104, LA105) Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions | *Moderate to Good* | Not listed under the BC Act or EPBC Act |
| 5 | PCT55 (CW104, LA105) Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions | *Moderate to Good_DNG* | Not listed under the BC Act or EPBC Act |
| 6 | PCT70 (CW220, LA223) White Cypress Pine woodland on sandy loams in central NSW wheatbelt | *Moderate to Good* | Not listed under the BC Act or EPBC Act |
| 7 | PCT76 (CW145, LA154) Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | *Moderate to Good* | 7.39 ha of *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions* EEC listed under the BC Act to be impacted<br>9.50 ha *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* EEC listed under the EPBC Act |
| 8 | PCT76 (CW145, LA154) Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | *Moderate to Good_DNG* | 36.69 ha of *Inland Grey Box Woodland in the Riverina, NSW South Western Slopes, Cobar Peneplain, Nandewar and Brigalow Belt South Bioregions* EEC listed under the BC Act to be impacted<br>51.97 ha *Grey Box (Eucalyptus microcarpa) Grassy Woodlands and Derived Native Grasslands of South-eastern Australia* EEC listed under the EPBC Act |
| 9 | PCT244 (CW172, LA178) Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt) | *Moderate to Good* | Not listed under the BC Act or EPBC Act |
| 10 | PCT244 (CW172, LA178) Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt) | *Moderate to Good_DNG* | Not listed under the BC Act or EPBC Act |
| 11 | PCT201 (CW138, LA145) Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion | *Moderate to Good* | 1.88 ha of *Fuzzy Box Woodland on alluvial Soils of the South Western Slopes, Darling Riverine Plains and Brigalow Belt South Bioregions* EEC listed under the BC Act to be |

| Veg Zone | PCT ID (BVT IDs) and PCT Name | Condition Class | Disturbance Area (ha) and Listing Status |
|---|---|---|---|
| | | | impacted<br>Not listed under the EPBC Act |
| 12 | PCT267 (CW213, LA218) White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | *Moderate to Good* | 3.87 ha of *White Box Yellow Box Blakely's Red Gum Woodland* EEC listed under the BC Act to be impacted<br>1.70 ha *White box - yellow box - Blakely's red gum grassy woodlands and derived native grasslands* CEEC listed under the EPBC Act |
| 13 | PCT267 (CW213, LA218) White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | *Moderate to Good_DNG* | 4.56 ha of *White Box Yellow Box Blakely's Red Gum Woodland* EEC listed under the BC Act to be impacted<br>4.56 ha *White box - yellow box - Blakely's red gum grassy woodlands and derived native grasslands* CEEC listed under the EPBC Act |
| 14 | PCT276 (CW226, LA226) Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion | *Moderate to Good* | 7.16 ha of *White Box Yellow Box Blakely's Red Gum Woodland* EEC listed under the BC Act to be impacted<br>7.16 ha *White box - yellow box - Blakely's red gum grassy woodlands and derived native grasslands* CEEC listed under the EPBC Act |
| 15 | PCT276 (CW226, LA226) Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion | *Moderate to Good_DNG* | 19.80 ha of *White Box Yellow Box Blakely's Red Gum Woodland* EEC listed under the BC Act to be impacted<br>19.80 ha *White box - yellow box - Blakely's red gum grassy woodlands and derived native grasslands* CEEC listed under the EPBC Act |

**Table 3** below includes a comparison of the number of ecosystem credits required according to the original BAR (umwelt 2016) and this addendum. A total of 5,911 ecosystem credits are required as a result of vegetation mapping amendments and assumption that the entirety of the development site is fully impacted. Refer to **Attachment 1** for the Biodiversity Credit Reports.

**Table 3 – BAR and Addendum Ecosystem Credit Requirements**

| Veg zone | PCT ID (BVT IDs) and PCT Name | Condition Class | TEC | Addendum Development Footprint (ha) | Ecosystem Credits Generated | |
|---|---|---|---|---|---|---|
| | | | | | BAR | Addendum |
| 1 | PCT26 (CW205, LA212) Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | *Moderate to Good* | Yes | 4.74 | 146 | 219 |
| 2 | PCT36 (CW183, LA193) River Red Gum tall to very tall open forest / woodland | *Moderate to Good* | Not listed | 0.87 | 46 | 46 |

| Veg zone | PCT ID (BVT IDs) and PCT Name | Condition Class | TEC | Addendum Development Footprint (ha) | Ecosystem Credits Generated | |
|---|---|---|---|---|---|---|
| | | | | | BAR | Addendum |
| | wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion | | | | | |
| 3 | PCT36 (CW183, LA193) River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion | *Low_Regeneration* | Not listed | 0.62 | 8 | 8 |
| 4 | PCT55 (CW104, LA105) Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions | *Moderate to Good* | Not listed | 1.11 | 49 | 57 |
| 5 | PCT55 (CW104, LA105) Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions | *Moderate to Good_DNG* | Not listed | 28.29 | 293 | 1352 |
| 6 | PCT70 (CW220, LA223) White Cypress Pine woodland on sandy loams in central NSW wheatbelt | *Moderate to Good* | Not listed | 1.95 | 38 | 48 |
| 7 | PCT76 (CW145, LA154) Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | *Moderate to Good* | Yes | 10.19 | 473 | 562 |
| 8 | PCT76 (CW145, LA154) Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | *Moderate to Good_DNG* | Yes | 51.97 | 556 | 1231 |
| 9 | PCT244 (CW172, LA178) Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt) | *Moderate to Good* | Not listed | 3.38 | 79 | 188 |
| 10 | PCT244 (CW172, LA178) Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone | *Moderate to Good_DNG* | Not listed | 20.08 | 35 | 585 |

| Veg zone | PCT ID (BVT IDs) and PCT Name | Condition Class | TEC | Addendum Development Footprint (ha) | Ecosystem Credits Generated | |
|---|---|---|---|---|---|---|
| | | | | | BAR | Addendum |
| | of central NSW (wheatbelt) | | | | | |
| 11 | PCT201 (CW138, LA145) Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion | *Moderate to Good* | Yes | 1.88 | 70 | 88 |
| 12 | PCT267 (CW213, LA218) White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | *Moderate to Good* | Yes | 3.87 | 169 | 207 |
| 13 | PCT267 (CW213, LA218) White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | *Moderate to Good_DNG* | Yes | 4.56 | 16 | 159 |
| 14 | PCT276 (CW226, LA226) Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion | *Moderate to Good* | Yes | 7.16 | 235 | 492 |
| 15 | PCT276 (CW226, LA226) Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion | *Moderate to Good_DNG* | Yes | 19.80 | 348 | 669 |
| - | Cleared/Non-native vegetation | - | - | 762.26 | - | - |
| **Total** | | | | **922.74** | **2,561** | **5,911*** |

*note that due to rounding the biodiversity credit reports total 5,913 ecosystem credits, however according to the BioBanking Credit Calculator the total number of ecosystem credits is 5,911.

## 2.2 Species Credits

Following the amendments to the vegetation map and the inclusion of temporary impacts, the area of habitat for the koala has been increased accordingly, as detailed in **Table 4**. A total of 711 species credits for the koala are now required to offset the impacts of the proposal on the koala, compared to 491 species credits required according to the BAR (Umwelt 2016).

**Table 4 - BAR (Umwelt 2016) and Addendum Koala Species Credit Requirements**

| BAR Impact (ha) | Addendum Impact (ha) | BAR Species Credits | Addendum Species Credits |
|---|---|---|---|
| 18.88 | 27.35 | 491 | 711 |

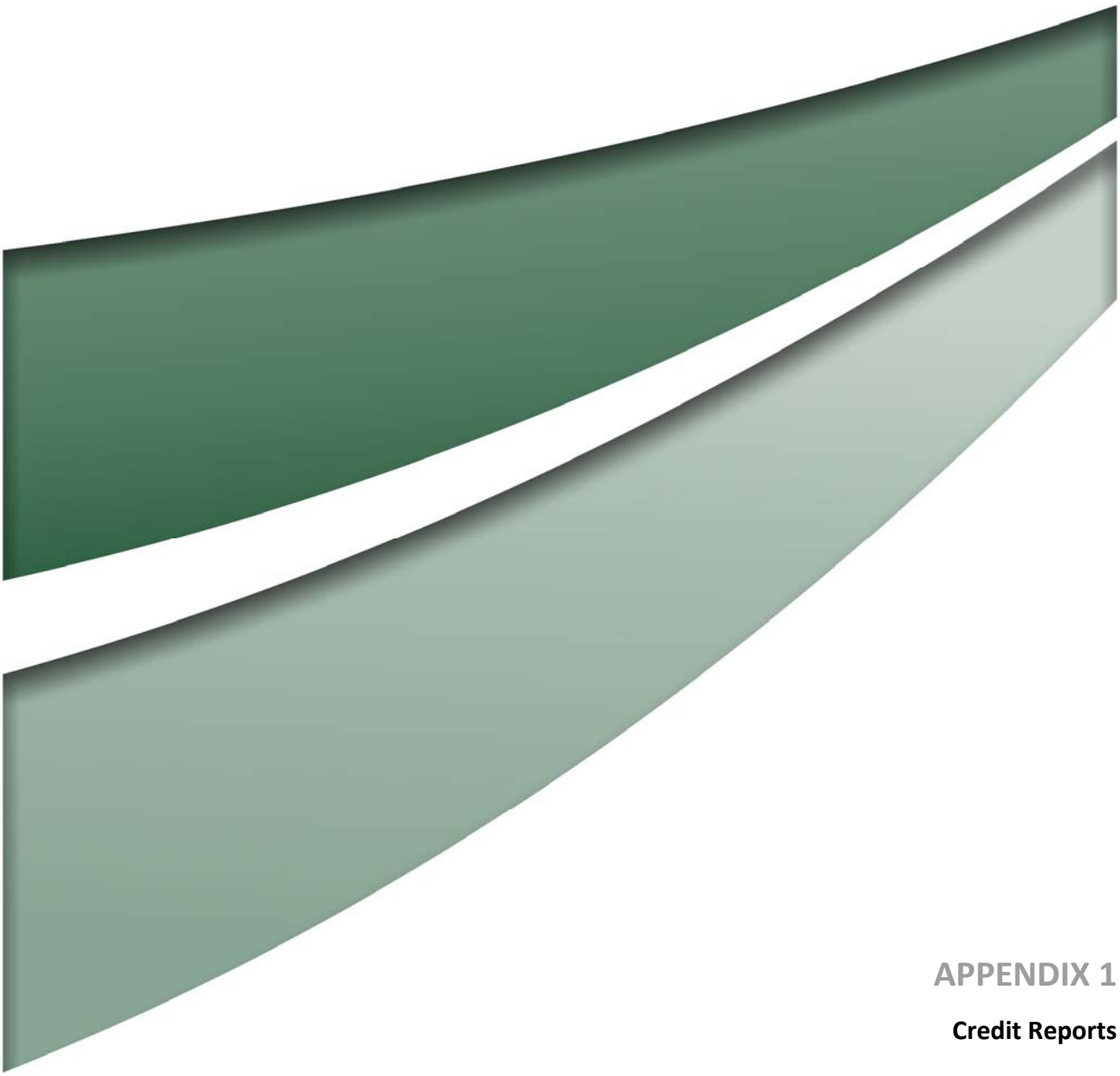
## 2.3 Summary

A total of 5,911 ecosystem credits and 711 species credits are required offset the impacts of the proposal. The updated Biodiversity Credit Report is included as **Attachment 1**.

We understand that the actual amount of vegetation that will be directly impacted by the proposal will be subject to further refinement during detailed design and the future biodiversity credits required to offset the proposal may decrease should the detailed design decrease the area of impact.

Yours sincerely

Allison Riley
NSW Ecology Manager



# APPENDIX 1

**Credit Reports**

# *Biodiversity credit report*

**This report identifies the number and type of biodiversity credits required for a major project.**

Date of report: 11/04/2018 Time: 1:54:56PM Calculator version: v4.0

## Major Project details

| | |
|---|---|
| **Proposal ID:** | 0113/2016/3640MP |
| **Proposal name:** | P2N Assessment Area 3 - Central West CMA/Bogan Macquarie IBRA SR |
| **Proposal address:** | na Parkes NSW 2870 |
| **Proponent name:** | Australian Rail and Track Corporation |
| **Proponent address:** | Level 12, 40 Creek Street Brisbane QLD 4000 |
| **Proponent phone:** | (07) 3364 8900 |
| **Assessor name:** | Ryan Parsons |
| **Assessor address:** | 75 York Street TERALBA NSW 2284 |
| **Assessor phone:** | 02 4950 5322 |
| **Assessor accreditation:** | 0113 |

## Summary of ecosystem credits required

| Plant Community type | Area (ha) | Credits created |
|---|---|---|
| Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions. | 29.17 | 1,398.00 |
| Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion | 0.40 | 19.00 |
| Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt). | 21.33 | 682.00 |
| Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | 3.11 | 144.00 |
| Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | 18.08 | 516.00 |
| White Cypress Pine woodland on sandy loams in central NSW wheatbelt | 0.80 | 21.00 |
| **Total** | 72.89 | 2,780 |

## Credit profiles

**1. Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion, (CW138)**

| | |
|---|---|
| Number of ecosystem credits created | 19 |
| IBRA sub-region | Bogan-Macquarie - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion, (CW138)<br><br>Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion, (CW112)<br><br>White Box grassy woodland of the Nandewar Bioregion and Brigalow Belt South Bioregion, (CW215)<br><br>White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion, (CW216)<br><br>Red Box - White Box +/- Red Stringybark hill woodland in the NSW South Western Slopes Bioregion, (CW280) | Bogan-Macquarie - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**2. Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (CW145)**

| | |
|---|---|
| Number of ecosystem credits created | 516 |
| IBRA sub-region | Bogan-Macquarie - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (CW145) | Bogan-Macquarie - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**3. Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt)., (CW172)**

| | |
|---|---|
| Number of ecosystem credits created | 682 |
| IBRA sub-region | Bogan-Macquarie - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt)., (CW172)<br><br>Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion, (CW144)<br><br>Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (CW145)<br><br>Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW, (CW152)<br><br>Poplar Box - Belah woodland on clay-loam soils on alluvial plains of north-central NSW, (CW167)<br><br>Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion, (CW317) | Bogan-Macquarie - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**4. White Cypress Pine woodland on sandy loams in central NSW wheatbelt, (CW220)**

| | |
|---|---|
| Number of ecosystem credits created | 21 |
| IBRA sub-region | Bogan-Macquarie - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| White Cypress Pine woodland on sandy loams in central NSW wheatbelt, (CW220)<br><br>Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion, (CW144)<br><br>Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (CW145)<br><br>Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW, (CW152)<br><br>Poplar Box - Belah woodland on clay-loam soils on alluvial plains of north-central NSW, (CW167)<br><br>Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt)., (CW172)<br><br>Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion, (CW317) | Bogan-Macquarie - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**5. Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions., (CW104)**

| | |
|---|---|
| Number of ecosystem credits created | 1,398 |
| IBRA sub-region | Bogan-Macquarie - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions., (CW104)<br><br>Coolabah - River Coobah - Lignum woodland wetland of frequently flooded floodplains mainly in the Darling Riverine Plains Bioregion, (CW125)<br><br>Coolabah open woodland wetland with chenopod/grassy ground cover on grey and brown clay floodplains, (CW126) | Bogan-Macquarie - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**6. Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion, (CW205)**

| | |
|---|---|
| Number of ecosystem credits created | 144 |
| IBRA sub-region | Bogan-Macquarie - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion, (CW205)<br><br>Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion, (CW204) | Bogan-Macquarie - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

## Summary of species credits required

# *Biodiversity credit report*

**This report identifies the number and type of biodiversity credits required for a major project.**

Date of report: 11/04/2018 Time: 1:47:09PM Calculator version: v4.0

## Major Project details

| | |
|---|---|
| **Proposal ID:** | 0113/2016/3632MP |
| **Proposal name:** | P2N Assessment Area 2 - Central West CMA/Lower Slopes IBRA SR |
| **Proposal address:** | na Parkes NSW 2870 |
| **Proponent name:** | Australian Rail and Track Corporation |
| **Proponent address:** | Level 12, 40 Creek Street Brisbane QLD 4000 |
| **Proponent phone:** | (07) 3364 8900 |
| **Assessor name:** | Ryan Parsons |
| **Assessor address:** | 75 York Street TERALBA NSW 2284 |
| **Assessor phone:** | 02 4950 5322 |
| **Assessor accreditation:** | 0113 |

## Summary of ecosystem credits required

| Plant Community type | Area (ha) | Credits created |
|---|---|---|
| Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions. | 0.23 | 11.00 |
| Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion | 1.48 | 69.26 |
| Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt). | 2.13 | 91.00 |
| River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion | 1.49 | 53.97 |
| Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion | 1.63 | 75.47 |
| Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | 21.43 | 594.50 |
| White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | 1.34 | 63.00 |
| White Cypress Pine woodland on sandy loams in central NSW wheatbelt | 0.17 | 4.00 |
| Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion | 17.47 | 813.36 |
| **Total** | 47.37 | 1,776 |

## Credit profiles

**1. Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion, (CW138)**

| | |
|---|---|
| Number of ecosystem credits created | 69 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion, (CW138)<br><br>Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion, (CW112)<br><br>White Box grassy woodland of the Nandewar Bioregion and Brigalow Belt South Bioregion, (CW215)<br><br>White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion, (CW216)<br><br>Red Box - White Box +/- Red Stringybark hill woodland in the NSW South Western Slopes Bioregion, (CW280) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**2. Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (CW145)**

| | |
|---|---|
| Number of ecosystem credits created | 595 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (CW145) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**3. Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt)., (CW172)**

| | |
|---|---|
| Number of ecosystem credits created | 91 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt)., (CW172)<br><br>Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion, (CW144)<br><br>Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (CW145)<br><br>Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW, (CW152)<br><br>Poplar Box - Belah woodland on clay-loam soils on alluvial plains of north-central NSW, (CW167)<br><br>Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion, (CW317) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**4. White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion, (CW213)**

| | |
|---|---|
| Number of ecosystem credits created | 63 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion, (CW213)<br><br>Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion, (CW112)<br><br>Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion, (CW138)<br><br>Fuzzy Box woodland on colluvium and alluvial flats in the Brigalow Belt South Bioregion (including Pilliga) and Nandewar Bioregion, (CW139)<br><br>White Box - Rough-barked Apple alluvial woodland of the NSW central western slopes including in the Mudgee region, (CW211)<br><br>White Box grassy woodland of the Nandewar Bioregion and Brigalow Belt South Bioregion, (CW215)<br><br>White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion, (CW216)<br><br>Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion, (CW226)<br><br>Apple Box - Rough-barked Apple terrace flats woodland of the southern Brigalow Belt South Bioregion, (CW231)<br><br>Red Box - White Box +/- Red Stringybark hill woodland in the NSW South Western Slopes Bioregion, (CW280) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**5. White Cypress Pine woodland on sandy loams in central NSW wheatbelt, (CW220)**

| | |
|---|---|
| Number of ecosystem credits created | 4 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| White Cypress Pine woodland on sandy loams in central NSW wheatbelt, (CW220)<br><br>Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion, (CW144)<br><br>Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (CW145)<br><br>Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW, (CW152)<br><br>Poplar Box - Belah woodland on clay-loam soils on alluvial plains of north-central NSW, (CW167)<br><br>Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt)., (CW172)<br><br>Western Grey Box - cypress pine shrub grass shrub tall woodland in the Brigalow Belt South Bioregion, (CW317) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**6. Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion, (CW226)**

| | |
|---|---|
| Number of ecosystem credits created | 813 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion, (CW226)<br><br>Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion, (CW112)<br><br>Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion, (CW138)<br><br>Fuzzy Box woodland on colluvium and alluvial flats in the Brigalow Belt South Bioregion (including Pilliga) and Nandewar Bioregion, (CW139)<br><br>White Box - Rough-barked Apple alluvial woodland of the NSW central western slopes including in the Mudgee region, (CW211)<br><br>White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion, (CW213)<br><br>White Box grassy woodland of the Nandewar Bioregion and Brigalow Belt South Bioregion, (CW215)<br><br>White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion, (CW216)<br><br>Apple Box - Rough-barked Apple terrace flats woodland of the southern Brigalow Belt South Bioregion, (CW231)<br><br>Red Box - White Box +/- Red Stringybark hill woodland in the NSW South Western Slopes Bioregion, (CW280) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**7. Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions., (CW104)**

| | |
|---|---|
| Number of ecosystem credits created | 11 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Belah woodland on alluvial plains and low rises in the central NSW wheatbelt to Pilliga and Liverpool Plains regions., (CW104)<br><br>Coolabah - River Coobah - Lignum woodland wetland of frequently flooded floodplains mainly in the Darling Riverine Plains Bioregion, (CW125)<br><br>Coolabah open woodland wetland with chenopod/grassy ground cover on grey and brown clay floodplains, (CW126) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**8. Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion, (CW205)**

| | |
|---|---|
| Number of ecosystem credits created | 75 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Weeping Myall open woodland of the Riverina Bioregion and NSW South Western Slopes Bioregion, (CW205)<br><br>Weeping Myall open woodland of the Darling Riverine Plains Bioregion and Brigalow Belt South Bioregion, (CW204) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**9. River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion, (CW183)**

| | |
|---|---|
| Number of ecosystem credits created | 46 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion, (CW183)<br><br>River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW, (CW181)<br><br>River Red Gum riparian tall woodland / open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion, (CW184)<br><br>Black Tea-tree - River Oak - Wilga riparian low forest/shrubland wetland of rich soil depressions in the Brigalow Belt South Bioregion, (CW237)<br><br>Blakely's Red Gum x Dirty Gum - White Cypress Pine tall riparian woodland, NSW South Western Slopes Bioregion, (CW240) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**10. River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion, (CW183)**

| | |
|---|---|
| Number of ecosystem credits created | 8 |
| IBRA sub-region | Lower Slopes - Central West |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| River Red Gum swampy woodland wetland on cowals (lakes) and associated flood channels in central NSW, (CW181)<br><br>River Red Gum tall to very tall open forest / woodland wetland on rivers on floodplains mainly in the Darling Riverine Plains Bioregion, (CW183)<br><br>River Red Gum riparian tall woodland / open forest wetland in the Nandewar Bioregion and Brigalow Belt South Bioregion, (CW184)<br><br>Black Tea-tree - River Oak - Wilga riparian low forest/shrubland wetland of rich soil depressions in the Brigalow Belt South Bioregion, (CW237)<br><br>Blakely's Red Gum x Dirty Gum - White Cypress Pine tall riparian woodland, NSW South Western Slopes Bioregion, (CW240) | Lower Slopes - Central West<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

## Summary of species credits required

# *Biodiversity credit report*

**This report identifies the number and type of biodiversity credits required for a major project.**

Date of report: 11/04/2018 Time: 1:39:04PM Calculator version: v4.0

## Major Project details

| | |
|---|---|
| **Proposal ID:** | 0113/2016/3641MP |
| **Proposal name:** | P2N Assessment Area 1 - Lachlan CMA/Lower Slopes IBRA SR |
| **Proposal address:** | na Parkes NSW 2870 |
| **Proponent name:** | Australian Rail and Track Corporation |
| **Proponent address:** | Level 12, 40 Creek Street Brisbane QLD 4000 |
| **Proponent phone:** | (07) 3364 8900 |
| **Assessor name:** | Ryan Parsons |
| **Assessor address:** | 75 York Street TERALBA NSW 2284 |
| **Assessor phone:** | 02 4950 5322 |
| **Assessor accreditation:** | 0113 |

## Summary of ecosystem credits required

| Plant Community type | Area (ha) | Credits created |
|---|---|---|
| Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions | 22.65 | 682.00 |
| White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion | 7.09 | 303.44 |
| White Cypress Pine woodland on sandy loams in central NSW wheatbelt | 0.98 | 23.00 |
| Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion | 9.49 | 348.41 |
| **Total** | 40.21 | 1,357 |

## Credit profiles

**1. White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion, (LA218)**

| | |
|---|---|
| Number of ecosystem credits created | 303 |
| IBRA sub-region | Lower Slopes - Lachlan |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion, (LA218)<br><br>White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion, (LA219)<br><br>Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion, (LA226)<br><br>Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion, (LA120)<br><br>Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion, (LA145)<br><br>Red Box - White Box +/- Red Stringybark hill woodland in the NSW South Western Slopes Bioregion, (LA252) | Lower Slopes - Lachlan<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**2. White Cypress Pine woodland on sandy loams in central NSW wheatbelt, (LA223)**

| | |
|---|---|
| Number of ecosystem credits created | 23 |
| IBRA sub-region | Lower Slopes - Lachlan |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| White Cypress Pine woodland on sandy loams in central NSW wheatbelt, (LA223)<br><br>Western Grey Box - Poplar Box - White Cypress Pine tall woodland on red loams mainly of the eastern Cobar Peneplain Bioregion, (LA152)<br><br>Western Grey Box - White Cypress Pine tall woodland on loam soil on alluvial plains of NSW South Western Slopes Bioregion and Riverina Bioregion, (LA153)<br><br>Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (LA154)<br><br>Mixed box eucalypt woodland on low sandy-loam rises on alluvial plains in central western NSW, (LA162)<br><br>Mixed Eucalypt woodlands of floodplains in the southern-eastern Cobar Peneplain Bioregion, (LA163)<br><br>Poplar Box - Belah woodland on clay-loam soils on alluvial plains of north-central NSW, (LA175)<br><br>Poplar Box grassy woodland on alluvial clay-loam soils mainly in the temperate (hot summer) climate zone of central NSW (wheatbelt)., (LA178)<br><br>Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone, (LA194)<br><br>Yellow Box - River Red Gum tall grassy riverine woodland of NSW South Western Slopes Bioregion and Riverina Bioregion, (LA195) | Lower Slopes - Lachlan<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**3. Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion, (LA226)**

| | |
|---|---|
| Number of ecosystem credits created | 348 |
| IBRA sub-region | Lower Slopes - Lachlan |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Yellow Box grassy tall woodland on alluvium or parna loams and clays on flats in NSW South Western Slopes Bioregion, (LA226)<br><br>White Box - White Cypress Pine - Western Grey Box shrub/grass/forb woodland in the NSW South Western Slopes Bioregion, (LA218)<br><br>White Box grassy woodland in the upper slopes sub-region of the NSW South Western Slopes Bioregion, (LA219)<br><br>Blakely's Red Gum - Yellow Box grassy tall woodland of the NSW South Western Slopes Bioregion, (LA120)<br><br>Fuzzy Box Woodland on alluvial brown loam soils mainly in the NSW South Western Slopes Bioregion, (LA145)<br><br>Red Box - White Box +/- Red Stringybark hill woodland in the NSW South Western Slopes Bioregion, (LA252) | Lower Slopes - Lachlan<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

**4. Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (LA154)**

| | |
|---|---|
| Number of ecosystem credits created | 682 |
| IBRA sub-region | Lower Slopes - Lachlan |

| Offset options - Plant Community types | Offset options - IBRA sub-regions |
|---|---|
| Western Grey Box tall grassy woodland on alluvial loam and clay soils in the NSW South Western Slopes and Riverina Bioregions, (LA154)<br><br>Riverine Western Grey Box grassy woodland of the semi-arid (warm) climate zone, (LA194) | Lower Slopes - Lachlan<br>and any IBRA subregion that adjoins the IBRA subregion in which the development occurs |

## Summary of species credits required

| Common name | Scientific name | Extent of impact Ha or individuals | Number of species credits created |
|---|---|---|---|
| Koala | Phascolarctos cinereus | 27.35 | 711 |