

Andrew Wright  
Group Manager- Biodiversity  
Werris Creek Coal Pty Ltd  
PO Box 600  
Gunnedah, NSW, 2380

05/06/2026

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Werris Creek Coal – Offset Management Plan

Dear Mr. Wright

Thank you for submitting the Offset Management Plan in accordance with Condition 28, Schedule 3 of the consent for the Werris Creek (MP10\_0059-PA-58). I also acknowledge your response to the Department's review comments and request for additional information.

I note the plan was revised to include consultation with NSW DCCEEW and updated to reflect that the development has completed active mining and is now within the post-mining rehabilitation phase. The management plan contains the information required by the conditions of approval.

Accordingly, as nominee of the Planning Secretary, I approve the revised Offset Management Plan (Rev. 5, June 2026).

You are reminded that if there are any inconsistencies between the Plan and the conditions of approval, the conditions prevail.

Please ensure you make the document publicly available on the project website at the earliest convenience.

If you wish to discuss the matter further, please contact Charissa Pillay on 02 99955944.

Yours sincerely



Stephen O'Donoghue  
Director  
Resource Assessments  
As nominee of the Planning Secretary



Australian Government

Department of Climate Change, Energy,  
the Environment and Water

EPBC 2010/5571

Andrew Wright  
Environmental Specialist (Biodiversity)  
Whitehaven Coal Limited  
[awright@whitehavencoal.com.au](mailto:awright@whitehavencoal.com.au)

**Approval of Werris Offset Management Plan for Werris Creek Life of Mine Extension Project, NSW**

Dear Mr Wright

Thank you for your email dated 25 May 2026 to the Department of Climate Change, Energy, the Environment and Water (the department), seeking approval of the revised Werris Offset Management Plan, in accordance with condition 2 of the above project under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).

Officers of the department have advised me on the Offset Management Plan and the requirements of the conditions of the approval for this project. On this basis, and as a delegate of the Minister for the Environment and Water (the Minister), I have decided to approve the Werris Offset Management Plan, Version 2.4, 25 May 2026.

Now this plan has been approved, it must be implemented.

As you are aware, the department has an active monitoring program which includes monitoring inspections, desk top document reviews and audits. Please ensure that you maintain accurate records of all activities associated with, or relevant to, the conditions of approval so that they can be made available to the department on request. Should you require any further information please contact Natasha Wilczek by email to [PostApproval@dcceew.gov.au](mailto:PostApproval@dcceew.gov.au) or telephone 02 5162 3254.

Yours sincerely

A handwritten signature in blue ink, appearing to read 'Alison Muscroft'.

Alison Muscroft  
A/g Director, NSW Central, Sydney & ACT Assessments Section  
Environment Assessments (NSW, ACT) Branch  
Environment Regulation Division

29 May 2026

**From:** [Natasha WILCZEK](#)  
**To:** [Andrew Wright](#)  
**Cc:** [Brianna FYFFE](#); [Sarah Cardenzana](#)  
**Subject:** RE: Werris Creek Revised Offset Management Plan - approval [SEC=OFFICIAL]  
**Date:** Thursday, 4 June 2026 1:50:03 PM  
**Attachments:** [image003.png](#)  
[image004.png](#)

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OFFICIAL

Hi Andrew,

Thank you for your email.

Condition 6 of EPBC Approval 2010/5571 states that *“If the person taking the action wishes to carry out any activity otherwise than in accordance with the management plan, as specified in the conditions, the person taking the action must submit to the department for the Minister’s written approval a revised version of that management plan...”*

As the addition to the management plan required by NSW DPHI is administrative and minor in nature, and does not result in the implementation of any activity otherwise than in accordance with the approved management plan, approval by the Minister is not required.

Activities described in *Werris Offset Management Plan, Version 2.4, 25 May 2026* must be implemented in accordance with EPBC Approval 2010/5571 from the date of its approval (29 May 2026).

Please let me know if you have any further questions.

Kind regards

Natasha Wilczek  
**A/g Senior Assessment Officer**

Environment Regulation Division | Environment Assessments (NSW, ACT) Branch | NSW Central, Sydney and ACT Assessments

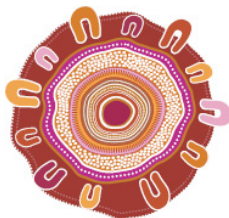
Kaurna Country, Level 13 Festival Tower, Adelaide SA 5000

GPO Box 3090, Canberra ACT 2601

Department of Climate Change, Energy, the Environment and Water

E [natasha.wilczek@dcceew.gov.au](mailto:natasha.wilczek@dcceew.gov.au)

**DCCEEW.gov.au** ABN 63 573 932 849



We acknowledge the Traditional Owners of country throughout Australia and recognise their continuing connection to land, waters and culture. We pay our respects to their Elders past and present.

OFFICIAL

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|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                   |                   | Document Approver:  | General Manager – Environment |
|                                                                                   |                   | Issue:              | 2026-V2.5                     |
|                                                                                   |                   | Last Revision Date: | 01 June 2026                  |
|                                                                                   |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

# **WERRIS OFFSET MANAGEMENT PLAN**

**(Offset Areas approved for the Werris Creek Coal Mine PA10\_0059  
and EPBC 2010/5571)**

**Prepared by Whitehaven Coal  
ABN: 68 124 425 396**

**01 June 2026**



|                                                                                   |                   |                     |                               |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

## Document History

| Edition | Rev. | Comments                                                                                                                                                                                                                                                                                                                                                                                                       | Author                                                     | Date             |
|---------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------|------------------|
| 1       | V11  | Final draft of <i>Biodiversity and Offset Management Plan</i> (WCC, 2013) for Werris BOA and Werris Creek Minesite areas                                                                                                                                                                                                                                                                                       | Eco Logical Australia Pty Ltd on behalf of Whitehaven Coal | August 2013      |
| 1       | 0    | Initial draft of WHC OMP to consolidate and standardise management requirements of subsidiary-owned WHC Biodiversity Offset Areas (Biobank, Kenna, Onsite, Werris and Willeroi) into one Management Plan following securement of Conservation Agreements CA0060, VCA0486, VC00528, VC00496, VC00530, VC00495, VC00529 and VC00531.                                                                             | Ecoplanning Pty Ltd on behalf of Whitehaven Coal           | 10 March 2023    |
| 2       | 0    | Initial draft of Werris OMP after consultation with NSW DPHI and Commonwealth DCCEEW requesting individual management plans for each WHC Mining Operation                                                                                                                                                                                                                                                      | Ecoplanning Pty Ltd on behalf of Whitehaven Coal           | 13 February 2024 |
| 2       | 1    | Revised draft of standalone Werris OMP for approval of Commonwealth DCCEEW after NSW DPHI requesting individual offset area management plans for each WHC Mining Operation.<br><br>Where relevant, amendments have been made to align with other WHC OMPs following consultation undertaken with the Biodiversity, Conservation and Science Group (BCS) of NSW DCCEEW and the BCT, and requirements by CDCCEW. | Ecoplanning Pty Ltd on behalf of Whitehaven Coal           | 11 December 2025 |
| 2       | 2    | Minor amendments to Werris OMP to address comments from Conservation Programs, Heritage and Regulation Group (CPHR) of the NSW DCCEEW dated 22 December 2025.                                                                                                                                                                                                                                                  | Ecoplanning Pty Ltd on behalf of Whitehaven Coal           | 14 January 2026  |
| 2       | 2    | Final for submission following satisfaction of amendments to the Werris OMP and Werris RBOS received from the CPHR Group of NSW DCCEEW.                                                                                                                                                                                                                                                                        | Ecoplanning Pty Ltd on behalf of Whitehaven Coal           | 10 February 2026 |

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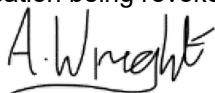
| Edition | Rev. | Comments                                                                                                  | Author                                           | Date         |
|---------|------|-----------------------------------------------------------------------------------------------------------|--------------------------------------------------|--------------|
| 2       | 3    | Minor amendments to Werris OMP to address comments from Commonwealth DCCEEW dated 13/04/2026 & 14/04/2026 | Ecoplanning Pty Ltd on behalf of Whitehaven Coal | 20 May 2026  |
| 2       | 4    | Minor amendments to Werris OMP to address comments from NSW DPHI dated 21/05/2026                         | Ecoplanning Pty Ltd on behalf of Whitehaven Coal | 25 May 2026  |
| 2       | 5    | Minor amendments to Werris OMP to address comments from NSW DPHI dated 01/06/2026.                        | Ecoplanning Pty Ltd on behalf of Whitehaven Coal | 01 June 2026 |

## DECLARATION OF ACCURACY

In making this declaration, I:

- am aware that section 491 of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) makes it an offence in certain circumstances to knowingly provide false or misleading information or documents to specified persons who are known to be performing a duty or carrying out a function under the EPBC Act or the *Environment Protection and Biodiversity Conservation Regulations 2000* (EPBC Regulations). The offence is punishable on conviction imprisonment or a fine, or both.
- am authorised to bind Whitehaven Coal to this declaration and have no knowledge of that authorisation being revoked at the time of making this declaration.

**Signature**



**Full name (please print)** Andrew Wright (Group Manager - Biodiversity)

**Organisation (please print)** Whitehaven Coal Mining Limited as the Approval Holder for EPBC 2010/5571

**Date:** 01 / 06 / 2026

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## GLOSSARY AND ABBREVIATIONS

| Acronym  | Description                                                                                                                                                                                           |
|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| ASC      | Australian Soil Classification                                                                                                                                                                        |
| AWS      | Automatic Weather Stations                                                                                                                                                                            |
| BA       | Biobanking Agreement                                                                                                                                                                                  |
| BBAM     | Biobanking Assessment Method                                                                                                                                                                          |
| BC Act   | Biodiversity Conservation Act 2016                                                                                                                                                                    |
| BCS      | Biodiversity, Conservation and Science Group within NSW DCCEEW (now CPHR)                                                                                                                             |
| BCT      | Biodiversity Conservation Trust                                                                                                                                                                       |
| BGW      | Box Gum Woodland                                                                                                                                                                                      |
| BOA      | Biodiversity Offset Area                                                                                                                                                                              |
| BOMP     | Biodiversity Offset Management Plan                                                                                                                                                                   |
| BOS      | Biodiversity Offset Strategy                                                                                                                                                                          |
| CDCCEEW  | Commonwealth Department of Climate Change, Energy, the Environment and Water (formerly Department of Agriculture, Water and the Environment [DAWE])                                                   |
| CEEC     | Critically Endangered Ecological Community                                                                                                                                                            |
| CPHR     | Conservation Programs, Heritage & Regulation Group within NSW DCCEEW (previously BCS)                                                                                                                 |
| DAWE     | Former Commonwealth Department of Agriculture, Water and the Environment, now Commonwealth Department of Climate Change, Energy, the Environment and Water (CDCCEEW)                                  |
| DNG      | Derived Native Grassland                                                                                                                                                                              |
| DPE      | Former NSW Department of Planning and Environment, now NSW Department of Planning, Housing and Infrastructure (DPHI) and NSW Department of Climate Change, Energy, the Environment and Water (DCCEEW) |
| EEC      | Endangered Ecological Community                                                                                                                                                                       |
| ELA      | Eco Logical Australia                                                                                                                                                                                 |
| EP       | Ecoplanning                                                                                                                                                                                           |
| EP&A Act | NSW Environmental Planning and Assessment Act 1979                                                                                                                                                    |
| EPBC Act | Environment Protection and Biodiversity Conservation Act 1999                                                                                                                                         |
| GBD      | General Biosecurity Duty                                                                                                                                                                              |
| GSG      | Greater Soil Group                                                                                                                                                                                    |
| ha       | Hectares                                                                                                                                                                                              |
| HTE      | Hight Threat Exotic                                                                                                                                                                                   |
| IBRA     | Interim Biogeographic Regionalisation for Australia                                                                                                                                                   |
| KTP      | Key Threatening Process                                                                                                                                                                               |



|                                                                                   |                   |                     |                               |
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| Acronym    | Description                                                                                                  |
|------------|--------------------------------------------------------------------------------------------------------------|
| LGA        | Local Government Area                                                                                        |
| Werris BOA | Encompassing the Werris Offset Properties                                                                    |
| NPWS       | NSW National Parks and Wildlife Service                                                                      |
| NSW        | New South Wales                                                                                              |
| NSW DCCEEW | NSW Department of Climate Change, Energy, the Environment and Water                                          |
| NSW DPHI   | NSW Department of Planning, Housing and Infrastructure (formerly Office of Environment and Heritage [OEH])   |
| NWRSWMP    | North West Regional Strategic Weed Management Plan 2017 – 2022                                               |
| OEH        | Former Office of Environment and Heritage, now NSW Department of Planning, Housing and Infrastructure (DPHI) |
| OMP        | Offset Management Plan                                                                                       |
| PCT        | Plant Community Type                                                                                         |
| RBOS       | Revised Biodiversity Offset Strategy                                                                         |
| RFS        | NSW Rural Fire Services                                                                                      |
| SSD        | State Significant Development                                                                                |
| TEC        | Threatened Ecological Community                                                                              |
| VCM        | Vickery Coal Mine                                                                                            |
| VZ         | Vegetation Zone                                                                                              |
| WCCM       | Werris Creek Coal Mine                                                                                       |
| WHC        | Whitehaven Coal Limited                                                                                      |
| WoNS       | Weeds of National Significance                                                                               |

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                   |                   | Document Approver:  | General Manager – Environment |
|                                                                                   |                   | Issue:              | 2026-V2.5                     |
|                                                                                   |                   | Last Revision Date: | 01 June 2026                  |
|                                                                                   |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

## EXECUTIVE SUMMARY

The Werris Offset Management Plan (OMP) has been prepared in accordance with the relevant State and Commonwealth approvals for Werris Creek Coal Mine (WCCM) and provides a plan for the management of the following WHC company-owned Werris Biodiversity Offset Area (BOA) as documented in the Werris Revised Biodiversity Offset Strategy (Ecoplanning, 2025).

This OMP describes the management methods to be applied to the Werris BOA, which consists of the secured properties Eurunderree, Narrawolga (North and South), Railway View, Hillview, Greenslopes and Marengo, and compensatory revegetation areas of Escott A, Hillview West, and Plain View North. The management methods are based on standardised management actions utilised across all other WHC company-owned BOA properties, ensuring contemporary management methods are being applied effectively and efficiently to deliver the required ecological objectives of various OMPs and in accordance with the State and Commonwealth approval requirements for the BOA within this OMP.

Following submission of a consolidated WHC BOMP in 2023; this standalone OMP has not previously been submitted to the New South Wales (NSW) Department of Planning, Housing and Infrastructure (NSW DPHI), NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) and to the Commonwealth Department of Climate Change, Energy, the Environment and Water (CDCCEEW), however, the following OMPs and Biodiversity Management Plans (BMPs) are currently approved for the management of biodiversity at the respective WHC coal mines:

- Werris Creek Coal Mine Biodiversity and Offset Management Plan (2013), approved by Department of Planning (now known as DPHI) on 30 August 2013 for WCCM; and
- Werris Creek Coal Mine Biodiversity Management Plan (2016), approved by Commonwealth Department of Environment and Energy (DoEE, now known as CDCCEEW) on 4 July 2017 for WCCM.

Pending approval from CDCCEEW and NSW DPHI; this OMP will supersede (in full or in part) the above listed management plans. The sections relating to the BOA of previously approved OMPs or Biodiversity Management Plans (BMPs) to be superseded or replaced by this OMP are outlined in **Table 1-3**.

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

## 1 INTRODUCTION

### 1.1 BACKGROUND

Whitehaven Coal Limited (WHC) operates numerous coal mines within the Gunnedah Basin (**Figure 1-1**), including the Werris Creek Coal Mine (WCCM). This Offset Management Plan (OMP) has been prepared to address the requirements of State and Commonwealth approval (Project Approvals under the NSW *Environmental Planning and Assessment Act* [EP&A Act] as well as approval under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* [EPBC Act] for WCCM (shown in **Table 1-1**) and has been guided by the *EPBC Act Environmental Offset Policy* (DSEWPaC 2012). Details regarding the mine, its location, ownership and approvals are summarised in **Table 1-1** and legally binding conservation covenant for the BOA is documented in **Table 1-2**.

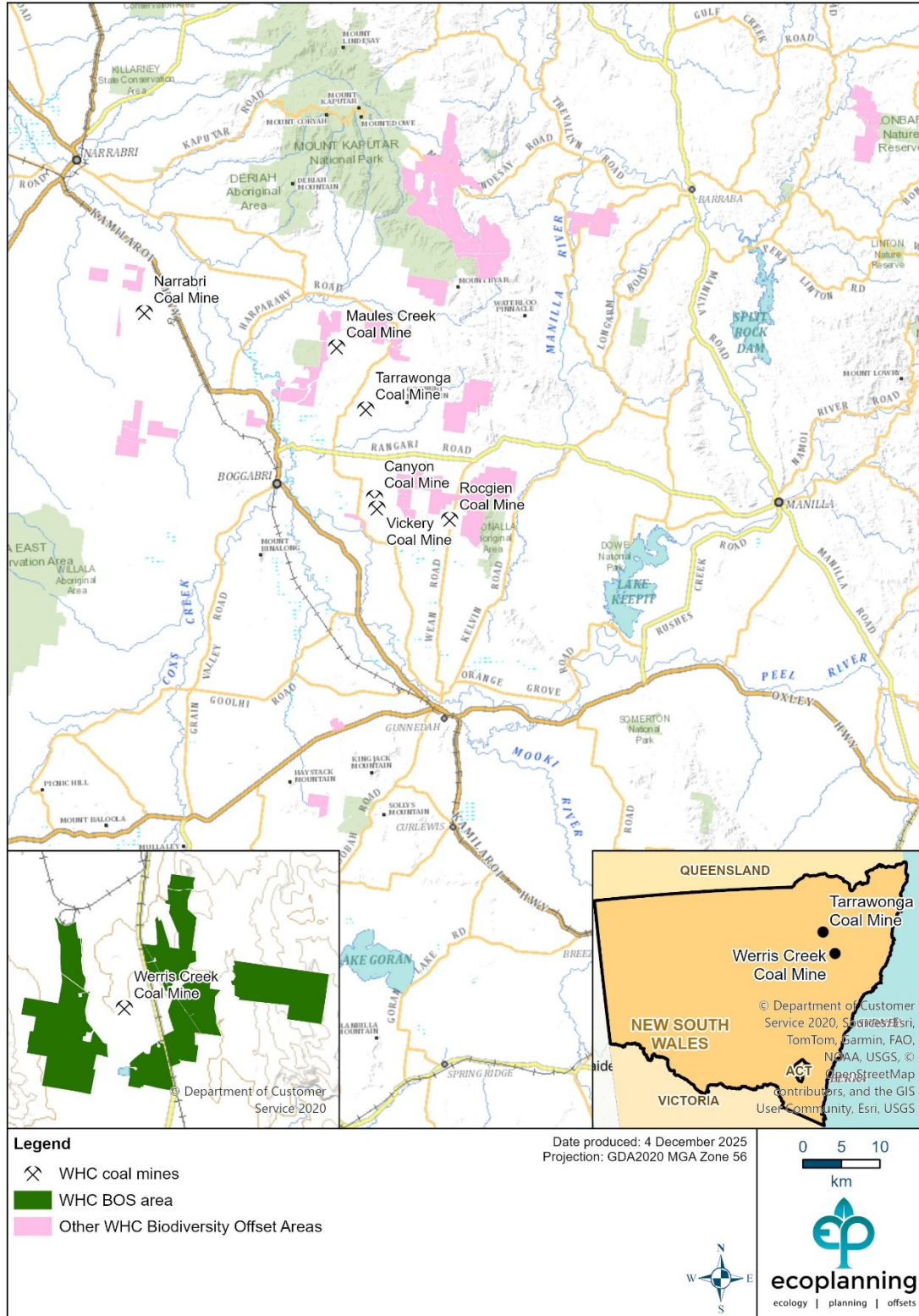
**Table 1-1: WCCM Location, Ownership and NSW/Commonwealth Approval details**

| Mine                          | Location                                                                                                       | Owner                                                             | State (NSW) Approval             | Commonwealth EPBC Approval       |
|-------------------------------|----------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|----------------------------------|----------------------------------|
| Werris Creek Coal Mine (WCCM) | Approximately 2.4km south of Werris Creek and 11km north-northwest of Quirindi in the north-west region of NSW | Werris Creek Coal Pty Limited (a wholly owned subsidiary of WHC). | MP 10_0059 MOD 5 (December 2024) | EPBC 2010/5571 (8 December 2017) |

**Table 1-2: Relevant Biodiversity Offset Areas (BOA) and Legally Binding Conservation Covenants**

| Mine                          | BOA        | Offset Properties                                                                                | Legally Binding Conservation Covenant                                                                                         |                                                                                  |
|-------------------------------|------------|--------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|
| Werris Creek Coal Mine (WCCM) | Werris BOA | Eurunderee<br>Narrawolga (North and South)<br>Hillview<br>Greenslopes<br>Railway View<br>Marengo | AN433796<br>AN433797<br>AN433812<br>AN433812<br>AN433763<br>AN433764<br>AN433847                                              | AN433820<br>AN433821<br>AN433787<br>AN433788<br>AN433834<br>AN433835<br>AN433846 |
|                               |            | Escott A<br>Hillview West<br>Plain View North                                                    | Compensatory Revegetation Area as displayed in Fig. 1 of MP 10_0059 MOD 5. No existing legally binding conservation covenant. |                                                                                  |

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                   |                   | Document Approver:  | General Manager – Environment |
|                                                                                   |                   | Issue:              | 2026-V2.5                     |
|                                                                                   |                   | Last Revision Date: | 01 June 2026                  |
|                                                                                   |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

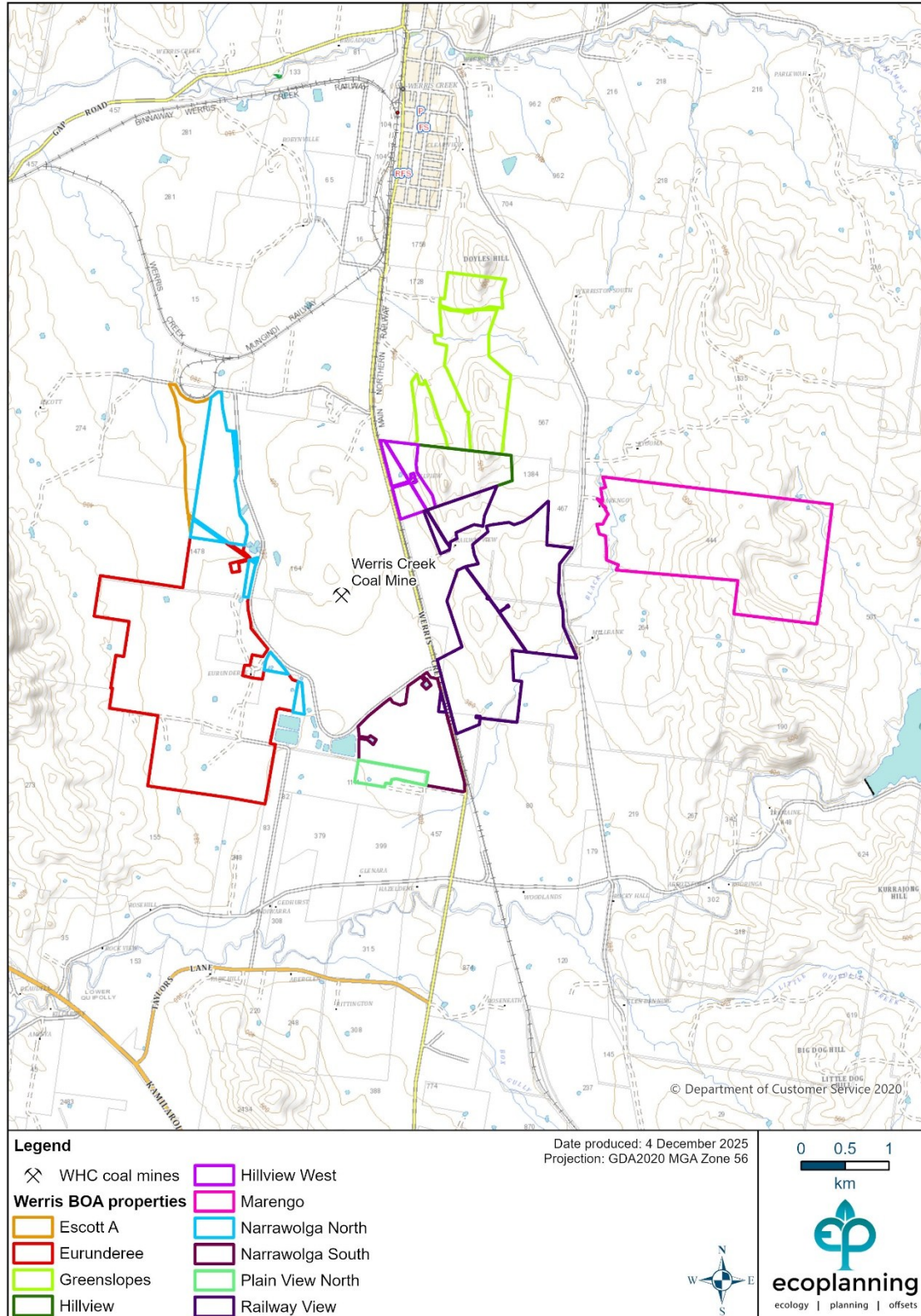


**Figure 1-1: Regional setting of WHC coal mines and Biodiversity Offset Strategy (BOS) areas.**



|                     |                               |
|---------------------|-------------------------------|
| Document Owner:     | Group Manager - Biodiversity  |
| Document Approver:  | General Manager – Environment |
| Issue:              | 2026-V2.5                     |
| Last Revision Date: | 01 June 2026                  |
| Revision Period:    | Refer to Section 6.3          |

## WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)



**Figure 1-2: Regional setting of the Werris BOA and offset properties**

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                   |                   | Document Approver:  | General Manager – Environment |
|                                                                                   |                   | Issue:              | 2026-V2.5                     |
|                                                                                   |                   | Last Revision Date: | 01 June 2026                  |
|                                                                                   |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

## 1.2 SCOPE AND OBJECTIVES

The purpose of this OMP is to provide a plan for the management of BOA shown in **Figure 1-1** and **Figure 1-2**, in accordance with all relevant approval requirements outlined in **Table 1-1** and summarised in **Section 2**. This OMP will provide WHC direction to:

- Identify the land that will be required to be managed in accordance with this OMP;
- Outline the actions for managing biodiversity within the BOA;
- Identify and address approvals and legislative requirements relevant to biodiversity management of the BOA;
- Provide a management framework that will lead to an improvement in the condition of biodiversity across the BOA;
- Identify and minimise the impacts of key threats to biodiversity; and
- Outline the monitoring, performance evaluation and reporting processes to be implemented by WHC personnel.

Upon its approval, this OMP will complement the existing *Biodiversity and Offset Management Plan* (WHC 2013) for Werris Creek, with the sections that are specific to onsite management retained but will supersede the relevant text in sections related to the BOA that are external and offsite to WCCM. The OMP will replace the previously approved *Werris Creek Coal Mine Biodiversity Management Plan* (WHC 2016). The sections of previously approved OMPs or Biodiversity Management Plans (BMPs) to be superseded or replaced by this OMP are outlined below in **Table 1-3**.

Werris Creek Coal Mine has completed active mining and is within the post-mining rehabilitation phase. All text or sections related to mine site rehabilitation areas within the *Biodiversity and Offset Management Plan* (WHC, 2013) for Werris Creek (Sections 1 – 14 except 8 & 9) are still relevant to biodiversity management of the mine site and are not being superseded by this OMP. Only the BOA properties external to the mine site are intended to be centralised and contemporise the biodiversity management going forward under this WHC OMP.

**Table 1-3: Sections of previously approved OMPs/BMPs to be superseded by this OMP.**

| Previously approved BOMP/BMP                                          | Sections of previously approved BMP/OMP to be replaced/superseded               | Relative section of this OMP                                                                                                                        |
|-----------------------------------------------------------------------|---------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Werris Creek Coal Mine Biodiversity Management Plan</i> (WHC 2016) | Entire BMP                                                                      | Entire OMP                                                                                                                                          |
| <i>Biodiversity and Offset Management Plan</i> (WHC 2013)             | Section 8: Management Strategies and Measures (as relevant to Werris Creek BOA) | <b>Section 3:</b> Existing Environment Relevant to the Biodiversity Offset Areas, and <b>Section 5:</b> Management of the Biodiversity Offset Areas |
|                                                                       | Section 9: Annual Biodiversity Monitoring                                       | <b>Section 5.14.1:</b> Flora Monitoring<br><b>Section 5.16:</b> Fauna Monitoring                                                                    |

## 1.3 STRUCTURE OF THE OFFSET MANAGEMENT PLAN

The structure of this plan is as follows:

**Section 2** Requirements for the Offset Management Plan

**Section 3** Description of the existing environment relevant to the Biodiversity Offset Areas.

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                   |                   | Document Approver:  | General Manager – Environment |
|                                                                                   |                   | Issue:              | 2026-V2.5                     |
|                                                                                   |                   | Last Revision Date: | 01 June 2026                  |
|                                                                                   |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

**Section 4** Description of the Biodiversity Offset Strategy (BOS) and Securement

**Section 5** Description of the management actions to be undertaken within the BOA, including ecological monitoring, and potential risks and contingency measures

**Section 6** Description of reporting and review requirements

The following are appended to this OMP:

**APPENDIX A:** Key Biometric Annual Performance Criteria for relevant Keith Classes

**APPENDIX B:** Offset Risk Assessment

**APPENDIX C:** Werris Creek Revised Biodiversity Offset Strategy (Ecoplanning 2026a)

## 1.4 CONSULTATION

The stakeholders outlined in **Table 1-4** will be formally consulted in the preparation of this OMP as per MP 10\_0059 MOD 5, which is to be finalised following approval from CDCCEEW (formerly the Commonwealth Department of Agriculture, Water and the Environment [DAWE]), and NSW DPHI (formerly Office of Environment and Heritage).

Consultation by WHC was initially undertaken for the Vickery OMP with the Biodiversity, Conservation and Science Group (BCS, now CPHR) of the NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW), and the BCT. Comments were received from the BCS (now CPHR) of NSW DCCEEW on 10 July 2024 and by the BCT on 27 August 2024. In addition, consultation has been undertaken with CDCCEEW for the Narrabri, Tarrawonga and Yarrari/Belah OMP in April 2025. To ensure consistency between WHC OMP documents, these comments, where relevant, have been incorporated into the Werris OMP.

The Werris Revised Biodiversity Offset Strategy (RBOS) was submitted to CPHR on 10 October 2025, with comments received on 23 October 2025. These comments were incorporated into the updated RBOS and re-submitted to CPHR on 26 November 2025. CPHR provided a response on 22 December 2025 noting satisfaction with the RBOS.

The revised Werris OMP was submitted to CPHR on 11 December 2025, with comments received on 22 December 2025. The Werris OMP was re-submitted to CPHR 14 January 2026, with CPHR noting satisfaction with the OMP on 9 February 2026.

**Table 1-4: Stakeholders to be consulted in preparation of this OMP**

| Stakeholder                                                                                                                                                                                                                                                                                                                                                                                          |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| NSW DPHI                                                                                                                                                                                                                                                                                                                                                                                             |
| CDCCEEW                                                                                                                                                                                                                                                                                                                                                                                              |
| Conservation Programs, Heritage & Regulation Group (CPHR) within NSW DCCEEW – OMP was consulted on 11 December 2025 with requested revisions provided 14 January 2026. CPHR responded 9 February 2026 noting satisfaction with the OMP. RBOS was consulted on 10 October 2025 with requested revisions provided 26 November 2025. CPHR responded 22 December 2025 noting satisfaction with the RBOS. |

## 1.5 RESPONSIBILITIES

WHC is responsible for managing, monitoring, implementing and reviewing the management activities specific to the BOA covered by this OMP. **Table 1-5** outlines the key positions and contractors involved

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                   |                   | Document Approver:  | General Manager – Environment |
|                                                                                   |                   | Issue:              | 2026-V2.5                     |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

with implementing the offset management activities in this OMP (at the time of writing), as well as the emergency contact details responsible for managing biodiversity in accordance with this OMP.

**Table 1-5: Details of all parties responsible for management, monitoring and implementing the management activities associated with the Werris Creek BOAs.**

| WCCM Offset Areas Key Contact / Emergency Contact                                                                       |                                           |                                               |             |                                                                                                                                                                                                                                                                                                                                                  |
|-------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|-----------------------------------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Attention: Whitehaven Group Manager - Biodiversity</b><br><b>biodiversity@whitehavencoal.com.au and 0488 407 000</b> |                                           |                                               |             |                                                                                                                                                                                                                                                                                                                                                  |
| Area                                                                                                                    | Organisation*                             | Position*                                     | Status*     | Responsibilities*                                                                                                                                                                                                                                                                                                                                |
| WHC Biodiversity Offset Areas                                                                                           | WHC                                       | General Manager                               | Employee    | Obtain and provide adequate resources for the Group Manager - Biodiversity to implement the OMP.                                                                                                                                                                                                                                                 |
|                                                                                                                         | WHC                                       | Group Manager - Biodiversity                  | Employee    | To authorise this OMP and undertake associated compliance and reporting requirements. Implement the overall biodiversity strategy on the offset areas; coordinate and supervise biodiversity management and monitoring activities on the offset areas. Initiate review of this OMP.                                                              |
|                                                                                                                         | WHC                                       | Biodiversity Specialist & Field Officers      | Employee    | Support the Group Manager - Biodiversity and supervise biodiversity management and monitoring activities on the offset areas.                                                                                                                                                                                                                    |
|                                                                                                                         | Pest Management Consultant/ Contractor    | Scientists & Field Technicians                | Contractors | Undertake biodiversity management activities as directed by the Group Manager – Biodiversity and Biodiversity Specialist /Field Officers for feral and pest animal monitoring and management/control.                                                                                                                                            |
|                                                                                                                         | Land Management & Weed Spraying Contactor | Field Operators & Technicians                 | Contractors | Undertake biodiversity management activities as directed by the Group Manager – Biodiversity and Biodiversity Specialist /Field Officers for weed spraying, habitat augmentation, threatened species, revegetation ground preparation and other minor earthworks and waste/infrastructure removal plus tree planting and maintenance activities. |
|                                                                                                                         | Fire & Ecological Burn Contractor         | Fire Fighters & Controlled Burn Practitioners | Contractors | Undertake biodiversity management activities as directed by the Group Manager - Biodiversity and Biodiversity Specialist/Field Officers for fire management planning, hazard reduction management and ecological burn implementation.                                                                                                            |



|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
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|                                                                                   |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

| WCCM Offset Areas Key Contact / Emergency Contact                                                                       |                       |            |             |                                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------|-----------------------|------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Attention: Whitehaven Group Manager - Biodiversity</b><br><b>biodiversity@whitehavencoal.com.au and 0488 407 000</b> |                       |            |             |                                                                                                                                                                                                     |
| Area                                                                                                                    | Organisation*         | Position*  | Status*     | Responsibilities*                                                                                                                                                                                   |
|                                                                                                                         | Ecological Consultant | Ecologists | Contractors | Undertake monitoring as directed by the Group Manager - Biodiversity and Biodiversity Specialist/Field Officers for threatened species and ecological community assessment and flora/fauna surveys. |

\* Role/responsibilities can vary over time by Whitehaven based on ongoing performance, compliance and commercial aspects that change as required.

## Incident and Emergency Response

As per Induction and Biodiversity Training (**Section 6.5**); workers (staff and contractors) must notify WHC of all hazards and incidents as soon as practicable inclusive of whether a safety or health, pollution, material harm or potential for material harm to the environment including if emergency response is required. Initial incident details will be collected and reported to WHC required to make a preliminary report, i.e. Reported Date and Time, Event Date and Time, Event Summary, What Action has been or will be undertaken, and Exact Location (Property).

Where emergency response is required for life threatening situations or for material harm to the environment, workers are to enact and be aware of where Whitehaven Biodiversity Emergency Response Cards (Emergency Call Phone are located with WHC Biodiversity weather stations) including contacting Emergency Services on 000 or 112 or text 106 and then advise Whitehaven Biodiversity when safe to do so.

If the incident is determined to be notifiable under this OMP (irrespective of whether emergency services have been contacted on 000), WHC must contact the following authorities as relevant:

1. CDCCEEW to report a perceived breach of national environment law at [environment.compliance@dcceew.gov.au](mailto:environment.compliance@dcceew.gov.au) or 1800 110 395
2. Environment Protection Authority Environment Line – 131 555
3. Public Health Units – 1300 066 055
4. Safework NSW – 131 050
5. Local Government
  - a. Liverpool Plains Shire Council – (02) 6746 1755
6. Fire and Rescue NSW – 1300 729 579 (Sydney)
7. NSW Department of Planning and Environment – 1300 420 596
8. Resource Regulator – 1300 814 609

## 1.6 RELATIONSHIP WITH OTHER MANAGEMENT PLANS

### ***Rehabilitation Management/Monitoring Plans***

As outlined in **Section 1.2**, this OMP does not prescribe management of biodiversity within mine site rehabilitation areas of WCCM. This OMP complements the existing documents that describe

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

rehabilitation and biodiversity management on each respective mine sites, so that collectively WHC are implementing integrated strategies for restoration of both mine site rehabilitation and BOS.

This OMP will complement the existing *Biodiversity and Offset Management Plan* (WHC 2013) for Werris Creek, with the sections that are specific to onsite management retained but will supersede the relevant text in sections related to the BOA that are external and offsite to WCCM. All text or sections related to mine site rehabilitation areas within the *Biodiversity and Offset Management Plan* (WHC, 2013) for Werris Creek (Sections 1 – 14 except 8 & 9) are still relevant to biodiversity management of the mine site and are not being superseded by this OMP. Further, the approved *Werris Creek Rehabilitation Management Plan* (WHC, 2025) outlines the specific management of mine site rehabilitation areas.

The OMP will replace the previously approved Werris Creek Coal Mine Biodiversity Management Plan (WHC 2016).

### ***Revised Biodiversity Offset Strategy***

The Revised Biodiversity Offset Strategy (RBOS) for WCCM (Ecoplanning 2026a; **APPENDIX C:**) updates the original BOS (WHC 2013). The aim of the RBOS was to update the existing vegetation mapping and descriptions contained within the Werris Creek Biodiversity Offset Management Plan (BOMP) (WHC 2013) for Werris Creek Biodiversity Offset Areas (BOAs). This was done by adopting the cadastral survey boundary following comprehensive survey in 2019/20 by Stewart Surveys as well as contemporising the vegetation classification and mapping from the previous Biometric Vegetation Type (BVT) to Plant Community Type (PCT) classification system (DCCEEW 2025). Further, as part of offset area divestment planning for WCCM, the adoption of additional minor boundary realignments and additional vegetation mapping has been completed. This OMP outlines the management within the BOA as described in the RBOS.

|                                                                                   |                   |                     |                               |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

## 2 REQUIREMENTS FOR THE OFFSET MANAGEMENT PLAN

While this OMP has been prepared for EPBC approval 2010/5571, this OMP also addresses the requirements of the State (NSW) approval MP 10\_0059 MOD 5 for WCCM. Each section of this OMP addresses the conditions of the relevant approval documents as outlined in **Table 2-1**. Detailed compliance tables for the Werris Creek Coal Mine, under these instruments, are also included as **Table 2-2** and **Table 2-3**.

**Table 2-1: Approval document conditions addressed within each section of this OMP.**

| OMP Section Cross Referenced to applicable condition of Approval documents | MP 10_0059      | EPBC 2010/5571 |
|----------------------------------------------------------------------------|-----------------|----------------|
| Responsibilities Section 1.5                                               | S3C 28h         | 2c & 2g        |
| Relationship with other Management Plans Section 1.6                       | S3C 28b         | N/A            |
| BOS Section 4                                                              | S3C 24, 26 & 27 | 1, 2a, 2b      |
| Management of Biodiversity Offset Areas Section 5                          | S3C 28c         | 2b             |
| Biodiversity Offset Area Establishment Section 5.2                         | N/A             | 2b             |
| Seed Management Section 5.3                                                | S3C 28e         | 2b             |
| Revegetation Section 5.4                                                   | S3C 28e         | 2b             |
| Ecological Thinning Section 5.5                                            | S3C 28c         | 2b             |
| Habitat Augmentation Section 5.6                                           | S3C 28e         | 2b             |
| Management of Heritage Values Section 5.7                                  | S3C 28e         | 2b             |
| Weed Management Section 5.8                                                | S3C 28e         | 2b             |
| Pest Animal Management Section 5.9                                         | S3C 28e         | 2b             |
| Erosion Control Section 5.10                                               | S3C 28e         | 2b             |
| Agricultural Management Section 5.11                                       | S3C 28e         | 2b             |
| Bushfire Management Section 5.12                                           | S3C 28e         | 2b             |
| Threatened Flora Management Section 5.13                                   | N/A             | 2b             |
| Vegetation and Habitat Monitoring Section 5.14                             | S3C 28f         | 2d             |
| Fauna Monitoring Section 5.15                                              | S3C 28f         | 2d             |
| Performance and Completion Criteria Section 5.16                           | S3C 28d         | 2c             |

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

| OMP Section Cross Referenced to applicable condition of Approval documents | MP 10_0059 | EPBC 2010/5571 |
|----------------------------------------------------------------------------|------------|----------------|
| Potential Risks and Contingency Measures Section 5.17                      | S3C 28g    | 2f             |
| Reporting and Review Section 6                                             | N/A        | 2e             |

S = Schedule of Major Project Approval; C = Condition Number within relevant Schedule (if applicable)

**Table 2-2: Compliance with EPBC (2010/5571) approval conditions**

| Condition Number | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Relevant OMP Section                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1                | <i>To offset the impact to the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community and foraging habitats of the Regent Honeyeater and Swift Parrot the person taking the action must register a legally binding conservation mechanism over the Werris Creek Life of Mine (LOM) Extension Project Biodiversity Offset Strategy (BOS) sites identified in the map at Appendix 1 and an additional area of at least 74 hectares of White Box-Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological community (together, the Offset Areas). The mechanism/s must provide enduring protection for the offset area and unless otherwise agreed to in writing by the Minister must be registered by 31 December 2018.</i> | <p><b>Section 4</b> addresses the Biodiversity Offset Strategy and minimum area requirements and <b>Section 4.1</b> addresses offset securement.</p> <p><b>Figure 4-3</b> displays areas of the EPBC listed White Box Yellow Box Blakely's Red Gum Grassy Woodland and Derived Native Grassland ecological community within the offset.</p> <p><b>Figure 4-4</b> displays Regent Honeyeater and Swift Parrot habitat within the offset.</p> <p>These items are also addressed in the WCCM RBOS (Ecoplanning 2026a; <b>APPENDIX C:</b>).</p> |
| 2                | <p><i>To offset the impacts to the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community, Regent Honeyeater and Swift Parrot, the person taking the action must submit to the Minister for approval an Offset Management Plan for all of the Offset Areas within 12 months of the date of this approval. The Offset Management Plan must be implemented.</i></p> <p><i>The Offset Management Plan must include, at a minimum, the following information:</i></p> <p>(a) <i>a textual description and map to clearly define the location and boundaries of all the Offset Areas. This must be accompanied with the offset attributes and a shapefile.</i></p>                                                                                         | <p>This OMP will be submitted to the Minister for approval.</p> <p><b>Section 1.1</b> details the properties within the BOA. Also see <b>Figure 1-1</b> and <b>Figure 1-2</b>, showing the location and boundaries. Offset attributes are provided separately as an excel workbook.</p>                                                                                                                                                                                                                                                     |

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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

| Condition Number | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Relevant OMP Section                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | <p>(b) <i>Details of management actions to protect and enhance the extent and condition of habitat values of the offset areas, including but not limited to rehabilitation, weed control, fire management, erosion and sediment control, management of livestock and restrictions on access of no less than:</i></p> <p>i. <i>310.2 hectares of habitat for the Regent Honeyeater and Swift Parrot; And</i></p> <p>ii. <i>731 hectares of White Box—Yellow Box—Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community;</i></p> | <p><b>Section 4</b> addresses the Biodiversity Offset Strategy and minimum area requirements.</p> <p><b>Section 5</b> details the management activities proposed, including:</p> <p>Rehabilitation: <b>Section 5.5</b> provides details on the revegetation program within the BOA, as well as revegetation works completed</p> <p>Weed control: <b>Section 5.9</b> provides details on the weed management program within the BOA, including seasonal weed assessment programs.</p> <p>Fire management: <b>Section 5.13</b> details bushfire management within the BOA, including describing the annual ecological burn program.</p> <p>Erosion control: <b>Section 5.11</b> provides details on erosion management and annual inspections within the BOA.</p> <p>Exclusion of livestock and restriction of access: <b>Section 5.12</b> details exclusion of livestock within the BOA. Restriction of access via fencing and inspections is detailed in <b>Section 5.3.1</b>. In addition, <b>Section 3.4</b> details the previous land use history of the site and specifies when destocking occurred.</p> <p>Other monitoring and management actions include:</p> <p>Seed Management: <b>Section 5.4</b></p> <p>Ecological Thinning: <b>Section 5.6</b></p> <p>Habitat Augmentation: <b>Section 5.7</b></p> <p>Heritage Management: <b>Section 5.8</b></p> <p>Pest animal management: <b>Section 5.10</b></p> |

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| Condition Number | Requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Relevant OMP Section                                                                                                                                                                                                                    |
|------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                  | (c) <i>the timing, responsibilities and performance criteria for management actions;</i>                                                                                                                                                                                                                                                                                                                                                                       | <b>Section 1.5</b> discusses the responsibilities of management activities discussed within the OMP.<br><b>Section 5.2</b> summarises the implementation schedule.<br><b>Section 5.17</b> discusses performance and completion criteria |
|                  | (d) <i>a monitoring plan including the undertaking of ecological surveys by a qualified ecologist to assess the success of the management actions against identified milestones and objectives.</i>                                                                                                                                                                                                                                                            | <b>Section 5.14.1</b> discusses the flora monitoring program.<br><b>Section 5.16</b> discusses the fauna monitoring program.<br><b>Section 5.17</b> discusses performance and completion criteria                                       |
|                  | (e) <i>a process to report, to the department, the management actions undertaken in the offset areas and the outcomes of those actions, including identifying any need for improved management;</i>                                                                                                                                                                                                                                                            | <b>Section 6.2.2</b> discusses the Commonwealth EPBC approval annual compliance reporting.                                                                                                                                              |
|                  | (f) <i>a description of the potential risks to successful management and rehabilitation in the offset areas, and a description of the contingency measures that would be implemented to mitigate these risks; and</i>                                                                                                                                                                                                                                          | <b>Section 5.18</b> discusses potential risks and contingency measures                                                                                                                                                                  |
|                  | (g) <i>details of the various parties responsible for management, monitoring and implementing the plan, including their position or status as a separate contractor.</i><br><br><i>Note: For clarity, the offset areas specified in condition 2 can accommodate offset requirements for more than one species habitat within the one area, if suitable habitat is verified as present and includes specific habitat requirements for the relevant species.</i> | <b>Section 1.5</b> and <b>Table 1-5</b> detail the persons responsible for implementation of the OMP, including management and monitoring activities.                                                                                   |

**Table 2-3: Compliance with Project Approval 10\_0059**

| Condition Number                                 | Condition                                                                                                                                                                                                                                       | Relevant OMP Section                                                                                                                                                                        |                                 |
|--------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| SCHEDULE 3: ENVIRONMENTAL PERFORMANCE CONDITIONS |                                                                                                                                                                                                                                                 |                                                                                                                                                                                             |                                 |
| Biodiversity Offset Strategy                     |                                                                                                                                                                                                                                                 |                                                                                                                                                                                             |                                 |
| 24                                               | <i>The Proponent shall implement the biodiversity offset strategy for the project described in the EA, summarised in Table 12 of the PA, and shown conceptually on the figure in Appendix 4 of the PA to the satisfaction of the Secretary.</i> | <b>Section 4</b> addresses the Biodiversity Offset Strategy and minimum area requirements.<br><br>These items are also addressed in the WCCM RBOS (Ecoplanning 2026a; <b>APPENDIX C</b> :). |                                 |
|                                                  | <i>Table 12: Summary of the Biodiversity Offset Strategy</i>                                                                                                                                                                                    |                                                                                                                                                                                             |                                 |
|                                                  | <b>Offset Areas</b>                                                                                                                                                                                                                             |                                                                                                                                                                                             | <b>Minimum Sizes (hectares)</b> |
|                                                  | <i>Eurunderee</i>                                                                                                                                                                                                                               |                                                                                                                                                                                             | 363.93                          |
|                                                  | <i>Hillview</i>                                                                                                                                                                                                                                 |                                                                                                                                                                                             | 57.32                           |
|                                                  | <i>Marengo</i>                                                                                                                                                                                                                                  |                                                                                                                                                                                             | 284.12                          |
|                                                  | <i>Railway View</i>                                                                                                                                                                                                                             |                                                                                                                                                                                             | 243.69                          |
|                                                  | <i>Mine Site</i>                                                                                                                                                                                                                                |                                                                                                                                                                                             | 215.86                          |
| <i>Greenslopes/Banool</i>                        | 123                                                                                                                                                                                                                                             |                                                                                                                                                                                             |                                 |

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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

| Condition Number                    | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                 | Relevant OMP Section                                |
|-------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|-----------------------------------------------------|
|                                     | <b>Total</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                      | <b>1,287.92</b> |                                                     |
|                                     | <b>Notes:</b> <ul style="list-style-type: none"><li>• To identify the areas referred to in Table 12, see the applicable figure in Appendix 4;</li><li>• The strategy includes the enhancement of existing fauna habitat within these areas, and where necessary the targeted establishment of naturally scarce fauna habitat; and</li><li>• Greenslopes/Banool must have at least 74 hectares of Box Gum Woodland EEC*.</li></ul> *now CEEC under the BC Act      |                 |                                                     |
| 25                                  | By the end of June 2012, unless the Secretary agrees otherwise, the Proponent shall update the biodiversity offset strategy for the project, in consultation with OEH, and to the satisfaction of the Secretary. The updated strategy must include the specific details of the Additional Offset Area (see Table 12).                                                                                                                                             |                 | WCCM RBOS (Ecoplanning 2026a; <b>APPENDIX C</b> ).  |
| 26                                  | The Proponent shall ensure that the biodiversity offset strategy and/or rehabilitation strategy is focused on the re-establishment and/or enhancement of:<br>(a) the following endangered ecological communities: <ul style="list-style-type: none"><li>• White Box-Yellow Box-Blakely's Red Gum Woodland EEC*; and</li><li>• White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC; and</li></ul> * now CEEC under the BC Act |                 | 5.1                                                 |
|                                     | (b) habitat for threatened fauna species, including the: <ul style="list-style-type: none"><li>• Regent Honeyeater, Swift Parrot, Brown Treecreeper, Hooded Robin, Little Lorikeet, and Barking Owl; and</li><li>• Eastern Bent-wing Bat, Eastern False pipistrelle, Yellow-bellied Bent-wing Bat and Greater Broad-nosed Bat.</li></ul>                                                                                                                          |                 | 5.1                                                 |
| Long Term Security of Offsets       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                                                     |
| 27                                  | The Proponent shall make suitable arrangements to provide appropriate long-term security for the offset areas (excluding the rehabilitation areas) by December 2012, or other date agreed by the Secretary, to the satisfaction of the Secretary.                                                                                                                                                                                                                 |                 | 5.3.4                                               |
| Biodiversity Offset Management Plan |                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                 |                                                     |
| 28                                  | The Proponent shall prepare and implement a Biodiversity Management Plan for the project to the satisfaction of the Secretary. This plan must:<br>(a) be prepared in consultation with OEH, and submitted to the Secretary for approval by the end of December 2012;                                                                                                                                                                                              |                 | WHC (2013), to be partially superseded by this OMP. |
|                                     | (b) describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site;                                                                                                                                                                                                                                                                                                                          |                 | 1.2, 1.6                                            |
|                                     | (c) describe the short, medium, and long term measures that would be implemented to: <ul style="list-style-type: none"><li>• manage the remnant vegetation and habitat on the site and in the offset area/s (if and when applicable); and</li><li>• implement the biodiversity offset strategy (if and when applicable), including detailed performance and completion criteria;</li></ul>                                                                        |                 | 5                                                   |
|                                     | (d) include detailed performance and completion criteria for evaluating the performance of the biodiversity offset strategy, and triggering remedial action (if necessary);                                                                                                                                                                                                                                                                                       |                 | 5.17                                                |
|                                     | (e) include a detailed description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for: <ul style="list-style-type: none"><li>• enhancing the quality of existing vegetation and fauna habitat;</li></ul>                                                                                                                                                                                             |                 | 5                                                   |
|                                     | <ul style="list-style-type: none"><li>• restoring native vegetation and fauna habitat on the biodiversity areas and rehabilitation area through focusing on assisted natural regeneration, targeted</li></ul>                                                                                                                                                                                                                                                     |                 | 5                                                   |



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| Condition Number         | Condition                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Relevant OMP Section               |
|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------|
|                          | <i>vegetation establishment and the introduction of naturally scarce fauna habitat features (where necessary):</i> <ul style="list-style-type: none"> <li><i>landscaping the land on site that faces the public roads to minimise the visual and lighting impacts of the project</i></li> <li><i>maximising the salvage of resources within the approved disturbance area – including vegetative, soil and cultural heritage resources – for beneficial reuse in the enhancement of the biodiversity areas or rehabilitation area;</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Mine Site BMP<br><br>Mine Site BMP |
|                          | <ul style="list-style-type: none"> <li><i>collecting and propagating seed;</i></li> <li><i>minimising the impacts on fauna on site, including undertaking pre-clearance surveys;</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 5.4<br>Mine Site BMP               |
|                          | <ul style="list-style-type: none"> <li><i>managing any potential conflicts between the proposed restoration works in the biodiversity areas and any Aboriginal heritage values (both cultural and archaeological);</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 5.8                                |
|                          | <ul style="list-style-type: none"> <li><i>managing salinity;</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5.11                               |
|                          | <ul style="list-style-type: none"> <li><i>controlling weeds and feral pests;</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 5.9, 5.10                          |
|                          | <ul style="list-style-type: none"> <li><i>controlling erosion;</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5.11                               |
|                          | <ul style="list-style-type: none"> <li><i>managing grazing and agriculture on site;</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5.12                               |
|                          | <ul style="list-style-type: none"> <li><i>controlling access; and</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | 5.3                                |
|                          | <ul style="list-style-type: none"> <li><i>bushfire management;</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5.13                               |
|                          | (f) <i>include a seasonally-based program to monitor and report on the effectiveness of these measures, and progress against the detailed performance and completion criteria;</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5.14.1, 5.16                       |
|                          | (g) <i>identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate against these risks; and</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 5.18                               |
|                          | (h) <i>include details of who would be responsible for monitoring, reviewing, and implementing the plan.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1.5                                |
| <b>Conservation Bond</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                                    |
| 29                       | <p><i>Within 6 months of the approval of the biodiversity offset strategy, the Proponent shall lodge a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan.</i></p> <p><i>The sum of the bond shall be determined by:</i></p> <ul style="list-style-type: none"> <li><i>(a) calculating the full cost of implementing the offset strategy (other than land acquisition costs); and</i></li> <li><i>(b) employing a suitably qualified quantity surveyor to verify the calculated costs, to the satisfaction of the Secretary</i></li> </ul> <p><i>If the offset strategy is completed generally in accordance with the completion criteria in the Biodiversity Management Plan to the satisfaction of the Secretary, the Secretary will release the bond.</i></p> <p><i>If the offset strategy is not completed generally in accordance with the completion criteria in the Biodiversity Management Plan, the Secretary will call in all or part of the conservation bond, and arrange for the satisfactory completion of the relevant works.</i></p> <p><i>With the agreement of the Secretary, this bond may be combined with rehabilitation security deposit administered by DRE.</i></p> | 5.3.5                              |

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## 2.1 RELEVANT ENVIRONMENTAL MANAGEMENT PLAN GUIDELINES

This OMP was prepared in consideration of the *Environmental Management Plan Guidelines* (Cth DCCEEW, 2024). The relevant environmental management plan guidelines are presented in **Table 2-4**.

**Table 2-4: Environmental Management Plan Guidelines**

| Guideline                                                                                                                                                                                                                                                                                                                                                                         | Relevant OMP Section                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|
| GENERAL PRINCIPLES FOR THE PREPARATION OF AN ENVIRONMENTAL MANAGEMENT PLAN                                                                                                                                                                                                                                                                                                        |                                               |
| Key principles                                                                                                                                                                                                                                                                                                                                                                    |                                               |
| An environmental management plan should:                                                                                                                                                                                                                                                                                                                                          |                                               |
| <ul style="list-style-type: none"><li>be balanced, objective and concise</li></ul>                                                                                                                                                                                                                                                                                                | Throughout this OMP                           |
| <ul style="list-style-type: none"><li>state any limitations that apply, or should apply, to the use of the information in the environmental management plan</li></ul>                                                                                                                                                                                                             | None                                          |
| <ul style="list-style-type: none"><li>identify any matter in relation to which there is a significant lack of relevant information or a significant degree of uncertainty</li></ul>                                                                                                                                                                                               | None                                          |
| <ul style="list-style-type: none"><li>include adaptive management strategies for managing uncertainty</li></ul>                                                                                                                                                                                                                                                                   | Section 5.18                                  |
| <ul style="list-style-type: none"><li>be written in a way that is easily understood by other parties</li></ul>                                                                                                                                                                                                                                                                    | Throughout this OMP.                          |
| <ul style="list-style-type: none"><li>clearly present how conclusions about risks have been reached</li></ul>                                                                                                                                                                                                                                                                     | Section 5.18 and APPENDIX B:                  |
| <ul style="list-style-type: none"><li>ensure that the person taking the action takes full responsibility for the content and commitments contained in the plan.</li></ul>                                                                                                                                                                                                         | Section 1.5 Declaration of Accuracy (Page ii) |
| Including commitments in management plans                                                                                                                                                                                                                                                                                                                                         |                                               |
| <ul style="list-style-type: none"><li>All commitments must be specific and auditable with measurable outcomes and clear timeframes.</li></ul>                                                                                                                                                                                                                                     | Throughout this OMP                           |
| <ul style="list-style-type: none"><li>To ensure readability, write clearly and avoid long sentences with complex clauses.</li></ul>                                                                                                                                                                                                                                               |                                               |
| <ul style="list-style-type: none"><li>Always use the terms 'will' and 'must', rather than 'should' or 'may' when committing to carry out management actions.</li></ul>                                                                                                                                                                                                            |                                               |
| <ul style="list-style-type: none"><li>Avoid use of ambiguous terminology such as 'where possible', 'as required', 'to the greatest extent possible'. If it is necessary to include ambiguous terminology, it should be explained and examples given.</li></ul>                                                                                                                    |                                               |
| <ul style="list-style-type: none"><li>Clearly explain any technical terms or acronyms used, and/or define them in a glossary.</li></ul>                                                                                                                                                                                                                                           |                                               |
| It is also important that commitments or statements within the management plan are consistent with other relevant management plans or conditions of approval.                                                                                                                                                                                                                     |                                               |
| Cross-referencing                                                                                                                                                                                                                                                                                                                                                                 |                                               |
| Where the plan refers to material in other documents, it should include cross-references that are clear, complete and that specify the document version and date. Use tables, diagrams and maps where their inclusion would provide a better understanding and implementation of the management plan. Link all tables, diagrams and maps into the text through cross-referencing. | Throughout this OMP and Section 7.            |
| CONTENT OF THE ENVIRONMENTAL MANAGEMENT PLAN                                                                                                                                                                                                                                                                                                                                      |                                               |
| Cover page and declaration of accuracy                                                                                                                                                                                                                                                                                                                                            |                                               |
| Cover page detailing:                                                                                                                                                                                                                                                                                                                                                             | Cover Page                                    |
| <ul style="list-style-type: none"><li>EPBC number</li></ul>                                                                                                                                                                                                                                                                                                                       |                                               |
| <ul style="list-style-type: none"><li>project name</li></ul>                                                                                                                                                                                                                                                                                                                      |                                               |
| <ul style="list-style-type: none"><li>proponent /approval holder and ACN or ABN</li></ul>                                                                                                                                                                                                                                                                                         |                                               |
| <ul style="list-style-type: none"><li>the proposed/approved action</li></ul>                                                                                                                                                                                                                                                                                                      |                                               |

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| Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Relevant OMP Section                                                |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|
| <ul style="list-style-type: none"><li>location of the action</li><li>date of preparation of the environmental management plan</li><li>person accepting responsibility for the environmental management plan – signed declaration (see below).</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Document History Table (p. i).<br>Declaration of Accuracy (Page ii) |
| <b>Document version control</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                     |
| The document version control should be a simple system that ensures that details of all key changes to the document over time are properly recorded. Identified changes should include details of timings, persons responsible and reasons for changes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Document History Table (Page i)                                     |
| <b>Table of contents</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                     |
| Table of contents page detailing: <ul style="list-style-type: none"><li>all section headings and page numbers</li><li>all figures, tables, plans and maps (should be numbered)</li><li>all appendixes (with meaningful titles, including for sub-appendixes if any). If the appendixes contain a collation of data, include summary of the contents.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Table of Contents (Page iii – vii).                                 |
| <b>Executive summary or introduction</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                     |
| The executive summary should note the key elements of the project, the purpose of the document, the main potential impacts and the primary strategies planned to address these impacts.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Executive Summary (Page 1)                                          |
| <b>Conditions of approval reference table</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                     |
| When an environmental management plan is prepared after the project has been approved under the EPBC Act, the management plan should include a table detailing the information noted below: <ul style="list-style-type: none"><li>The EPBC Act approval condition requirements the plan is intended to address. These are best presented broken down into each of the individual actions that the conditions require.</li><li>The section and page numbers which address the approval conditions.</li><li>A summary of the key commitments relating to each of the approval conditions.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                         | Section 2                                                           |
| <b>Project description</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                     |
| The environmental management plan should provide a description of the project as this provides context for the plan. The location of all project actions should be described and a map showing their location provided. Basic information on the environment at these locations should also be included as this helps provide the environmental context to which the environmental management plan applies. The plan should include a description of the activities that will be undertaken as part of the project including project details relevant to any approval conditions and with potential impacts on matters protected under the EPBC Act. The plan should distinguish between construction and operational activities, if relevant. A schedule of intended commencement and completion dates should be provided. Projects undertaken in stages should identify each stage in the schedule. Contingency schedules can also be included along with examples of events that could result in the use of the contingency schedules. | Section 1                                                           |
| <b>Objectives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                     |
| The environmental outcomes of the plan should be defined. These should be tailored to the environmental issues outlined in the plan.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Section 5.1                                                         |
| <b>Environmental management roles and responsibilities</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                     |
| Once an action is approved, the approval holder is responsible for complying with the conditions of approval, including the commitments made in environmental management plans. The plan should define the roles and responsibilities of personnel in charge of the environmental management of the project. The roles and responsibilities of each relevant position should be documented, including the responsibilities of subcontractors. The names of the responsible personnel do not need to be included. Identification of the position titles, roles and responsibilities is sufficient. If the roles and responsibilities are expected to change over time the long-term variations should also be documented.                                                                                                                                                                                                                                                                                                                  | Section 1.5                                                         |

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|                                                                                   |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

| Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Relevant OMP Section                                    |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------|
| <b>Reporting</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                         |
| <p>An environmental management plan will usually require reporting arrangements for two purposes. Reporting arrangements assist with effective implementation and with external reporting. External reports may include reports on environmental incidences to the regulator, reports to stakeholders, reports to inform reviews of the plan and reports to meet the reporting requirements of the conditions of approval.</p> <p>The description of reporting requirements should include:</p> <ul style="list-style-type: none"> <li>a list of required reports including where appropriate monitoring, environmental incidents, non-compliance, corrective action and auditing</li> <li>a description of the standard report content</li> <li>the schedule or triggers for preparing a report</li> <li>who the report is provided to</li> <li>document control procedures.</li> </ul> <p>Reporting commitments should also be consistent with any reporting to us required by the conditions of approval.</p>                                                                                                                                                                                                                                                                                                                                                | Section 6                                               |
| <b>Environmental Training</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                         |
| <p>All people involved with the project should receive relevant environmental training to ensure they understand their responsibilities when implementing the environmental management plan. People to be trained include those at the site/s of all project activities and operations, including contractors, subcontractors and visitors. The training should be tailored to the role of the individual in the project.</p> <p>The environmental management plan should describe the training to be implemented and could include:</p> <ul style="list-style-type: none"> <li>site inductions</li> <li>identification of key points of environmental value and any relevant matters of national environmental significance</li> <li>understanding the requirements of the environmental management plan and the individual's role</li> <li>environmental incident emergency response procedures</li> <li>site environmental controls</li> <li>an outline of the potential consequences of not meeting their environmental responsibilities.</li> </ul> <p>Records of all training conducted should be maintained and include:</p> <ul style="list-style-type: none"> <li>the person receiving the training</li> <li>the date the training was received</li> <li>the name of the person conducting the training</li> <li>a summary of the training.</li> </ul> | Section 6.5                                             |
| <b>Emergency contacts and procedures</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                         |
| <p>The environmental management plan should identify the key emergency contacts responsible for managing environmental emergencies associated with the project and their contact details. These personnel should have the power to stop and direct works so that they can manage emergencies effectively. In addition, the plan should establish procedures for managing environmental emergencies and ensure that those procedures are implemented and maintained.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Section 1.5                                             |
| <b>Potential environmental impacts and risks</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                         |
| <p><u>Threats to matters protected under the EPBC Act</u></p> <p>The environmental management plan should summarise all the identified threats to matters protected under Part 3 of the EPBC Act in the management plan. The matters protected by the EPBC Act include:</p> <ul style="list-style-type: none"> <li>the 9 matters of national environmental significance (listed in Appendix A)</li> <li>the environment in general (for actions by Commonwealth agencies or actions on Commonwealth land) or the environment on Commonwealth land (for actions outside Commonwealth land).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Section 1.6<br>Section 4<br>Section 5.18<br>APPENDIX B: |

|                                                                                                     |                   |                     |                               |
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|  <b>Whitehaven</b> | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                                     |                   | Document Approver:  | General Manager – Environment |
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|                                                                                                     |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                                               |                   |                     |                               |

| Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Relevant OMP Section        |
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| <p><i>The plan should refer to relevant information provided in the EPBC Act assessment documentation, such as an environmental impact statement or preliminary documentation. If the project has already been approved, the plan should detail all new information relevant to the conditions placed on the approval. The key sensitivities of the environmental values potentially impacted by the action should be identified.</i></p> <p><u>Potential impacts</u></p> <p><i>The potential impacts section of the plan should focus on identifying, locating and quantifying the potential impacts (direct and indirect) of the project on the matters protected by the EPBC Act. It should discuss:</i></p> <ul style="list-style-type: none"> <li><i>the relevant impacts of the project</i></li> <li><i>the nature and extent of the potential short-term and long-term effects</i></li> <li><i>any uncertainties regarding the predicted impacts.</i></li> </ul> <p><i>This may include a summary of any relevant information previously provided in assessment documentation, such as an environmental impact statement or preliminary documentation.</i></p> <p><i>Impacts from relevant stages of the action (for example, pre-construction, construction and operation) should be delineated in this section and should reflect the relevant conditions of approval. It may be necessary to divide the potential impacts into subsections reflecting the stages of the project.</i></p> <p><u>Risk assessment</u></p> <p><i>Once the potential impacts of the proposal are clearly identified a risk assessment should be undertaken for each potential impact. This means that the likelihood and consequences of each potential impact need to be estimated. An example of a methodology for risk assessment is at Evaluating risk.</i></p> <p><i>The function of the risk assessment is not to repeat or supersede the original assessment of a project or its conditions of approval. Rather it is to ensure that these risks are effectively translated into actual mitigation and management actions. Impacts with higher risk ratings usually require more management actions and controls. This minimises the likelihood of the risk occurring and reduces the consequences to acceptable levels.</i></p> |                             |
| <p><b>Environmental management measures</b></p> <p><i>The environmental management plan should clearly state how the potential impacts of the proposal will be managed and this information usually forms the bulk of the content of the plan. For each potential impact, the plan should address:</i></p> <ul style="list-style-type: none"> <li><i>environmental management activities, controls and performance targets</i></li> <li><i>environmental management maps and diagrams</i></li> <li><i>monitoring programs with trigger values for corrective actions</i></li> <li><i>corrective actions and non-compliance reporting</i></li> <li><i>environmental schedules</i></li> </ul> <p><i>These topics are described in more detail below. It is helpful if management plans present the information on these topics for one potential impact at a time. This ensures that all the management measures for each potential impact are in the same section of the document and easy to locate.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Section 5                   |
| <p><u>Environmental management activities, controls and performance targets</u></p> <p><i>The environmental management plan should describe all the environmental management activities and control measures that will be implemented to avoid or minimise environmental impacts. The description of each measure should also specify the timeframes for implementation and the performance targets or outcomes to be achieved. The timing of measures is often best presented in a timetable. Performance targets and outcomes should be quantitative and auditable.</i></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Section 5                   |
| <p><u>Environmental management maps and diagrams</u></p> <p><i>Environmental management maps and diagrams are useful visual tools that aid in environmental management activities. Maps can provide useful spatial information about areas that require environmental management. Diagrams can illustrate the design of environmental control measures and the flow of environmental management procedures. For example, a map could be used to show:</i></p> <ul style="list-style-type: none"> <li><i>environmentally sensitive areas on or near a project site</i></li> <li><i>vegetation that requires protection</i></li> <li><i>buffer zones or ‘no-go zones’</i></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Figures throughout the OMP. |

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| Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Relevant OMP Section         |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| <ul style="list-style-type: none"><li>• <i>monitoring locations.</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                              |
| <u>Environmental monitoring</u><br><i>The environmental management plan should specify how the effectiveness of environmental management measures will be monitored. It should include the methodology, frequency and duration of monitoring activities. It should also include trigger values or conditions under which corrective actions are taken. The plan should also specify if, and when, follow up action is required and how monitoring records will be maintained.</i>                                                                                                                                                             | Section 5.15 and 5.16        |
| <u>Corrective actions</u><br><i>The environmental management plan should include procedures for addressing:</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Section 5.18<br>Section 6    |
| <ul style="list-style-type: none"><li>• <i>monitoring results which exceed the trigger values for corrective action</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                              |
| <ul style="list-style-type: none"><li>• <i>potential corrective actions</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                              |
| <ul style="list-style-type: none"><li>• <i>reporting non-compliance with approval conditions to the relevant authority</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                              |
| <ul style="list-style-type: none"><li>• <i>environmental incidents and emergencies.</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                              |
| <i>The plan should also identify who is responsible for implementing the above procedures. Auditable systems should be developed for recording the implementation of these procedures and their outcomes.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                 | Section 1.5                  |
| <b>Audit and review</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                              |
| <u>Environmental auditing</u><br><i>The environmental management plan should include the schedule or triggers for auditing the implementation and effectiveness of the plan. It should address both internal and external audit requirements including who is responsible for undertaking the audits and reporting the results.</i>                                                                                                                                                                                                                                                                                                           | Section 6.4                  |
| <u>Environmental management plan review</u><br><i>The environmental management plan should specify the schedule or triggers for reviews of the plan. A review should assess whether the plan is achieving its objectives and the requirements of any relevant approval conditions. A review should take into account environmental monitoring records, corrective actions and the results of any audits. The plan should also identify who will be responsible for undertaking the review. During the review process, any reasons for varying the environmental management plan should be documented.</i>                                     | Section 6.3                  |
| <u>Review of an environmental management plan would typically be undertaken:</u>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                              |
| <ul style="list-style-type: none"><li>• <i>following significant environmental incidents</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              |
| <ul style="list-style-type: none"><li>• <i>when there is a need to improve performance in an area of environmental impact</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                              |
| <ul style="list-style-type: none"><li>• <i>periodically for actions undertaken over long timeframes such as one, two or five years.</i></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                              |
| <i>However, if the person taking the action wishes to carry out any activity other than in accordance with the approved management plan specified in the approval conditions, the person taking the action is usually required to submit to us for the Minister's written approval a revised management plan. In these cases, the varied activity should not commence until the Minister has approved the varied management plan in writing. As a guiding principle, the Minister will not approve a varied management plan unless the revised management plan would result in an equivalent or improved environmental outcome over time.</i> |                              |
| <b>Glossary</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                              |
| <i>This should include any acronyms, all terms which are open to different interpretations or terms which are not in common use. Terms which are defined in the approval conditions should retain the same meaning as that used in the conditions.</i>                                                                                                                                                                                                                                                                                                                                                                                        | Page viii - ix               |
| <b>EVALUATING RISK</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                              |
| <i>The following section sets out a qualitative risk assessment methodology that can be applied to the environmental risks associated with a wide range of projects. It is provided as an example of one approach to risk assessment and the Department does not require that this particular approach be used when preparing an environmental management plan. Further guidance on evaluating and managing risk can be found in AS ISO 31000:2018 Risk management – Guidelines (Standards Australia 2018).</i>                                                                                                                               | Section 5.18 and Appendix B. |
| <b>Likelihood and consequence</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                              |
| <i>Each environmental risk should be given a rating in terms of likelihood and consequence using the criteria in the table 1 and table 2 below. These ratings are then combined using the risk rating table to generate a risk rating of low, medium, high or severe</i>                                                                                                                                                                                                                                                                                                                                                                      | Appendix B.                  |



**WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)**

| Guideline                                                                                                                                                                                                                                                                                                                                                               |                                                                                                          | Relevant OMP Section |                                |        |          |
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| Table 1 Likelihood                                                                                                                                                                                                                                                                                                                                                      |                                                                                                          |                      |                                |        |          |
| Qualitative measure of likelihood                                                                                                                                                                                                                                                                                                                                       | How likely is it that this event/issue will occur after control strategies have been put in place        |                      |                                |        |          |
| Highly likely                                                                                                                                                                                                                                                                                                                                                           | Is expected to occur in most circumstances                                                               |                      |                                |        |          |
| Likely                                                                                                                                                                                                                                                                                                                                                                  | Will probably occur during the life of the project                                                       |                      |                                |        |          |
| Possible                                                                                                                                                                                                                                                                                                                                                                | Might occur during the life of the project                                                               |                      |                                |        |          |
| Unlikely                                                                                                                                                                                                                                                                                                                                                                | Could occur but considered unlikely or doubtful                                                          |                      |                                |        |          |
| Rare                                                                                                                                                                                                                                                                                                                                                                    | May occur in exceptional circumstances                                                                   |                      |                                |        |          |
| Table 2 Consequences                                                                                                                                                                                                                                                                                                                                                    |                                                                                                          |                      |                                |        |          |
| Qualitative measure of consequences                                                                                                                                                                                                                                                                                                                                     | What will be the consequence/result if this issue does occur rating                                      |                      |                                |        |          |
| Minor                                                                                                                                                                                                                                                                                                                                                                   | Minor incident of environmental damage that can be reversed                                              |                      |                                |        |          |
| Moderate                                                                                                                                                                                                                                                                                                                                                                | Isolated but substantial instances of environmental damage that could be reversed with intensive efforts |                      |                                |        |          |
| High                                                                                                                                                                                                                                                                                                                                                                    | Substantial instances of environmental damage that could be reversed with intensive efforts              |                      |                                |        |          |
| Major                                                                                                                                                                                                                                                                                                                                                                   | Major loss of environmental amenity and real danger of continuing                                        |                      |                                |        |          |
| Critical                                                                                                                                                                                                                                                                                                                                                                | Severe widespread loss of environmental amenity and irrecoverable environmental damage                   |                      |                                |        |          |
| Risk rating                                                                                                                                                                                                                                                                                                                                                             |                                                                                                          |                      |                                |        |          |
| You should give each of your risks a likelihood rating and a consequence rating. Using the rating table below you can determine whether your risk is low, medium, high or severe.                                                                                                                                                                                       |                                                                                                          | Appendix B.          |                                |        |          |
| The risk rating generated using the above table can be used as a guide to the amount of time and resources that will be required to manage each risk. Risks with 'low' risk ratings will usually require significantly less management than 'medium', 'high' and 'severe' risks.                                                                                        |                                                                                                          |                      |                                |        |          |
| This is usually reflected in the environmental management plan where issues with higher risk ratings require more detailed information regarding:                                                                                                                                                                                                                       |                                                                                                          |                      |                                |        |          |
| • the description of the risk                                                                                                                                                                                                                                                                                                                                           |                                                                                                          |                      |                                |        |          |
| • the measures and commitments to minimise and manage the risk                                                                                                                                                                                                                                                                                                          |                                                                                                          |                      |                                |        |          |
| • the performance objectives and monitoring programs                                                                                                                                                                                                                                                                                                                    |                                                                                                          |                      |                                |        |          |
| • trigger values for additional action, review and reporting.                                                                                                                                                                                                                                                                                                           |                                                                                                          |                      |                                |        |          |
| Table 3 Risk Rating                                                                                                                                                                                                                                                                                                                                                     |                                                                                                          |                      |                                |        |          |
|                                                                                                                                                                                                                                                                                                                                                                         | Consequence                                                                                              |                      |                                |        |          |
|                                                                                                                                                                                                                                                                                                                                                                         | Minor                                                                                                    | Moderate             | High                           | Major  | Critical |
| Highly Likely                                                                                                                                                                                                                                                                                                                                                           | Medium                                                                                                   | High                 | High                           | Severe | Severe   |
| Likely                                                                                                                                                                                                                                                                                                                                                                  | Low                                                                                                      | Medium               | High                           | High   | Severe   |
| Possible                                                                                                                                                                                                                                                                                                                                                                | Low                                                                                                      | Medium               | Medium                         | High   | Severe   |
| Unlikely                                                                                                                                                                                                                                                                                                                                                                | Low                                                                                                      | Low                  | Medium                         | High   | High     |
| Rare                                                                                                                                                                                                                                                                                                                                                                    | Low                                                                                                      | Low                  | Low                            | Medium | High     |
| FORMAT OF SUBMISSIONS                                                                                                                                                                                                                                                                                                                                                   |                                                                                                          |                      |                                |        |          |
| General                                                                                                                                                                                                                                                                                                                                                                 |                                                                                                          |                      |                                |        |          |
| Each page of the environmental management plan should include the name of the project, the date of the environmental management plan and sequential page numbering. An environmental management plan can be submitted via standard post or electronically. Submissions should be titled 'Environmental Management Plan' with the project name and EPBC approval number. |                                                                                                          |                      | Header and Footer of each page |        |          |



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| Guideline                                                                                                                                                                                                                                                                                                                                                                                                                                      | Relevant OMP Section        |
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| <b>General requirements for maps, plans and sections</b>                                                                                                                                                                                                                                                                                                                                                                                       |                             |
| <i>All maps and sections should conform to the following standards.</i>                                                                                                                                                                                                                                                                                                                                                                        | Figures throughout the OMP. |
| <ul style="list-style-type: none"> <li>• <i>Scale – an appropriate standard metric scale should be chosen to best represent the information required (for example 1:25 000, 1:10 000 and 1:5000).</i></li> </ul>                                                                                                                                                                                                                               |                             |
| <ul style="list-style-type: none"> <li>• <i>Datum – plans and cross sections should refer to Australian Height Datum.</i></li> </ul>                                                                                                                                                                                                                                                                                                           |                             |
| <ul style="list-style-type: none"> <li>• <i>Title Block – plans should have a title block in the lower right-hand corner of the sheet with the following information:</i> <ul style="list-style-type: none"> <li>– <i>EPBC number and project name</i></li> <li>– <i>title and number of the plan</i></li> <li>– <i>author</i></li> <li>– <i>scale</i></li> <li>– <i>date</i></li> <li>– <i>source and date of data</i></li> </ul> </li> </ul> |                             |
| <ul style="list-style-type: none"> <li>• <i>Legend – plans should have a clear and comprehensive legend to identify the symbols and colours used.</i></li> </ul>                                                                                                                                                                                                                                                                               |                             |
| <ul style="list-style-type: none"> <li>• <i>Maps, plans, figures, images and sections should also:</i> <ul style="list-style-type: none"> <li>– <i>use metric measurements throughout</i></li> <li>– <i>show a graphic bar scale</i></li> <li>– <i>show any local grid lines and standards</i></li> <li>– <i>have a north point or orientation of sections</i></li> <li>– <i>include a key.</i></li> </ul> </li> </ul>                         |                             |
| <i>Maps may also be submitted in ESRI Shapefiles containing '.shp', '.shx' and '.dbf' files.</i>                                                                                                                                                                                                                                                                                                                                               |                             |

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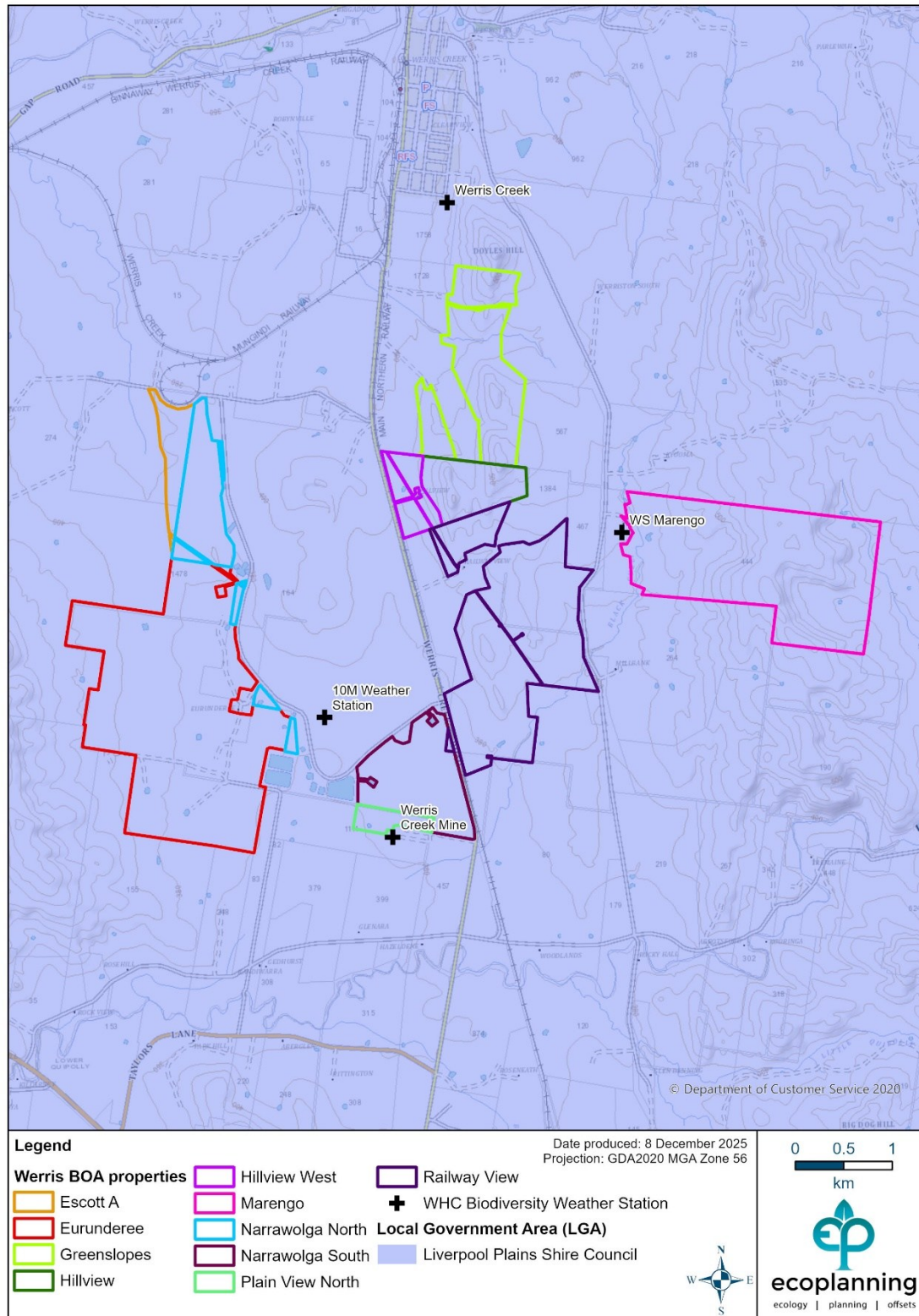
### 3 EXISTING ENVIRONMENT RELEVANT TO THE BIODIVERSITY OFFSET AREAS

This section describes the existing environment relevant to the BOA. This section summarises the geography, prevailing climatic conditions; geology, topography and hydrology; land use history; threatened species and ecological communities; and introduced flora and fauna. It also provides a summary of the BOS approved for WCCM including the key biodiversity values for each relevant strategy such as vegetation community descriptions and mapping.

#### 3.1 GEOGRAPHY

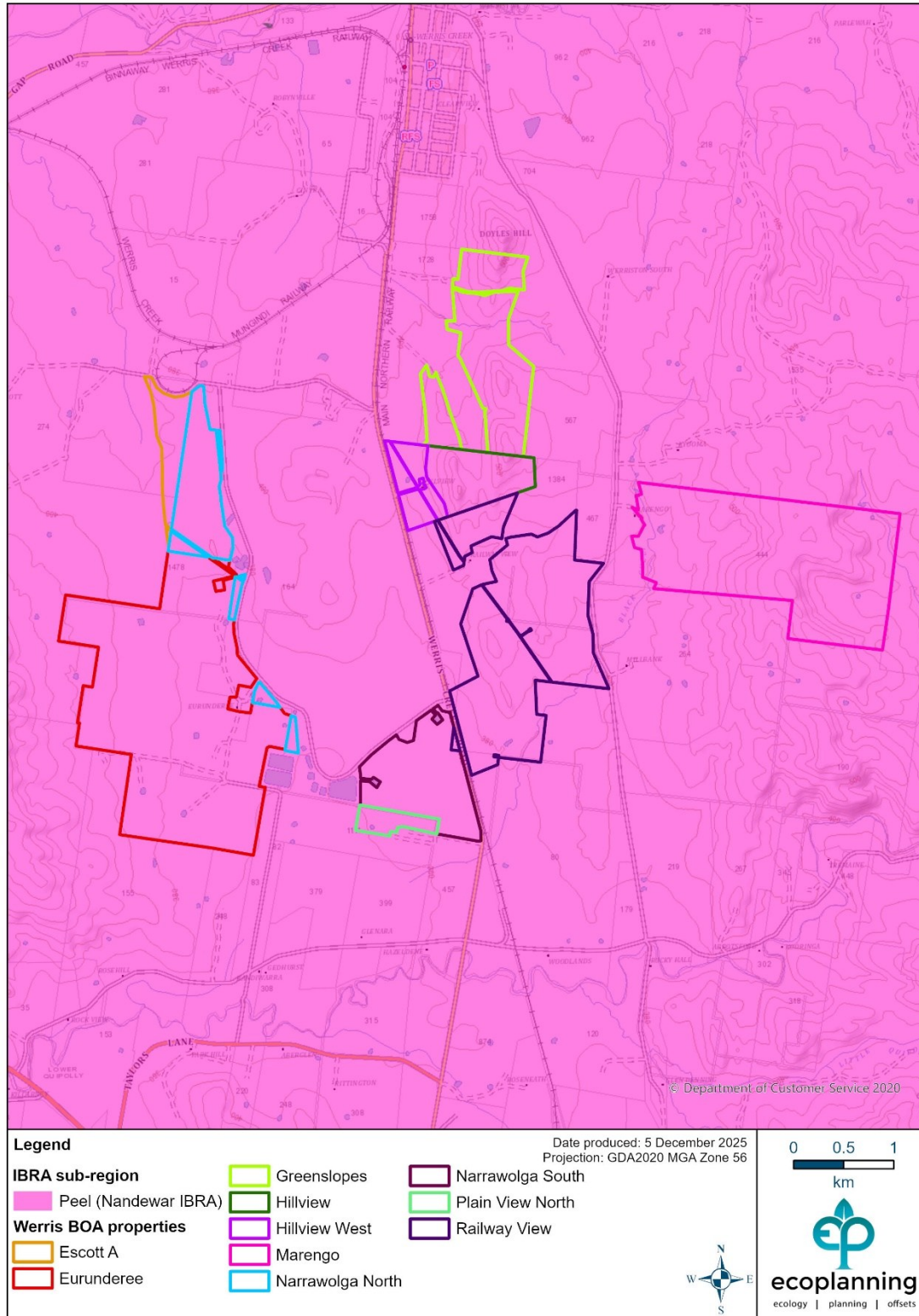
The Werris BOA comprises Narrawolga (North and South), Eurunderree, Railway View, Hillview, Greenslopes and Marengo properties. All properties occur in the Liverpool Plains Shire Council local government area (LGA) and within the Peel IBRA sub-region of the Nandewar IBRA region (**Figure 3-1** and **Figure 3-2**).

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**Figure 3-1: Location of the Werris BOA in relation to LGAs, and nearest weather station.**

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**Figure 3-2: IBRA sub-regions of the Werris BOA.**



|                                                                                   |                   |                     |                               |
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### 3.2 CLIMATIC INFORMATION

The most central public meteorological station to the BOA is the Quirindi Post Office Automatic Weather Stations (AWS) (BOM 2025). The highest mean maximum and minimum temperatures occurs during January, reaching a mean maximum of 32.4°C and mean minimum of 16.6°C. Winter minimums are experienced in July with a mean maximum of 16.0°C and an mean minimum of 1.6°C. The average annual rainfall is 681.2mm, with the maximum typically received in January (mean maximum of 80.2 mm) and the minimum in April (mean maximum of 41.5 mm). However, recent years have seen extreme conditions, with 2019 being the peak of the drought and driest on record for Quirindi with only 303.9 mm of rain recorded, followed by above average rainfall, including in 2021 which recorded the second wettest year on record with a total of 1095.2 mm of rain.

WHC weather stations are located across the BOAs (shown in **Figure 3-1**) to record more localised weather conditions for reporting purposes (Advitech, 2024). One weather station is located within the Marengo property (WS Marengo) and another near Plain View (Werris Creek Mine). Records from the Marengo weather station show the highest maximum monthly average temperature was in December 2024, with a mean maximum of 33°C. The lowest minimum monthly average temperature was in June and July 2024, with a mean minimum of 4°C. Annual temperature ranges were 0°C to 39°C in 2024. The total annual rainfall in 2024 was 660 mm with the maximum in January (100mm) and minimum in December (16mm). The Werris Creek Mine weather station recorded the highest maximum monthly average temperature in December 2024, with a mean maximum of 33°C. The lowest minimum monthly average temperature was in July 2024, with a mean minimum of 2°C. Annual temperature ranges were -3°C to 38°C in 2024. The total annual rainfall in 2024 was 682 mm with the maximum in January (102mm) and minimum in March (20mm).

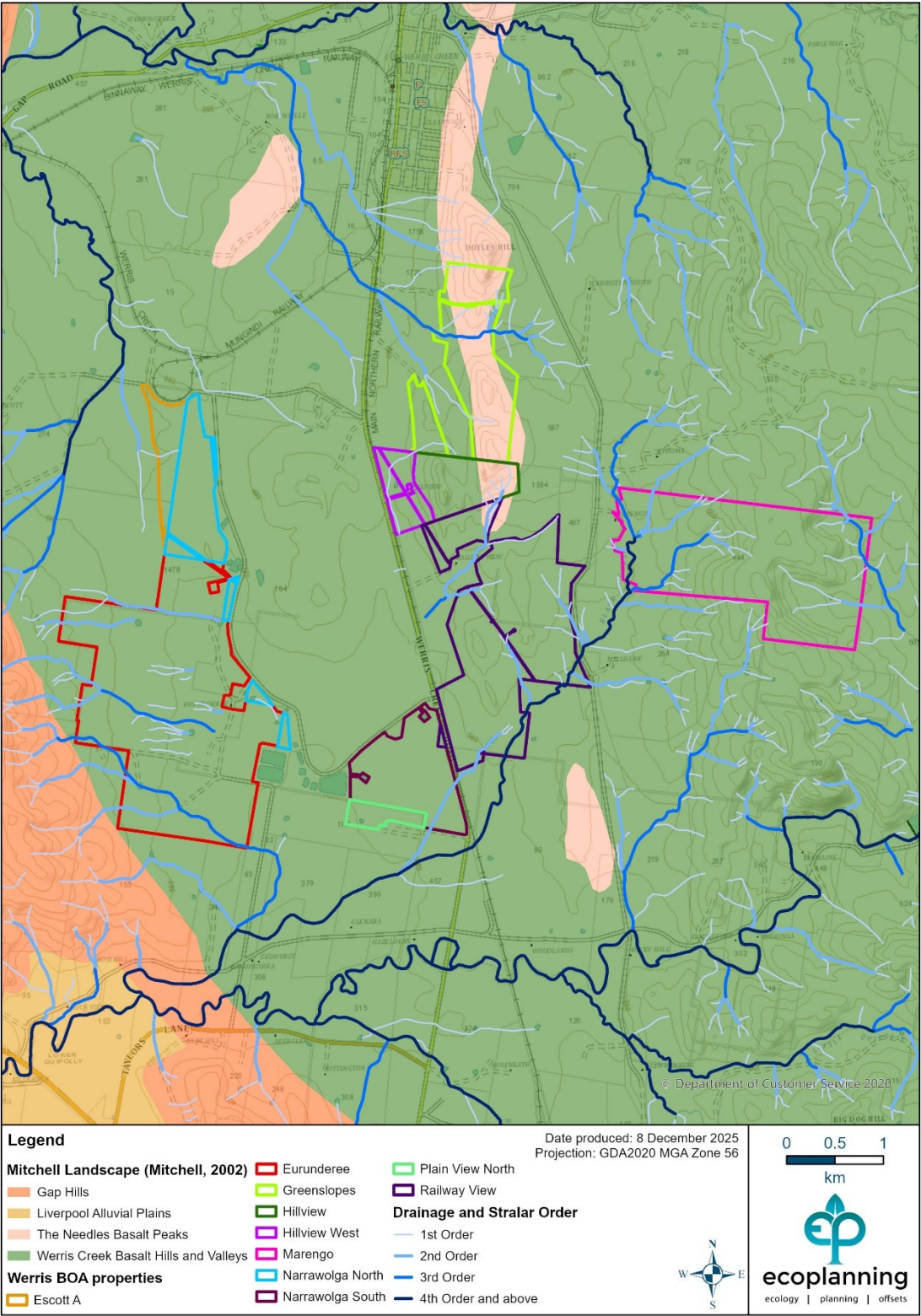
### 3.3 GEOLOGY, TOPOGRAPHY AND HYDROLOGY

The WCCM BOA occurs within the Werris Creek Basalt Hills and Valleys Mitchell Landscape (Mitchell, 2002) (**Figure 3-3**). The geology of Werris Creek Basalt Hills and Valleys Mitchell Landscape consists of brown and red brown gradational structured loam and clay merging with black sticky clay along streamlines. Profiles thicken downslope and are of moderate fertility (Mitchell, 2002).

The Greater Soil Group (GSG) and Australian Soil Classification (ASC) (DPE, 2020a, 2020b) have mapped the Werris BOA soils as Black Earths, Earthy Sands, Grey/Brown/Red Clays, Lithosols, Red Brown Earths and Solodic Soils. The topography of the Werris BOA is variable with the minimum and maximum elevations ranging from 320m to 480m for the Werris BOA.

The Werris BOA is within the Namoi River Catchment (Murray Darling Basin Authority [MDBA], 2024) and natural drainage generally flows to the northwest. The BOA is within the catchment of Black Gully which flows into Quipolly Creek then Quirindi Creek and Mooki River and then the Namoi River (Stream Order 9) (DPIE Water, 2024) (**Figure 3-3**).

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**Figure 3-3: Mitchell landscapes and watercourses within and surrounding the Werris BOA.**

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### 3.4 PREVIOUS LAND USE HISTORY

Each offset property within the Werris BOA has a similar history of agricultural management over much of the 20<sup>th</sup> century but with localised variances in intensity and extent of the disturbance to the natural ecosystems and habitat. Previous agricultural management was predominantly grazing and cultivation, as evidenced by the large extent of exotic, low diversity and derived native grasslands. This is reflected in the overall resilience being low with some moderate resilience to the east where it adjoins other semi-cleared vegetation along ridgelines. Biodiversity management commenced between 2010 and 2012 as the various Offset properties were acquired and permanently destocked.

### 3.5 INTRODUCED FLORA AND FAUNA

At the commencement of biodiversity management (between 2010 and 2012); weed species were widespread across the various BOA due to the previous extensive agricultural history of most properties. Since that time, through routine weed management; most priority weed species recorded during seasonal weed assessments (Ecoplanning, 2021a, 2020b, 2020c) have declined with the remaining key weeds shown below in **Table 3-1**.

**Table 3-1: Occurrence of weed species within the BOA**

| Species Name                | Common Name      | Priority Weed status for North West Region (LLS 2017)                                                                                                                                                                                                                                                                                                                                                                              | Weed Threat Category* |
|-----------------------------|------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| <i>Hypericum perforatum</i> | St John's Wort   | Regional Priority Weed – limited distribution and abundance in region and eradication is the regional objective                                                                                                                                                                                                                                                                                                                    | -                     |
| <i>Lycium ferocissimum</i>  | African Boxthorn | Regional Recommended Measure. Land managers should mitigate the risk of new weeds being introduced to their land. Land managers should mitigate spread from their land. Land managers reduce impacts from the plant on priority assets.                                                                                                                                                                                            | WoNS                  |
| <i>Opuntia stricta</i>      | Prickly Pear     | Priority Weed - Prohibition on dealings                                                                                                                                                                                                                                                                                                                                                                                            | WoNS, KTP             |
| <i>Opuntia tomentosa</i>    | Velvet Pear      | General Biosecurity Duty. All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable. Prohibition on dealings. Must not be imported into the State or sold | -                     |
| <i>Phyla canescens</i>      | Lippia           | General Biosecurity Duty                                                                                                                                                                                                                                                                                                                                                                                                           | -                     |
| <i>Xanthium occidentale</i> | Noogoora Burr    | General Biosecurity Duty. All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.                                                                      | HTE                   |
| <i>Xanthium spinosum</i>    | Bathurst Burr    | General Biosecurity Duty. All plants are regulated with a general biosecurity duty to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable.                                                                      | HTE                   |

\* WoNs = Weeds of National Significance, HTE = High Threat Exotic and KTP = Key Threatening Process

Similarly, at the commencement of Biodiversity Management (between 2010 and 2012), certain pest animals were widespread across the various BOAs given their previous extended agricultural history. However, since that time, through routine pest animal management; most species have declined in detection on all offset properties while others species appear only in discrete areas (**Table 3-2**) as collated from data collected during baseline assessments, annual fauna monitoring and from quarterly pest animal management reports (AMBS, 2023).



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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

**Table 3-2: Occurrence of Priority Pest animals within the BOA**

| Pest animals                                                                | Area of Occurrence (properties)                                                             |
|-----------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Feral Pig ( <i>Sus scrofa</i> )                                             | Has been detected on all offset properties or is expected to occur on all offset properties |
| European Red Fox ( <i>Vulpes vulpes</i> )                                   | Has been detected on all offset properties or is expected to occur on all offset properties |
| European Rabbit ( <i>Oryctolagus cuniculus</i> )                            | Has been detected on all offset properties or is expected to occur on all offset properties |
| Feral Deer spp. ( <i>Cervus</i> spp., <i>Axis</i> spp. or <i>Dama</i> spp.) | Marengo, Railway View, Narrawolga and Eurunderee                                            |
| Feral Cat ( <i>Felis catus</i> )                                            | Has been detected on all offset properties or is expected to occur on all offset properties |

### 3.6 THREATENED ECOLOGICAL COMMUNITIES, FLORA AND FAUNA

#### *Threatened Ecological Communities*

Two threatened ecological communities (TECs) have been mapped within the Werris BOA (**Table 3-3**; also see **Figure 4-2** and **Figure 4-3**).

Five PCTs (433, 435, 544, 597 and 599) mapped within the Werris BOA are part of the threatened ecological community White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed as a CEEC under the BC Act and the EPBC Act. The revised BOA contains 1,309.69 ha of land meeting the criteria for listing under the BC Act, and 1,303.35 ha meets the listing criteria under the EPBC Act.

The BOA also contains 1 ha of PCT 547 which forms part of Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions, listed as an EEC under the BC Act and part of Semi-evergreen Vine Thickets of the Brigalow Belt Bioregions (North and South) listed as an EEC under the EPBC Act.

Further details on these TECs, including vegetation descriptions and photos, can be found within the Revised Biodiversity Offset Strategy (RBOS) for WCCM (Ecoplanning, 2025; **APPENDIX C**:).

**Table 3-3: Threatened Ecological Communities within the BOA**

| Ecological Community                                                                    | Area of TEC (ha) |          |
|-----------------------------------------------------------------------------------------|------------------|----------|
|                                                                                         | BC Act           | EPBC Act |
| White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland | 1,309.69         | 1,303.35 |
| Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions          | 1.00             | 1.00     |

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### ***Threatened Flora***

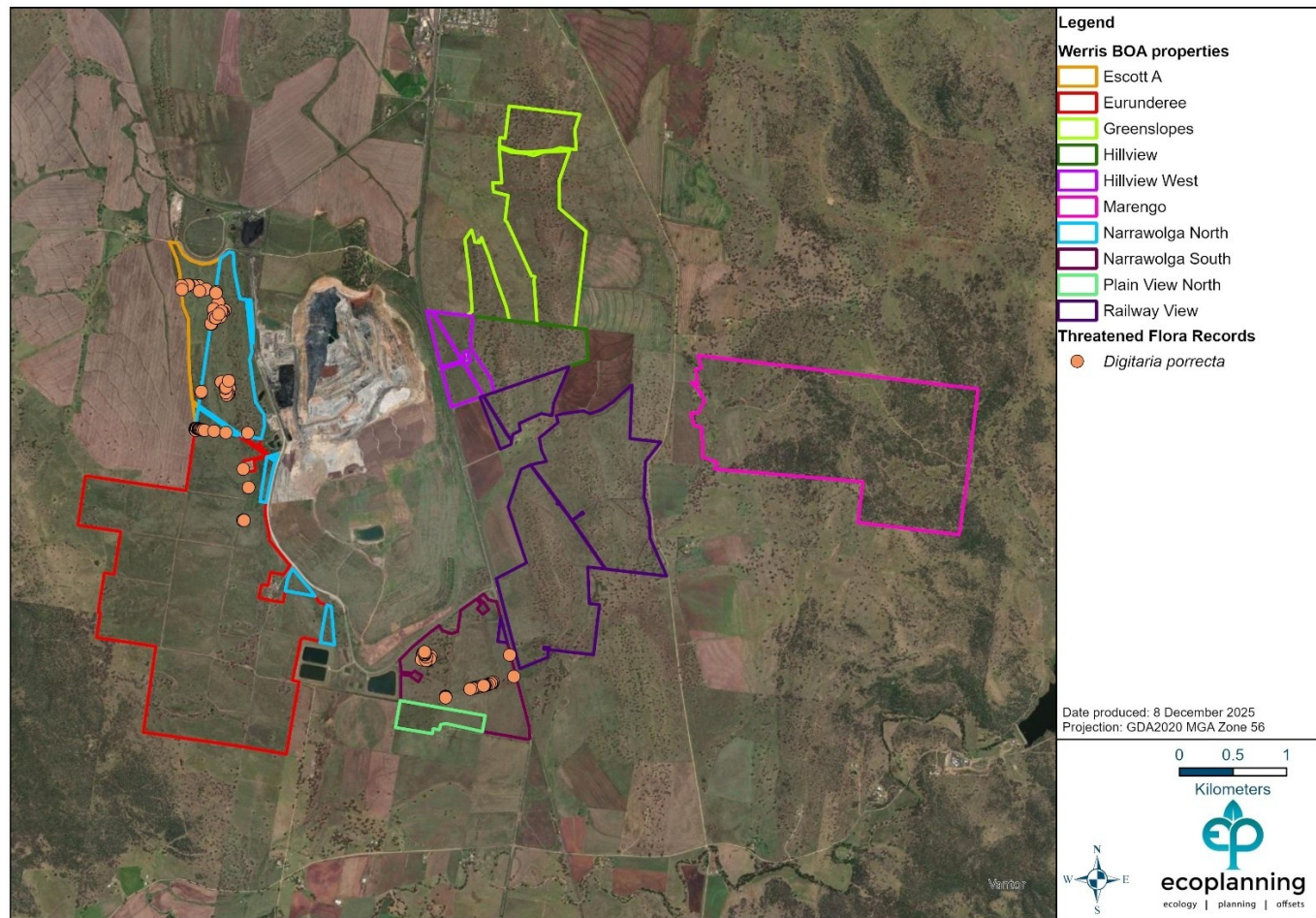
One threatened flora species has been recorded within the Werris BOA (Ecoplanning, 2021b) (**Figure 3-4; Table 3-4**).

**Table 3-4: Threatened Flora recorded within the BOA**

| Scientific Name           | Common Name        | Threatened Status |          | Offset Property        | Likelihood |
|---------------------------|--------------------|-------------------|----------|------------------------|------------|
|                           |                    | BC Act            | EPBC Act |                        |            |
| <i>Digitaria porrecta</i> | Finger Panic Grass | E                 | -        | Eurunderee, Narrawolga | Occurs     |

E=Endangered

|                                                                                   |                   |                     |                               |
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**Figure 3-4: Threatened flora species occurring within the Werris BOA.**

|                                                                                   |                   |                     |                               |
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### Threatened Fauna

All threatened fauna recorded within the Werris BOA during surveys undertaken between 2020 – 2023 by AMBS (2023) are shown below in **Table 3-5**. Species previously recorded or predicted to occur (based on potential habitat) have also been included (Eco Logical, 2013).

**Table 3-5: Recorded and Predicted Threatened Fauna of the BOA.**

| Scientific Name                        | Common Name                            | Status |          | Habitat Requirements                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | Occurrence         |
|----------------------------------------|----------------------------------------|--------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
|                                        |                                        | BC Act | EPBC Act |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |
| Birds                                  |                                        |        |          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                    |
| <i>Anthochaera phrygia</i>             | Regent Honeyeater                      | C<br>E | E        | The species inhabits dry open forest and woodland, particularly Box-Ironbark woodland, and riparian forests of River Sheoak. Regent Honeyeaters inhabit woodlands that support a significantly high abundance and species richness of bird species. These woodlands have significantly large numbers of mature trees, high canopy cover and abundance of mistletoes.                                                                                                                                                                                                     | P<br>(ELA 2013)    |
| <i>Artamus cyanopterus cyanopterus</i> | Dusky Woodswallow                      | V      | -        | The species is often reported in woodlands and dry open sclerophyll forests, usually dominated by eucalypts, including mallee associations. It has also been recorded in shrublands and heathlands and various modified habitats, including regenerating forests and very occasionally in moist forests or rainforests.                                                                                                                                                                                                                                                  | Yes<br>(AMBS 2023) |
| <i>Circus assimilis</i>                | Spotted Harrier                        | V      | -        | The Spotted Harrier occurs throughout the Australian mainland, except in densely forested or wooded habitats of the coast, escarpment and ranges, and rarely in Tasmania. Individuals disperse widely in NSW and comprise a single population.                                                                                                                                                                                                                                                                                                                           | Yes<br>(AMBS 2023) |
| <i>Climacteris picumnus victoriae</i>  | Brown Treecreeper (eastern subspecies) | V      | -        | Found in eucalypt woodlands (including Box-Gum Woodland) and dry open forest of the inland slopes and plains inland of the Great Dividing Range; mainly inhabits woodlands dominated by stringybarks or other rough-barked eucalypts, usually with an open grassy understorey, sometimes with one or more shrub species; also found in mallee and River Red Gum ( <i>Eucalyptus camaldulensis</i> ) Forest bordering wetlands with an open understorey of acacias, saltbush, lignum, cumbungi and grasses; fallen timber is an important habitat component for foraging. | Yes<br>(AMBS 2023) |
| <i>Glossopsitta pusilla</i>            | Little Lorikeet                        | V      | -        | Forages primarily in the canopy of open Eucalypt forest and woodland, yet also finds food in Angophora, Melaleuca and other tree species. Riparian habitats are particularly used, due to higher soil fertility and hence greater productivity.                                                                                                                                                                                                                                                                                                                          | Yes (AMBS 2023)    |
| <i>Hieraaetus morphnoides</i>          | Little Eagle                           | V      | -        | Utilises open eucalypt, sheoak and acacia forest, woodland or open woodland                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | Yes (AMBS 2023)    |
| <i>Lathamus discolor</i>               | Swift Parrot                           | E      | E        | On the mainland they occur in areas where eucalypts are flowering profusely or where there are abundant lerp (from sap-sucking bugs) infestations.                                                                                                                                                                                                                                                                                                                                                                                                                       | P<br>(ELA 2013)    |

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| Scientific Name                           | Common Name                               | Status |          | Habitat Requirements                                                                                                                                                                                                                                                                                                                                                                    | Occurrence      |
|-------------------------------------------|-------------------------------------------|--------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
|                                           |                                           | BC Act | EPBC Act |                                                                                                                                                                                                                                                                                                                                                                                         |                 |
| <i>Melanodryas cucullata</i>              | Hooded Robin (south-eastern form)         | V      | -        | Prefers lightly wooded country, usually open eucalypt woodland, acacia scrub and mallee, often in or near clearings or open areas. Requires structurally diverse habitats featuring mature eucalypts, saplings, some small shrubs and a ground layer of moderately tall native grasses.                                                                                                 | Yes (AMBS 2023) |
| <i>Neophema pulchella</i>                 | Turquoise Parrot                          | V      | -        | The Turquoise Parrot inhabits eucalypt and cypress-pine open forests and woodlands (commonly box or box-ironbark) with native grasses, sometimes with a low shrubby understorey, often in undulating or rugged country, or on footslopes. It also lives in open woodland or riparian gum woodland, and often near ecotones between woodland and grassland, or coastal forest and heath. | Yes (AMBS 2023) |
| <i>Ninox connivens</i>                    | Barking Owl                               | V      | -        | Inhabits woodland and open forest, including fragmented remnants and partly cleared farmland.                                                                                                                                                                                                                                                                                           | Yes (AMBS 2023) |
| <i>Oxyura australis</i>                   | Blue-billed Duck                          | V      | -        | Prefers deep water in large permanent wetlands and swamps with dense aquatic vegetation. Can be found on temperate, fresh to saline, terrestrial wetlands, including sewerage ponds, rivers, salt lakes and saltpans.                                                                                                                                                                   | Yes (ELA 2013)  |
| <i>Pomatostomus temporalis temporalis</i> | Grey-crowned Babbler (eastern subspecies) | V      | -        | Grey-crowned Babblers occupy open woodlands dominated by mature eucalypts, with regenerating trees, tall shrubs, and an intact ground cover of grass and forbs.                                                                                                                                                                                                                         | Yes (AMBS 2023) |
| <i>Stagonopleura guttata</i>              | Diamond Firetail                          | V      | -        | Found in grassy eucalypt woodlands, including Box-Gum Woodlands and Snow Gum Eucalyptus pauciflora Woodlands. Also occurs in open forest, mallee, Natural Temperate Grassland, and in secondary grassland derived from other communities.                                                                                                                                               | Yes (AMBS 2023) |
| <b>Mammals</b>                            |                                           |        |          |                                                                                                                                                                                                                                                                                                                                                                                         |                 |
| <i>Miniopterus orianae oceanensis</i>     | Eastern Bentwing-bat                      | V      | -        | Caves used as primary roosting habitat                                                                                                                                                                                                                                                                                                                                                  | Yes (ELA 2013)  |
| <i>Phascolarctos cinereus</i>             | Koala                                     | E      | E        | Inhabit eucalypt woodlands and forests.                                                                                                                                                                                                                                                                                                                                                 | Yes (ELA 2013)  |
| <i>Saccolaimus flaviventris</i>           | Yellow-bellied Sheath-tailed Bat          | V      | -        | Tree hollows and buildings; in treeless areas they are known to utilise mammal burrows.                                                                                                                                                                                                                                                                                                 | Yes (AMBS 2023) |
| <i>Scoteanax rueppellii</i>               | Greater Broad-nosed Bat                   | V      | -        | Variety of habitats from woodland through to moist and dry eucalypt forest and rainforest, though it is most commonly found in tall wet forest.                                                                                                                                                                                                                                         | Yes (AMBS 2023) |

P=Potential, Yes=recorded or observed



|                                                                                   |                   |                     |                               |
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#### 4 BIODIVERSITY OFFSET STRATEGY (BOS) AND SECUREMENT

A summary of the minimum requirements in the various NSW and Commonwealth approvals for land-based offsetting in the WCCM BOS are:

- 1287.92ha of BOA across 6 properties including enhancement of existing fauna habitat and targeted establishment of naturally scarce fauna habitat (PA 10\_0059 Schedule 3 Condition 24);
- At least 74ha of Box Gum Woodland (BGW) CEEC on Greenslopes/Banool (PA 10\_0059 Schedule 3 Condition 24);
- 310.2ha of Regent Honeyeater and Swift Parrot habitat (EPBC Approval 2010/5571 Condition 2bi); and
- 731ha of White Box-Yellow Box-Blakeley's Red Gum Grassy Woodland and Derived Native Grassland CEEC (EPBC Approval 2010/5571 Condition 2bii).

In the final stages of the Werris Creek EPBC Approval assessment, correspondence from WHC dated 9 November 2011 on behalf of WCC outlined how 731 ha of White Box CEEC will be achieved. WHC committed both the White Box Grassy Woodland (Woodland form - Class 4) and White Box Grassy Woodland (DNG form - Class 3a), which conformed to the EPBC CEEC definition; as well as the other White Box Grassy Woodland (DNG form - Class 3b) not conforming to EPBC CEEC definition in 2011. As the Class 3b DNG would be subject to restoration over time, this was expected to conform to EPBC CEEC definition to achieve the 731 ha of White Box CEEC. The 2026 RBOS indicates that White Box CEEC meeting EPBC definition now exceeds the 731 ha outlined within EPBC Approval 2010/5571 Condition 2bii. A summary of how the 731 ha commitment has been achieved over time is outlined below:

- Biodiversity Impact Assessment for Werris Creek Coal Mine Life of Mine Project (Eco Logical, 2010) initially committed the EPBC CEEC definition conforming to White Box Class 4 Woodland form (120 ha) and Class 3 DNG form (447.7 ha) for a combined 567.7 ha;
- WHC correspondence 9 November 2011 with updated BOS mapping, including the requested additional offset areas, committed White Box Grassy Woodland (Woodland form - Class 4 – 290.56 ha) and White Box Grassy Woodland (DNG form - Class 3a - 211.61 ha), which conformed to the EPBC CEEC definition; as well as the other White Box Grassy Woodland (DNG form - Class 3b – 228.84 ha) not conforming to EPBC CEEC definition in 2011. As the Class 3b DNG would be subject to restoration over time, this was expected to conform to EPBC CEEC definition to achieve a total of 731 ha of White Box CEEC, which was adopted into the EPBC Approval 2010/5571 Condition 2bii;
- Werris Creek Coal Biodiversity and Offset Management Plan (2013 and reapproved as Biodiversity Offset Management Plan 2016) finalised the BOS mapping of the additional offset areas, committing White Box Grassy Woodland (Woodland form - Class 4 – 323.56 ha), White Box Grassy Woodland (DNG form - Class 3a - 259.27 ha), and Yellow Box – Blakeley's Red Gum grassy woodland (Woodland form – Class 4 - 8.15 h which conformed to the EPBC CEEC definition; as well as the other White Box Grassy Woodland (DNG form - Class 3b – 408.67 ha) not conforming to EPBC CEEC definition in 2013. As the Class 3b DNG would be subject to restoration over time, this was expected to conform to EPBC BGW CEEC definition to achieve a total of 999.65 ha of BGW CEEC;
- Werris Creek Revised Biodiversity Offset Strategy (Ecoplanning 2026a) demonstrates the total area of EPBC listed White Box- Yellow Box – Blakeley's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community within the BOA is now 1,303.35 ha, exceeding the minimum requirement of 731 ha as outlined in the EPBC 2010/5571 approval.



|                                                                                   |                   |                     |                               |
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For Regent Honeyeater and Swift Parrot habitat, correspondence from WHC dated 9 November 2011 on behalf of WCC indicate that WHC committed White Box Grassy Woodland (Woodland form – Class 4 – 290.56 ha) and Remnant White Box Paddock Trees (Paddock Trees – Class 2 – 19.64 ha), to achieve the 310.2 ha of Regent Honeyeater and Swift Parrot.

The 2026 RBOS was prepared to incorporate several key updates affecting the boundaries and classification of vegetation since the previous BOS (WHC 2013), specifically:

- Exclusion of all rehabilitation areas;
- Exclusion of Crown Road reserves and easements;
- Updates to cadastral boundaries, following completion of high accuracy boundary definition survey;
- Update of vegetation mapping from BVT to PCTs;
- Update of condition class categories; and
- Improvement in vegetation condition following biodiversity restoration works.

Extensive fieldwork and desktop analyses was undertaken to update vegetation mapping to PCTs and inform the 2026 RBOS (**APPENDIX C:**). PCT allocation was based on site descriptions (that included dominant canopy species) used in conjunction with plot data and ArcGIS mapping of site contours and Great Soil Groups (GSGs). Vegetation conditions for each PCT were updated in the 2026 RBOS to reflect the three broad condition classes utilised in the Flora Monitoring Project Plan (FMPP; Ecoplanning 2023), which standardises flora monitoring (including condition classification) across all WHC BOAs.

To meet the original BOS approval requirements, WHC established the Werris Creek BOA (Eurunderee, Hillview, Marengo, Railway View, Narrawolga (North and South, previously Mine Site) and Greenslopes (not including Banool) offset properties (**Figure 1-2**). The Werris Revised Biodiversity Offset Strategy (RBOS; Ecoplanning 2026a; **APPENDIX C:**) indicates 1,315.44 ha of land to be managed in accordance with this OMP. The total biodiversity offset area included in the 2026 RBOS represents a deficit of 4.05 ha of land compared to the approved 2013 BOS (also see Table 7 of the approved Werris BOMP 2016 and Table 3-9 of **APPENDIX C:**), a result of adopting the cadastral survey boundary following comprehensive survey in 2019/20 by Stewart Surveys. Nonetheless, the 2026 RBOS represents a surplus of 27.52 ha compared to the BOS conditioned under Project Approval (PA) 10\_0059 (MOD5) (summarised in Table 12 of the PA). Note that the previous 2013 BOS did not follow true cadastral property boundaries but rather created “Mine Site” using the Mining Lease. Notwithstanding, this has now been correctly apportioned to the adjacent Eurunderee, Narrawolga North and Narrawolga South properties.

The 2026 RBOS demonstrates the total area of EPBC listed White Box- Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland Ecological Community within the BOA is 1,303.35 ha, exceeding the minimum requirement of 731 ha as outlined in the EPBC 2010/5571 approval. This was due to the reclassification of vegetation mapping from BVT to PCTs, resulting in a revised vegetation and condition map, and an increase in the number of PCTs associated with the Box Gum Woodland TEC. In addition, analysis undertaken in mid-2025 resulted in the status of several polygons updated to meet EPBC status for Box Gum Woodland, indicating an improvement in native diversity and groundcover since biodiversity management commenced on the site. Minor updates to the boundaries have also contributed to the increase. The total area meeting EPBC listed BGW within the Werris BOA includes 350.53 ha in good condition, 216.42 ha in semi-cleared condition, and 736.39 ha in DNG condition. This is in comparison to 999.65 ha listed in the approved 2013 BOS (also see Table 7 of WHC 2016), which comprised 590.98 ha meeting EPBC definition of BGW, and an additional 408.67 ha to be restored to meet EPBC status.

|                                                                                   |                   |                     |                               |
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In addition, the total area of the BC Act listed Box Gum Woodland CEEC within the Greenslopes offset is 129.20 ha, exceeding the minimum requirement of 74 ha as outlined in Schedule 3 Condition 24 of NSW PA 10\_0059. This is in comparison to 95.70 ha listed in the approved 2013 BOS (also see Table 7 of WHC 2016).

The area of suitable habitat for Regent Honeyeater and Swift Parrot has increased since the 2013 BOS to of the reclassification of vegetation communities, and an increase in the number of PCTs associated with the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland TEC. Overall, the total area of suitable habitat for Regent Honeyeater and Swift Parrot is 566.95 ha, exceeding the minimum area of 310.2 ha required by Condition 2bi of EPBC Approval 2010/5571. This is in comparison to 489.11 **APPENDIX C:**).

In addition, two PCTs were identified within the WCCM Compensatory Revegetation Area (Escott A, Hillview West/Infrastructure, and Plain View North) that are classified into two broad condition states for a total area of 76.03 ha; of which all meets the criteria for listing as TECs under the BC Act and EPBC Act. Further 17.27 ha of suitable habitat for Regent Honeyeater and Swift Parrot is present in the WCCM Compensatory Revegetation Area. The WCCM Compensatory Revegetation Area is however not included in the total area calculations for the RBOS.

**Table 4-1: Summary of requirements of NSW Project Approval 10\_0059 and EPBC Approval 2010/5571 and how they have been met.**

| Biodiversity Offset Strategy Criteria (PA 10_0059 and/or EPBC 2010/5571)                                                                                                                | Required Area for Biodiversity Offset Strategy (ha) | Area in Biodiversity Offset Strategy 2013 (ha) | Area in Revised Biodiversity Offset Strategy 2025 (ha) | Difference (Revised BOS – Required BOS) (ha) |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------|------------------------------------------------|--------------------------------------------------------|----------------------------------------------|
| 1287.92ha of BOA across 6 properties including enhancement of existing fauna habitat and targeted establishment of naturally scarce fauna habitat (PA 10_0059 Schedule 3 Condition 24); | 1287.92                                             | 1,319.49                                       | 1,315.44                                               | + 27.52                                      |
| At least 74ha of Box Gum Woodland (BGW) CEEC on Greenslopes/Banool (PA 10_0059 Schedule 3 Condition 24);                                                                                | 74                                                  | 95.70                                          | 129.20                                                 | + 33.50                                      |
| 310.2ha of Regent Honeyeater and Swift Parrot habitat (EPBC Approval 2010/5571 Condition 2bi); and                                                                                      | 310.2                                               | 489.11                                         | 566.95                                                 | + 256.75                                     |
| 731ha of White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC (EPBC Approval 2010/5571 Condition 2bii).                                             | 731                                                 | 999.65*                                        | 1303.35                                                | + 572.35                                     |

\*Includes 590.98 ha meeting EPBC Act listing within the BOS 2013, and an additional 408.67 ha to be restored to meet EPBC status.

#### 4.1 OFFSET SECUREMENT

To meet compliance with securement of the WCCM BOS, WHC achieved the registration of Section 88E Positive Public Covenants under the NSW *Conveyancing Act 1919* registered on title and therefore secured in perpetuity on 20 July and 2 August 2018 on the following Lots and Deposited Plan (and Auto consols as relevant):

- Lot 1 in DP 981722
- Auto consol 12504-241
- Auto consol 6646-288
- Lot 1 in DP 1179777
- Auto consol 12504-241
- Auto consol 6646-288
- Lot 1 in DP 1179777
- Lot 73 in DP 751034
- Auto consol 8658-14
- Lot 6 in DP 1184235
- Lot 258 in DP 1101474
- Lot 264 in DP 751017

|                                                                                   |                   |                     |                               |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

- Lot 73 in DP 751034
- Lot 8 in DP 1184235
- Auto consol 15372-44
- Lot 2 in DP 1085891
- Lot 2 in DP 1182293
- Lot 3 in DP 1182293
- Lot 4 in DP 1022826
- Lot 5 in DP 1182293
- Lot 1 in DP 981722
- Lot 8 in DP 1184235
- AC 15372-44
- Lot 2 in DP 1085891
- Lot 2 in DP 1182293
- Lot 3 in DP 1182293
- Lot 4 in DP 1022826
- Lot 5 in DP 1182293
- Auto consol 8384-58
- Auto consol 8384-59
- Lot 45 in DP 751017
- Lot 71 in DP 403895
- Lot 2 in DP 1184236
- Lot 3 in DP 1184236
- Lot 44 in DP 751017
- Lot 78 in DP 751017
- Lot 79 in DP 751017
- Lot 144 in DP 751017
- Lot 147 in DP 751017
- Auto consol 2990-170.

This encompasses the properties Eurunderee, Narrawolga (North and South), Hillview, Greenslopes, Railway View and Marengo. Former NSW DPE (now DPHI) and DoEE (now CDCCEEW) were notified on 25 July and 3 August 2018 that compliance had been achieved with EPBC Approval 2010/5571 Condition 2b and PA 10\_0059 Schedule 3 Condition 24.

The Compensatory Revegetation Area including Escott A, Hillview West and Infrastructure, and Plain View North do not currently have a legally binding conservation covenant. However, as part of the divestment planning for the WCCM BOA, NSW DPHI and DCCEEW has requested that the entire BOA is secured under Biodiversity Stewardship Agreements (BSAs) (see **Section 5.3.4**).

## 4.2 VEGETATION COMMUNITIES, FAUNA HABITAT AND CONDITION

The WCCM RBOS (Ecoplanning 2026a; **APPENDIX C:**) vegetation communities of the Werris BOA, including compensatory revegetation areas, are listed in **Table 4-2** and **Table 4-3**, and shown in **Figure 4-1**. These tables also indicate the extent of Box-Gum Woodland CEEC (shown in **Figure 4-2** and **Figure 4-3**), as well as the extent of Swift Parrot and Regent Honeyeater habitat in the BOA (shown in **Figure 4-4**).

**Table 4-2: Plant Community Types (PCTs) and condition classes in the BOA (Eurunderee, Narrawolga North and South, Hillview, Greenslopes, Railway View and Marengo).**

| PCT no. | PCT Name                                                                                                               | Condition Class | TEC              |                  | Regent Honeyeater/<br>Swift Parrot habitat | Area (ha)* |
|---------|------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|------------------|--------------------------------------------|------------|
|         |                                                                                                                        |                 | BC Act           | EPBC Act         |                                            |            |
| 433     | White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion | Good            | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 95.42      |
|         |                                                                                                                        | Semi-cleared    | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 176.98     |
|         |                                                                                                                        | DNG/Cleared     | Yes <sup>1</sup> | Yes <sup>1</sup> | No                                         | 731.05     |
|         |                                                                                                                        |                 | Yes <sup>1</sup> | No               | No                                         | 4.76       |
|         |                                                                                                                        |                 | No               | No               | No                                         | 0.73       |
| 435     | White Box – White Cypress Pine shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion  | Semi-cleared    | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 3.72       |
| 544     |                                                                                                                        | Semi-cleared    | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 3.95       |

|                                                                                                     |                   |                     |                               |
|-----------------------------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  <b>Whitehaven</b> | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                                               |                   |                     |                               |

| PCT no.    | PCT Name                                                                                                                                                                 | Condition Class | TEC              |                  | Regent Honeyeater/ Swift Parrot habitat | Area (ha)* |
|------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|------------------|-----------------------------------------|------------|
|            |                                                                                                                                                                          |                 | BC Act           | EPBC Act         |                                         |            |
|            | Rough-barked Apple – White Cypress Pine – Blakely's Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion                | DNG/Cleared     | Yes <sup>1</sup> | No               | No                                      | 1.58       |
|            |                                                                                                                                                                          | DNG/Cleared     | No               | No               | No                                      | 2.03       |
| 547        | Wild Quince – Mock Olive – Rusty Fig – lamboto - Sweet Pittosporum dry rainforest of rocky and scree areas of the Nandewar Bioregion and New England Tableland Bioregion | Good            | Yes <sup>2</sup> | Yes <sup>3</sup> | No                                      | 1.00       |
| 597        | White Box - cypress pine - Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion                | Good            | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 245.53     |
|            |                                                                                                                                                                          | Semi-cleared    | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 21.02      |
|            |                                                                                                                                                                          | DNG/Cleared     | Yes <sup>1</sup> | Yes <sup>1</sup> | No                                      | 5.34       |
| 599        | Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion                                       | Good            | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 9.58       |
|            |                                                                                                                                                                          | Semi-cleared    | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 10.75      |
| NA         | Non PCT - Dam                                                                                                                                                            | N/A             | NA               | NA               | No                                      | 1.99       |
| TOTAL AREA |                                                                                                                                                                          |                 |                  |                  |                                         | 1,315.44*  |

\*subject to rounding errors, <sup>1</sup> White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland, <sup>2</sup> Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions, <sup>3</sup> Semi-evergreen Vine Thickets of the Brigalow Belt Bioregions (North and South)

**Table 4-3: Plant community types (PCTs) and condition classes found within the Werris Creek Compensatory Revegetation areas of the BOA (Escott A, Hillview West/ Infrastructure and Plain View North).**

| PCT no. | PCT Name                                                                                                               | Condition Class | TEC              |                  | Regent Honeyeater/ Swift Parrot habitat | Area (ha) |
|---------|------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|------------------|-----------------------------------------|-----------|
|         |                                                                                                                        |                 | BC Act           | EPBC Act         |                                         |           |
| 433     | White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion | Good            | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 4.47      |
|         |                                                                                                                        | Semi-cleared    | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 5.09      |

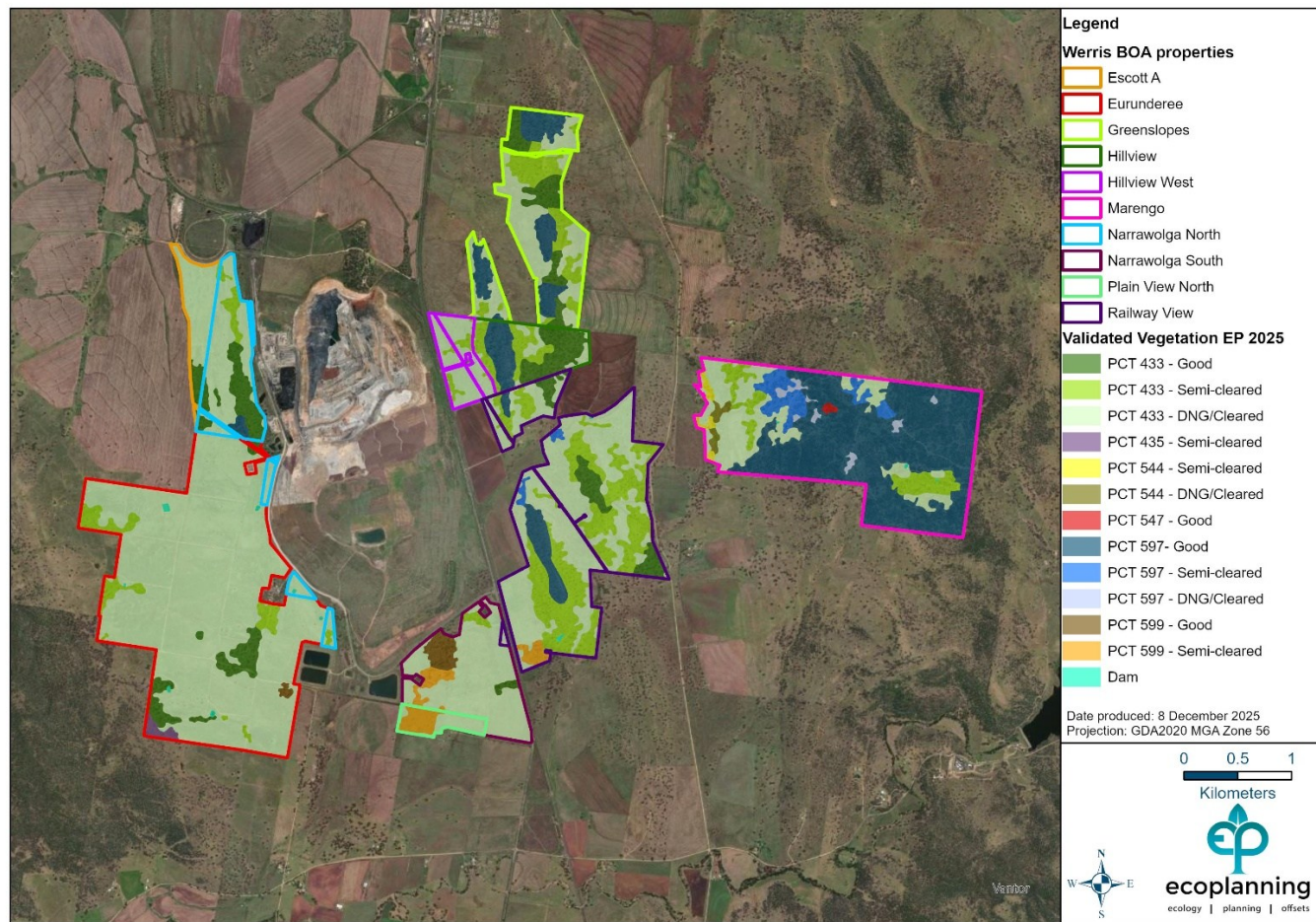
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|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
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| PCT no.    | PCT Name                                                                                                                           | Condition Class | TEC              |                  | Regent Honeyeater/ Swift Parrot habitat | Area (ha) |
|------------|------------------------------------------------------------------------------------------------------------------------------------|-----------------|------------------|------------------|-----------------------------------------|-----------|
|            |                                                                                                                                    |                 | BC Act           | EPBC Act         |                                         |           |
|            |                                                                                                                                    | DNG/Cleared     | Yes <sup>1</sup> | Yes <sup>1</sup> | No                                      | 58.76     |
| 599        | Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion | Semi-cleared    | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 7.71      |
| TOTAL AREA |                                                                                                                                    |                 |                  | 76.03*           |                                         |           |

\*subject to rounding errors, <sup>1</sup> White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland



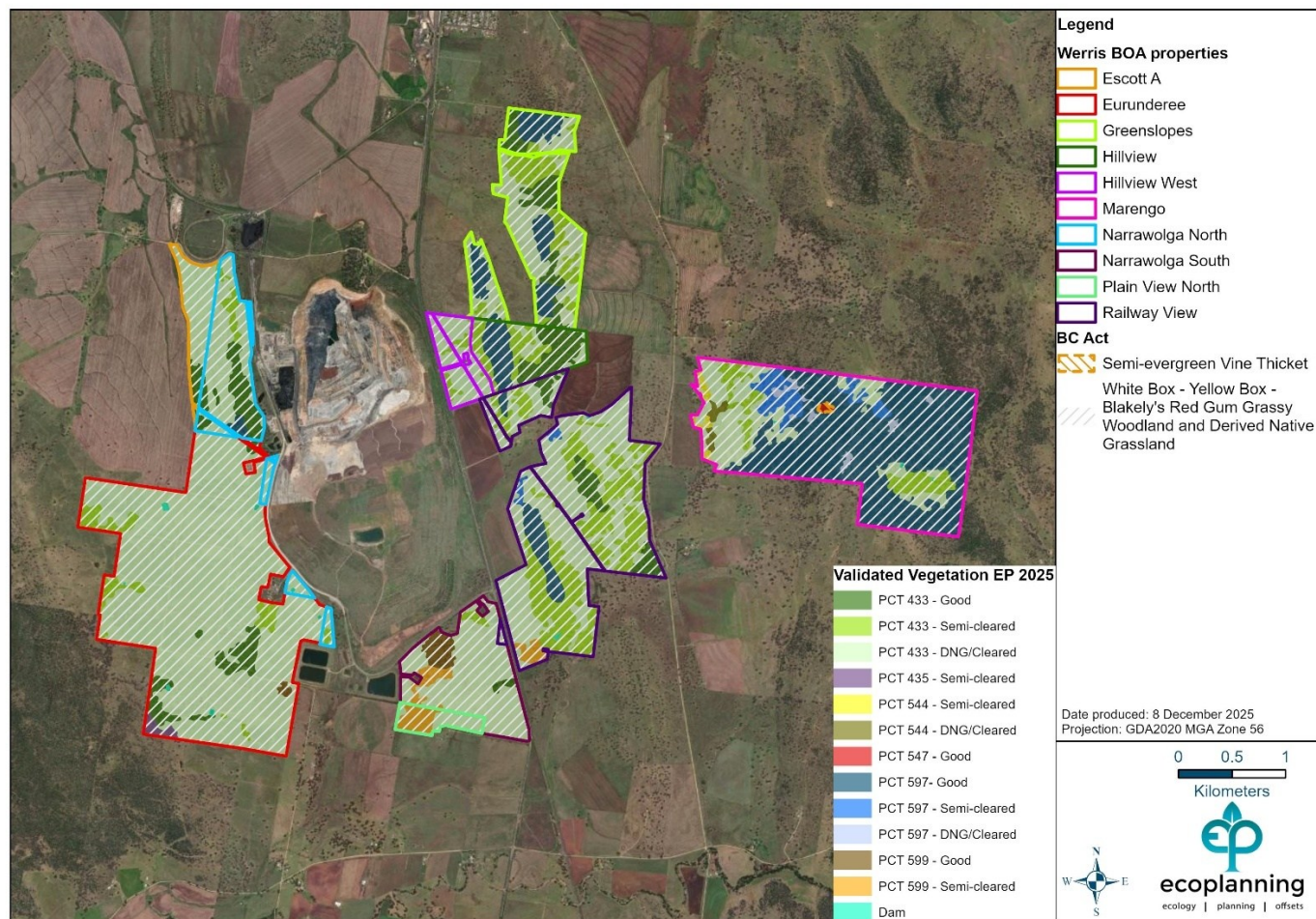
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**Figure 4-1: Vegetation Communities – Werris BOA (Ecoplaning 2026a).**

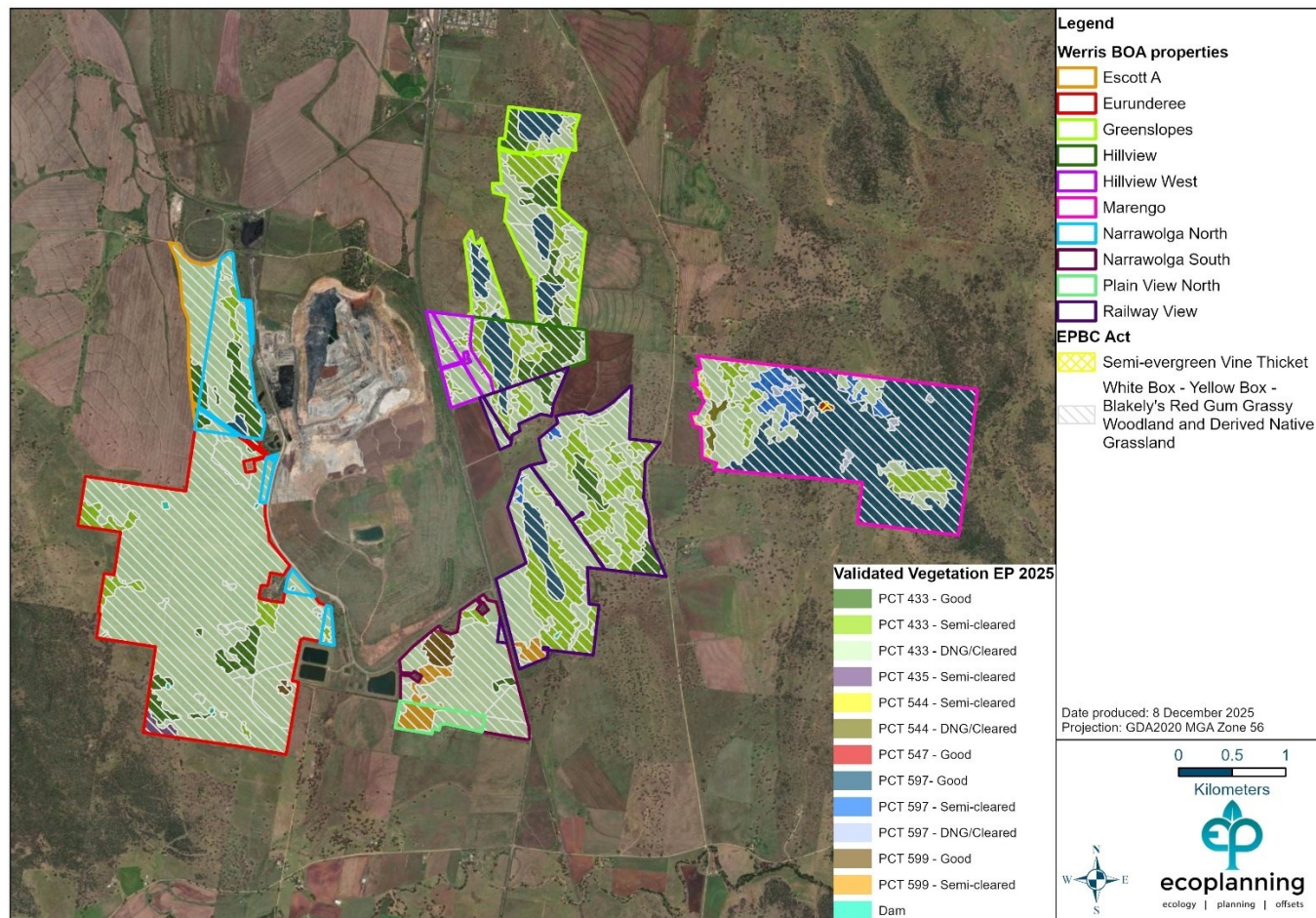


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**Figure 4-2: Threatened Ecological Communities (TECs) listed under the BC Act within the BOA.**

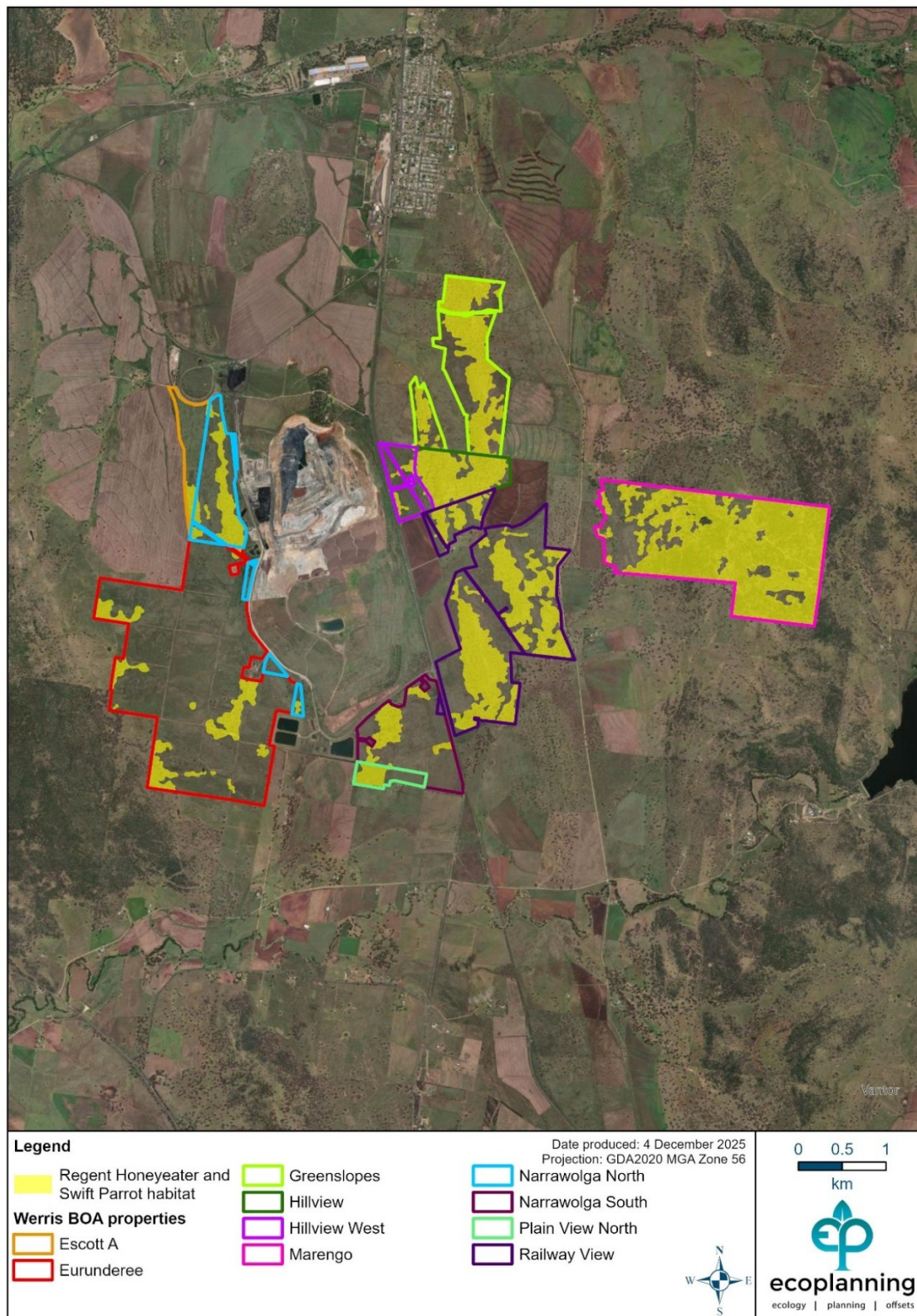
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |



**Figure 4-3: Threatened Ecological Communities (TECs) listed under the EPBC Act within the BOA.**



|                                                                                   |                   |                     |                               |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |



**Figure 4-4: Regent Honeyeater and Swift Parrot habitat within the BOA.**

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
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|                                                                                   |                   | Revision Period:    | Refer to Section 6.3          |
| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

## 5 MANAGEMENT OF THE BIODIVERSITY OFFSET AREAS

This section describes the management measures to be implemented in the BOA. The management regime in the biodiversity offset areas will be adaptive over time to achieve the ecological management objectives.

### 5.1 ECOLOGICAL MANAGEMENT OBJECTIVES

The ecological management objectives specific to the BOA are shown below in **Table 5-1**.

**Table 5-1: Ecological management objectives specific to the BOA**

| Mine BOS | Ecological Management Objectives                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| WCCM BOS | <ul style="list-style-type: none"> <li>protect and enhance existing Box-Gum Woodland CEEC (woodland form)</li> <li>restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC (derived native grassland)</li> <li>protect and enhance existing woodland and forest habitat for Regent Honeyeater and Swift Parrot</li> <li>protect and enhance existing woodland and forest habitat for Brown Treecreeper, Hooded Robin, Little Lorikeet, Barking Owl, Eastern Bentwing Bat, Eastern False Pipistrelle, *Yellow-bellied Sheath-tailed Bat and Greater Broad-nosed Bat</li> <li>restore self-sustaining woodland and/or forest within derived native grasslands and 'non-native/Cleared' areas to provide habitat for the above listed threatened species listed under the EPBC Act</li> </ul> |

\* MP 10\_0059 has called this species 'Yellow-bellied Bent-wing Bat'

### 5.2 IMPLEMENTATION SCHEDULE

The following **Table 5-2** summarises the management actions described and the frequency/timing of when those actions are to occur.

**Table 5-2: OMP Implementation Schedule**

| Section | Management Action                                          | Frequency and/or Timing                                              |
|---------|------------------------------------------------------------|----------------------------------------------------------------------|
| 5.3.1   | Tracks and Fences                                          | Biannual/as required                                                 |
| 5.3.2   | Other Offset Infrastructure                                | Biannual                                                             |
| 5.3.3   | Signage and Inspections                                    | Biannual/as required                                                 |
| 5.3.4   | Long Term Security and Biodiversity Offset Area Divestment | Complete / divestment securing in progress                           |
| 5.3.5   | Conservation Bond                                          | Annual                                                               |
| 5.4     | Seed Management                                            | Seasonal, based on life cycle stage and development of native plants |
| 5.5     | Revegetation                                               | Annual/as required (dependent on seasonal conditions)                |
| 5.6     | Ecological Thinning                                        | As required by assessment                                            |
| 5.7     | Habitat Augmentation                                       | As required by assessment                                            |
| 5.8     | Heritage Management                                        | Annual                                                               |
| 5.9     | Weed Management                                            | Seasonal (dependent on seasonal conditions)                          |
| 5.10    | Pest Animal Management                                     | Seasonal (dependent on seasonal conditions)                          |
| 5.11    | Erosion Management                                         | Annual                                                               |
| 5.12    | Agriculture Management                                     | As required                                                          |
| 5.13    | Bushfire Management                                        | Annual/as required (dependent on seasonal conditions)                |
| 5.14    | Threatened Flora Management                                | Seasonal (dependent on seasonal conditions)                          |

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| Section | Management Action                        | Frequency and/or Timing |
|---------|------------------------------------------|-------------------------|
| 5.14.1  | Flora Monitoring                         | Annual                  |
| 5.16    | Fauna Monitoring                         | Annual and biennial     |
| 5.17    | Performance and Completion Criteria      | Annual                  |
| 5.18    | Potential Risks and Contingency Measures | As required             |

### 5.3 BIODIVERSITY OFFSET AREA ESTABLISHMENT

This section outlines WHC's approach to the demarcation of BOA boundaries for controlling access (including the use of signage) and provision for the long-term security of the biodiversity offset areas (including provision of conservation bonds) in accordance with the Project and EPBC Act Approvals (**Table 2-2** and **Table 2-3**)

#### 5.3.1 Tracks and Fences

Access tracks and fence lines are to be located on or adjacent to the actual BOA boundary wherever practicable. The use of existing fences will be maximised in the first instance as the BOA boundary, to reduce additional disturbance. This will secure the BOA by minimising the likelihood of inadvertent grazing, unauthorised disturbance, or unauthorised access into the BOA. Wherever practical, new fencing will prioritise the use of plain wire fencing (minimising the use of barbed wire). Redundant internal fencing within the BOA will be progressively removed overtime.

New access tracks and fences will be located, as required (e.g. for access, fence maintenance or replacement), in consideration of biodiversity (such as threatened species) and heritage constraints. Due diligence inspections will be undertaken prior to any disturbance, and new tracks and fences will be constructed with a maximum 6 m total width.

Ongoing monitoring and site inspections undertaken by WHC will note any damage or disrepair of fences and undertake maintenance/repair as required. If in instances where barbed-wire fencing is being used and is found to be restrictive or damaging to fauna, ecologically-friendly alternatives will be investigated.

#### 5.3.2 Other Offset Infrastructure

Existing infrastructure (such as electricity transmission lines, windmills/water bores and pipes, homesteads and sheds) wholly or partly within the BOA will be retained and managed as required by the relevant owners and/or managers/licensees. Any existing infrastructure no longer required will be progressively removed overtime and any hazardous materials or contaminated lands remediated as required.

Existing farm dams within the BOA will be assessed for habitat and if not required for management or habitat; will be filled in. The filled farm dams will be revegetated to minimise soil erosion.

New infrastructure will be located, as required, in consideration of biodiversity (such as threatened species) and heritage constraints, and due diligence inspections will be undertaken prior to any disturbance.

#### 5.3.3 Signage and Inspections

Signage will be installed on gates and/or other access points into the BOA that identifies the property/domain name as a 'Biodiversity Offset Area', and that authorised access only is allowed.

Routine (6 monthly) inspections will assess fencing, gates, access tracks and signage for maintenance issues and disturbance factors (including fire, unauthorised access and evidence of waste), limited by



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health and safety considerations, resources, accessibility, weather and/or ground conditions. Maintenance of all access tracks, fences and gates will be undertaken as required.

### 5.3.4 Long Term Security and Biodiversity Offset Area Divestment

The Werris BOA properties of Eurunderee, Narrawolga (North and South), Hillview, Greenslopes, Railway View and Marengo are currently secured in perpetuity by an appropriate legal mechanism for set out in **Table 5-3**.

**Table 5-3: Long-term security provisions for the BOA**

| Long-term Security Provision                                                                                 | Offset Property          | Legally Binding Conservation Covenant |          | Registered                   |
|--------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------|----------|------------------------------|
| Title secured under a 'conservation covenant' (using a s88E instrument of the <i>Conveyancing Act 1919</i> ) | Eurunderee               | AN433763                              | AN433813 | 20/07/2018 and<br>02/08/2018 |
|                                                                                                              | Narrawolga North & South | AN433764                              | AN433820 |                              |
|                                                                                                              | Hillview                 | AN433787                              | AN433821 |                              |
|                                                                                                              | Railway View             | AN433788                              | AN433834 |                              |
|                                                                                                              | Greenslopes              | AN433796                              | AN433835 |                              |
|                                                                                                              | Marengo                  | AN433797                              | AN433846 |                              |
|                                                                                                              |                          | AN433812                              | AN433847 |                              |

As part of the divestment planning for the WCCM BOA, NSW DPHI and DCCEEW has requested that the BOA is secured under Biodiversity Stewardship Agreements (BSAs). This will apply to those areas currently under an existing legally binding conservation covenant (**Table 5-3**) as well as the Compensatory Revegetation Area of Escott A, Hillview West, and Plain View North. Six BSAs are proposed based on the following groupings of properties, with securement aiming to occur by 2029 (within three years):

- Escott A, Narrawolga North and Eurunderee
- Narrawolga South and Plain View North
- Railway View
- Hillview and Hillview West
- Greenslopes
- Marengo

### 5.3.5 Biodiversity Offset Area Conservation Bond

In accordance with Condition 29 of Schedule 3 to PA 10\_0059, Werris Creek BOA have approved Conservation and Biodiversity Bonds lodged with NSW DPHI (formerly DPE). These bonds have been updated as per the details in **Table 5-4** ensuring the BOS for each BOA can be implemented in accordance with the performance and completion criteria if management was unable to be continued for the offset.



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**Table 5-4: Recent updates of Conservation and Biodiversity Bonds for the BOA**

| BOA           | Current Conservation and Biodiversity Bond | Costs verified by          | Approval         | Cost estimate at time of Approval |
|---------------|--------------------------------------------|----------------------------|------------------|-----------------------------------|
| Werris (WCCM) | 28 January 2025                            | Lindsay Doyle & Associates | 24 February 2024 | \$4,365,600.57                    |

The sum of the bond has been determined by calculating the cost of implementing the BOS (not including land acquisition costs) in perpetuity. The sum of each bond has included all biodiversity offset area management measures, staff costs, fencing, fire management, weed management, feral animal control, seed collection, replanting/revegetation, monitoring, auditing and reporting. A suitably qualified quantity surveyor has been employed to verify the calculated costs.

As required, WHC will review and accordingly update the Conservation Bond (nominally annually) based on the progressive completion of biodiversity management works.

#### 5.4 SEED MANAGEMENT

WHC coordinates routine seed assessment programs designed to identify, on a seasonal basis, the life cycle and development stages of native plants across a range of the BOA to determine the best strategy in order to collect seeds for future revegetation programs. The format of the seed assessments ensures that timely and prioritised seed collection is implemented, and that reporting includes spatial information required by seed collection contractors to undertake the required works. Seed collection will be based on seed assessment results and from other opportunistic observations, but the assessment, collection and propagation will only be undertaken as required depending on the revegetation needs.

Seed collection, management, propagation, storage and record-keeping will be undertaken in consideration of Greening Australia (various dates) Florabank Guidelines (<http://www.florabank.org.au>). Currently accepted best practice, as described in Rawlings *et al.* (2010) for local provenance seed collection includes:

- Collection of seed from several source sites with similar rainfall, soil, altitude, aspect, and slope position to the revegetation site to ensure they are most adapted to the landscape and environmental conditions;
- Collection of seed from between 20-50 plants of each species for genetic diversity; and
- Collection of seed from plants spaced approximately three plant-heights apart to prevent collection of too many closely related seeds.

For seed collection undertaken on site; records will include the species, quantities, dates and locations (in consideration of Florabank Guideline 4) and be reported.

#### 5.5 REVEGETATION

The objective of the revegetation program is to increase the area, quality and connectivity of native vegetation and habitats, focusing on assisted natural regeneration and active revegetation methods including direct seeding or seedling planting. The revegetation program was prepared following the principles outlined within *Florabank Guidelines* (Greening Australia, various dates) and *A Guide to Managing Box Gum Grassy Woodlands* (Rawlings *et al.*, 2010).

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WHC will undertake annual revegetation assessments to identify across the BOA where natural regeneration is not occurring, as well as any underperforming previous revegetation areas to determine what and where any active revegetation or maintenance revegetation is required for the upcoming season of the annual revegetation program.

Annual revegetation assessments will consider key species required to match the mapped or adjoining suitable PCT vegetation communities as well as any natural or physical constraints to revegetation of individual paddocks across the BOA. The information from the annual revegetation assessments will be used to place seed and hiko seedling orders for the required quantity of tree, shrub and ground cover species. Orders will be placed in advance to allow sufficient time for additional seed collection (if required, **Section 5.4**) and for seedling germination/propagation to occur in time for the upcoming annual revegetation program. Flora species indicatively used in areas under active revegetation (**Table 5-5**) include a variety of grasses, shrubs and trees to create a structurally diverse habitat (including species associated for Box-Gum Woodland CEEC; and habitat for the Regent Honeyeater and Swift Parrot). The annual revegetation program timing is to occur during periods of desirable seasonal conditions (times of opportunistic high soil moisture and moderate diurnal temperature variation).

Ground truthing and mapping of proposed revegetation paddocks will determine what preparation and maintenance works are required for individual revegetation paddocks. Ground preparation methods that can be implemented (where required) include weed control, grass competition maintenance, soil disturbance (i.e., augering, mounding, ripping, harrowing or ploughing) as well as consideration of other ancillary items (i.e. tree guards) that are required to optimise revegetation success and growth/development of seedlings and seeding areas. Post planting inspections will be undertaken progressively to survey performance/quality, methods and results to date including a final end of season survival count of the previous annual revegetation program. All these processes and steps allow progressive learning and adaptive management to be implemented as part of future revegetation programs (**Plate 1**).

**Table 5-5: Indicative Revegetation Species List for Key PCTs within the BOA.**

| Common Name             | Scientific Name                 | Common Name                  | Scientific Name                                  |
|-------------------------|---------------------------------|------------------------------|--------------------------------------------------|
| <b>Trees</b>            |                                 | <b>Grasses</b>               |                                                  |
| Western Rosewood        | <i>Alectryon oleifolius</i>     | Kangaroo Grass               | <i>Themeda triandra</i>                          |
| Red Ash                 | <i>Alphitonia excelsa</i>       | Wallaby Grass                | <i>Rytidosperma</i> spp.                         |
| Rough-barked Apple      | <i>Angophora floribunda</i>     | Plains Grass                 | <i>Austrostipa aristiglumis</i>                  |
| Whitewood               | <i>Atalaya hemiglauca</i>       | Barbed Wire Grass            | <i>Cymbopogon refractus</i>                      |
| Kurrajong               | <i>Brachychiton populneus</i>   | Slender Bamboo Grass         | <i>Austrostipa verticillata</i>                  |
| #White Cypress Pine     | <i>Callitris glaucophylla</i>   | Slender Rats Tail Grass      | <i>Sporobolus creber</i>                         |
| #Belah                  | <i>Casuarina cristata</i>       | Tall Oats Grass              | <i>Themeda avenacea</i>                          |
| **White Box             | <i>Eucalyptus albens</i>        | Silky Browntop               | <i>Eulalia aurea</i>                             |
| #Apple Box              | <i>Eucalyptus bridgesiana</i>   | <b>Shrubs and Sub-shrubs</b> |                                                  |
| **Blakely's Red Gum     | <i>Eucalyptus blakelyi</i>      | Western Silver Wattle        | <i>Acacia decora</i>                             |
| #Narrow-leaved Ironbark | <i>Eucalyptus crebra</i>        | Sticky Wallaby Bush          | <i>Beyeria viscosa</i>                           |
| #River Red Gum          | <i>Eucalyptus camaldulensis</i> | Sticky Hop-Bush              | <i>Dodonaea viscosa</i> ssp. <i>angustifolia</i> |
| Tumbledown Red Gum      | <i>Eucalyptus dealbata</i>      | Wilga                        | <i>Geijera parviflora</i>                        |
| Dwyers Red Gum          | <i>Eucalyptus dwyeri</i>        | Black Tea-tree               | <i>Melaleuca bracteata</i>                       |
| Silver-top Stringybark  | <i>Eucalyptus laevopinea</i>    | <b>Forbs</b>                 |                                                  |
| Red Stringybark         | <i>Eucalyptus macrorhyncha</i>  | Yellow Burr-daisy            | <i>Calotis</i> spp.                              |

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| Common Name             | Scientific Name                | Common Name        | Scientific Name                  |
|-------------------------|--------------------------------|--------------------|----------------------------------|
| #Silver-leaved Ironbark | <i>Eucalyptus melanophloia</i> | Common Everlasting | <i>Chrysocephalum apiculatum</i> |
| **Yellow Box            | <i>Eucalyptus melliodora</i>   | Ruby Saltbush      | <i>Enchylaena tomentosa</i>      |
| #Western Grey Box       | <i>Eucalyptus microcarpa</i>   | Winter Apple       | <i>Eremophila debilis</i>        |
| Pilliga Box             | <i>Eucalyptus pilligaensis</i> | Narrawa Burr       | <i>Solanum cinereum</i>          |
| Poplar Box              | <i>Eucalyptus populnea</i>     | Fuzz Weed          | <i>Vittadinia</i> spp.           |
| Manna Gum               | <i>Eucalyptus viminalis</i>    | Blue Bells         | <i>Wahlenbergia</i> spp.         |

\* Species associated with the Box-Gum Woodland CEEC to create structurally diverse habitat as per the NSW Final Determination and Commonwealth Listing Advice for these communities (TSSC, 2006). # Species associated with habitat for the Regent Honeyeater, Swift Parrot and Corben's Long-eared Bat.



**Plate 1: Active revegetation within Werris BOA**

### 5.5.1 Revegetation Works Completed

Revegetation works have been undertaken across the BOA as outlined in **Table 5-6** and **Figure 5-1**. The restoration commitments outlined below include areas of active revegetation and natural regeneration.

**Table 5-6: Extent of revegetation works undertaken across the Werris BOA**

| Restoration commitment (ha) and relevant approval | Area (ha) of new and/or maintenance plantings |      |      |      |      |      |      |      | Extent active revegetation (ha) | Extent natural regeneration (ha) | Total restoration completed to date (ha) (active + natural) |
|---------------------------------------------------|-----------------------------------------------|------|------|------|------|------|------|------|---------------------------------|----------------------------------|-------------------------------------------------------------|
|                                                   | 2017                                          | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 |                                 |                                  |                                                             |
| 745.49*                                           | 104                                           | 139  | 110  | 217  | 155  | 117  | 52   | 18   | 747.03                          | 170.79                           | 917.82                                                      |

\*Area of BGW to be restored as per the Revised Biodiversity Offset Strategy (Ecoplanning 2026a). Includes all areas in DNG/Cleared condition within the Werris Creek BOA, excluding the compensatory revegetation areas.

Active revegetation extents (shown in **Table 5-6**) were quantified based on the actual extent of primary revegetation undertaken across the BOA. Differences between areas committed to in the relevant Approvals and the actual extent of active revegetation is identified through Annual Revegetation Assessments. Assessments to date have found that some areas originally committed to, were not suitable for revegetation due to increased natural regeneration; unsuitably steep or rocky ground; the presence of remnant riparian or paddock trees; identification of heritage sites; identification of threatened

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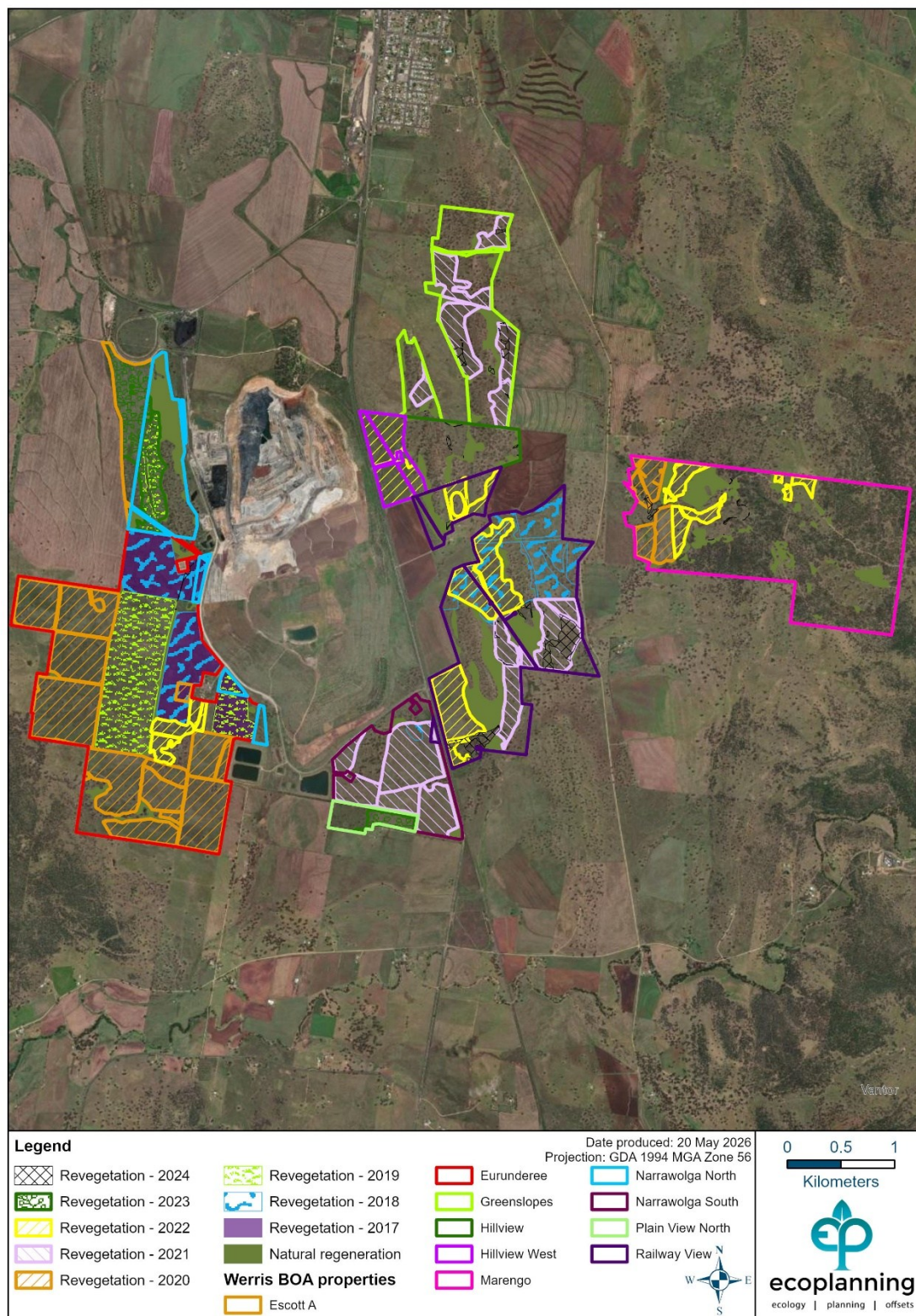
flora species (and the erection of enclosures); and the presence of fence lines and access tracks. Natural regeneration has been assessed via aerial imagery.

Primary revegetation is materially complete for Werris BOA. Annual Revegetation Assessments undertaken by Ecoplanning in July 2021 and 2022 have informed the FY22 Revegetation Order Report (Ecoplanning, 2021c) and the draft FY23 Revegetation Order Report (Ecoplanning, 2022).

Whilst active primary and secondary revegetation works are continuing, the BOA has exceeded the explicit restoration commitments (**Table 5-6**).



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**Figure 5-1: Revegetation undertaken across Werris BOA**



|                                                                                   |                   |                     |                               |
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## 5.6 ECOLOGICAL THINNING

Ecological thinning will only be considered in habitats identified as having dense regrowth, in particular *Callitris* species. WHC will undertake ecological thinning assessments to identify areas across the BOA where dense regrowth is impacting on flora and fauna habitat condition or is adverse to natural regeneration/ecological restoration. Initial stages of the ecological thinning assessment concludes that ecological thinning of *Callitris* could not be justified at this point in time without further assessment. If further assessment determines that ecological thinning is required; it will be staged, reflective of existing flora and fauna habitat condition.

## 5.7 HABITAT AUGMENTATION

Habitat augmentation (using salvaged resources or nest boxes) will be undertaken in accordance with Approval conditions and in habitats identified as having low habitat resources. Whitehaven will undertake habitat needs assessments to identify across the BOA where habitat resources are scarce, to determine the extent of habitat augmentation required. Habitat augmentation will be staged, reflective of existing fauna habitat condition and will utilise available salvaged resources such as coarse woody debris, rocky debris and artificial hollows (including nest boxes – the number and type determined by the habitat needs assessment based on signs of use and suitable dimensions required for species and data collected from clearing areas on mine sites).

Where nest boxes are to be installed; they will be made from high quality and durable materials that provide for a long lifespan and of designs that are targeted for hollow-dependent threatened species known to occur in the locality of the offset site such as woodland birds, arboreal mammals and microbats.

A targeted monitoring program is implemented for the BOA with habitat augmentation to survey their use in conjunction with other fauna methods (**Section 5.16**). Monitoring includes targeted camera surveys and external/internal observations of habitat augmentation structures to identify both their use and condition.

## 5.8 HERITAGE MANAGEMENT

Biodiversity management of heritage sites and values is consistent with the relevant baseline surveys and mine site specific Heritage Management Plans. There is not expected to be any conflict between biodiversity management works in the biodiversity offset areas and any cultural and historical heritage values and sites by adopting the following measures:

- Any new BOA should have heritage due diligence assessments completed prior to commencing biodiversity management works that cause surface disturbance. In addition, biodiversity management works (such as fire break track maintenance, revegetation ground preparation or infrastructure/asset removal) cultural and historic heritage site locations will be reviewed to avoid being affected.
- Routinely maintain and update the Whitehaven Historical Heritage Register and Spatial Database (Whincop, 2021a) and the Whitehaven Cultural Heritage Register and Spatial Database (Whincop, 2021b).
- All relevant identified cultural and historic heritage sites within biodiversity offset areas will be demarcated and fenced. To avoid inadvertent disturbance; heritage sites will have demarcation fencing installed and signs that identify the WHC BOA property, type of heritage and site ID, and a Whitehaven contact number provided so that only authorised access can be permitted and all activities must be authorised;
- All relevant identified cultural and historic heritage sites will have an Annual Heritage Site and Fencing Inspection undertaken by appropriately qualified heritage specialists to ensure the

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integrity of the fencing and site condition has not compromised and that heritage sites are appropriately managed.

- If any potential heritage sites, remains, or artefacts are identified during biodiversity management; the work will immediately stop within the vicinity of the suspected area and appropriately qualified heritage specialists will be engaged and an assessment undertaken to determine what action and reporting is required. Biodiversity offset areas will need to meet all statutory requirements under the *NSW National Parks and Wildlife Act 1974* and *NSW Heritage Act 1977*.

## 5.9 WEED MANAGEMENT

WHC aim to promote natural regeneration by reducing weeds so that perennial exotic plant cover (PEPC) does not comprise of more than 20% of flora monitoring plots (aligned with RBS-2 [Umwelt 2017]) by implementing measures aiming to exclude priority weed species listed in the *North West Regional Strategic Weed Management Plan 2017 – 2022* (NWRSWMP) (LLS, 2017). Priority weed species relevant to the BOA include Weeds of National Significance (WoNS), High Threat Exotics (HTE) and weeds identified within the BC Act and EPBC Act as a Key Threatening Process (KTP).

WHC will manage weeds in accordance with the *NSW Biosecurity Act 2015* that introduced the 'General Biosecurity Duty' (GBD) which requires all land managers and users to ensure as far as is reasonably practicable, that biosecurity risks are prevented, eliminated or minimised. In addition to WHC's GBD responsibility, weed management will be implemented aligned with the NWRSWMP (LLS, 2017) and weed control measures will be guided by published control measures (e.g., DPI, 2018a). The NWRSWMP introduces a risk management approach (based on the weed invasion curve stages of prevention, eradication, containment and asset protection) to prioritise weeds for management based on those weeds that are 'State Level Determined Priority Weeds for the North West Local Land Services Region' and additional 'Regional Priority Weeds'.

The spread and introduction of weeds can be prevented by the practice of weed hygiene measures. WHC will instruct contractor vehicles and equipment entering the biodiversity offset area (via toolbox talks and other communications including key messages) to be clean and free from weeds and/or seeds. Access to the biodiversity offset areas will also be controlled as described in **Section 5.3**.

Seasonal weed assessment programs are undertaken across the biodiversity offset area to identify weed species, extent and condition of any infestations and the opportunity for control/management depending on seasonal conditions. The weed assessments ensure that timely and prioritised weed control is undertaken on a seasonal basis, with information provided directly to contractors to enable targeted weed control and efficient use of resources across the BOA.

A number of environmental and priority weeds are known to occur in the biodiversity offset areas as listed in **Table 5-7**. Based on seasonal weed assessment results; weed control will target priority weeds and any other environmental weed present in the BOA. If new priority weed species are found, then this will be communicated with WHC mine sites and neighbouring properties/organisations (via toolbox talks and other communications including key messages) and will also be managed in accordance with this OMP.

Department of Primary Industries *NSW WeedWise* Website will be consulted prior to weed control, for recommended techniques for the removal of priority weeds. Relevant methods for controlling priority weeds known to occur in the biodiversity offset areas are summarised in **Table 5-7**.

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**Table 5-7: Example Control Methods of Priority Weeds across BOA**

| Common Name        | Scientific Name               | Example Control Methods (DPI, 2018a) <sup>2</sup> |
|--------------------|-------------------------------|---------------------------------------------------|
| Mother of Millions | <i>Bryophyllum delagoense</i> | herbicide application                             |
| Paterson's Curse   | <i>Echium plantagineum</i>    | herbicide application                             |
| Coolatai Grass     | <i>Hyparrhenia hirta</i>      | physically remove, herbicide application          |
| African Boxthorn   | <i>Lycium ferocissimum</i>    | physically remove, herbicide application          |
| Prickly Pear       | <i>Opuntia</i> spp.           | physical removal, herbicide application           |
| Tiger Pear         | <i>Opuntia aurantiaca</i>     | physical removal, herbicide application           |
| Sweet Briar        | <i>Rosa rubiginosa</i>        | physical removal, herbicide application           |
| Fireweed           | <i>Senecio</i> spp.           | herbicide application                             |
| Cockle Burr        | <i>Xanthium occidentale</i>   | physical removal, herbicide application           |
| Bathurst Burr      | <i>Xanthium spinosum</i>      | physical removal, herbicide application           |

All personnel involved in weed management will be required to hold relevant and valid licences/ permits for weed management works, including a chemical licence to use herbicides and a chainsaw certificate to operate chainsaws (where applicable).

## 5.10 PEST ANIMAL MANAGEMENT

The overarching objective of the pest animal management program is to ensure that the impacts of pest animals to native species, existing vegetation and revegetation within biodiversity offset areas are minimised. The goal of pest animal management is to achieve an overall reduction in pest animal species and population sizes targeted by control measures implemented across the BOA (in consideration of potential drought conditions and seasonal trends).

WHC aims to apply an even and consistent pest animal management effort by routinely scheduling a rolling monitoring and control programs across the BOA. This standardised approach can also be supplemented with periodic targeted programs that focus on specific areas with high pest animal detection, or, on species which have increasing rates of detection. Both the overall management and targeted programs are planned using data collected from grid based motion detection camera monitoring program, pest animal observations and the results of previous control programs.

Pest animal management will focus on the pest animals recorded from the biodiversity offset areas (Table 4-4). However, if new pest animals are found, those new pest animals will also be managed in accordance with this OMP.

Control measures will be implemented by Pest Control Contractor(s) and/or WHC personnel as required. All personnel involved in pest animal control will be required to hold relevant and valid licences/permits, including any relevant chemical licences for pesticide use or a firearms licence for shooting. Pest animal control will be undertaken in consideration of the control recommendations outlined in the *Ecology and Management of Vertebrate Pests in NSW* (DPI, 2018b).

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**Table 5-8: Control Methods for Target Pest Animals**

| Common Name      | Scientific Name                                             | Example Control Method                                             | Relevant Documents <sup>2</sup>                                                                                                                                                                                                                                                                                              |
|------------------|-------------------------------------------------------------|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Feral Pig        | <i>Sus scrofa</i>                                           | trapping/ground shooting; and/or ground baiting.                   | <i>Threat Abatement Plan for Predation, Habitat Degradation, Competition and Disease Transmission by Feral Pigs</i> (DotEE, 2017); <i>PestSmart Toolkit</i> (Centre for Invasive Species Solutions, 2021); and <i>Ecology and Management of Vertebrate Pests in NSW</i> (DPI, 2018b).                                        |
| Feral Goat       | <i>Capra hircus</i>                                         | trapping/mustering; and/or ground shooting.                        | <i>Threat Abatement Plan for Competition and Land Degradation by Unmanaged Goats</i> (DEWHA, 2008a); and <i>PestSmart Toolkit</i> (Centre for Invasive Species Solutions, 2021).                                                                                                                                             |
| European Red Fox | <i>Vulpes</i>                                               | trapping; and/or ground baiting.                                   | <i>Threat Abatement Plan for Predation by European Red Fox</i> (DEWHA, 2008b); <i>NSW Threat Abatement Plan for Predation by The Red Fox (Vulpes vulpes)</i> (OEH, 2011); <i>PestSmart Toolkit</i> (Centre for Invasive Species Solutions, 2021); and <i>Ecology and Management of Vertebrate Pests in NSW</i> (DPI, 2018b). |
| European Rabbit  | <i>Oryctolagus cuniculus</i>                                | warren ripping/fumigation; ground shooting; and/or ground baiting. | <i>Threat Abatement Plan for Competition and Land Degradation by Rabbits</i> (DotEE, 2016); <i>PestSmart Toolkit</i> (Centre for Invasive Species Solutions, 2021); and <i>Ecology and Management of Vertebrate Pests in NSW</i> (DPI, 2018b).                                                                               |
| Brown Hare       | <i>Lepus capensis</i>                                       | ground shooting.                                                   | <i>Integrated Hare Control</i> (Department of Environment and Primary Industries [VIC], 2015); and <i>Ecology and Management of Vertebrate Pests in NSW</i> (DPI, 2018b).                                                                                                                                                    |
| Feral Deer       | <i>Cervus spp.</i> , <i>Axis spp.</i> , or <i>Dama spp.</i> | ground shooting.                                                   | <i>Feral Deer</i> (SEWPaC, 2011); and <i>Ecology and Management of Vertebrate Pests in NSW</i> (DPI, 2018b).                                                                                                                                                                                                                 |
| Feral Cat        | <i>Felis catus</i>                                          | trapping; and/or ground shooting.                                  | <i>Threat Abatement Plan for Predation by Feral Cats</i> (DotE, 2015); <i>PestSmart Toolkit</i> (Centre for Invasive Species Solutions, 2021); and <i>Ecology and Management of Vertebrate Pests in NSW</i> (DPI, 2018b).                                                                                                    |
| Wild Dog         | <i>Canis familiaris</i>                                     | ground baiting; and/or ground shooting.                            | <i>New South Wales Wild Dog Management Strategy 2017-2021</i> (DPI, 2017); <i>PestSmart Toolkit</i> (Centre for Invasive Species Solutions, 2021); and <i>Ecology and Management of Vertebrate Pests in NSW</i> (DPI, 2018b).                                                                                                |

<sup>1</sup>Local Land Services Act 2013

<sup>2</sup>An alternative published method may be used as required.

## 5.11 EROSION MANAGEMENT

Erosion management is determined by annual inspection programs of known soil degradation (erosion and/or salinity) sites, unsealed tracks and associated drainage structures across the BOA to review appropriate erosion and sediment control measures required in accordance with the Blue Book (*Managing Urban Stormwater: Soils and Construction Volume 1* [Landcom, 2004]). Should annual inspection programs identify areas of unstable and active erosion or salinity, the soil erosion register will be updated including what (if any) active remediation works are required to be undertaken. Any erosion and sedimentation identified with tracks and associated drainage structures will be maintained through annual fire break track maintenance program.

## 5.12 AGRICULTURE MANAGEMENT

Agriculture/grazing has been excluded from the biodiversity offset areas. Stray neighbouring stock will be removed as soon as practicable. Any proposed grazing for high threat weed infestations must be planned in consideration of Conservation Agreement conditions and aligned with the *Biodiversity Conservation Trust Livestock Grazing Guidelines* (BCT, 2021).

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### 5.13 BUSHFIRE MANAGEMENT

WHC will annually quantify bushfire fuel loads and characterisation of the BOA to assess bushfire hazard of various offset properties prior to each bushfire season. The assessment will consider human, environment and infrastructure assets within and adjacent to biodiversity offset areas to quantify an overall bushfire risk, then the feasibility of various hazard reduction methods are considered (for example but not limited to fire exclusion, mechanical fuel reduction such as slashing or undertaking ecological burns) prior to determining annual treatment/actions for each offset property.

Offset properties with moderate to high overall bushfire risks will be prioritised as part of an annual ecological burn program and will be subject to conceptual and strategic fire planning and mapping. Once annual fire planning has identified paddocks feasible to undertake ecological burns, and a burn plan has been prepared, WHC will consult, where required, with relevant stakeholders such as NSW Rural Fire Services (RFS), Councils and neighbours/local community as well as NSW Environmental Protection Authority (EPA Approval for Open Burning is required for ecological burns) and NSW Biodiversity Conservation Trust (BCT) in consideration of Conservation Agreement conditions.

WHC will establish and maintain Access Tracks within the BOA and around the perimeter of the BOA that will serve a dual purpose to passively mitigate fire spreading within or outside of the offset property (where practicable) and containment for bushfires and active ecological burns (as required). Access Tracks will be periodically maintained as zero fuel barriers (preferably mineral earth barriers up to 6 m total width of clearing; acknowledging that between maintenance events some fuel accumulation will occur, not to NSW RFS Fire Trail Standards (November, 2023). Access Tracks will be inspected annually, prior to the fire season, and maintenance of Access Tracks to be prioritised as required by the inspection.

WHC will undertake an annual ecological burn program of paddocks/burn blocks identified through the above assessment, within the prioritised offset properties, using suitably experienced and capable professionals with adequate firefighting resources and training to safely and competently light and extinguish ecological burns. The location of ecological burns within grasslands (if previous revegetation present, will need to be sufficiently mature to avoid fire impacts) and existing remnant vegetation will be in consideration of Conservation Agreement and will align with fire intervals outlined by the Bush Fire Coordinating Committee (2008) summarised as:

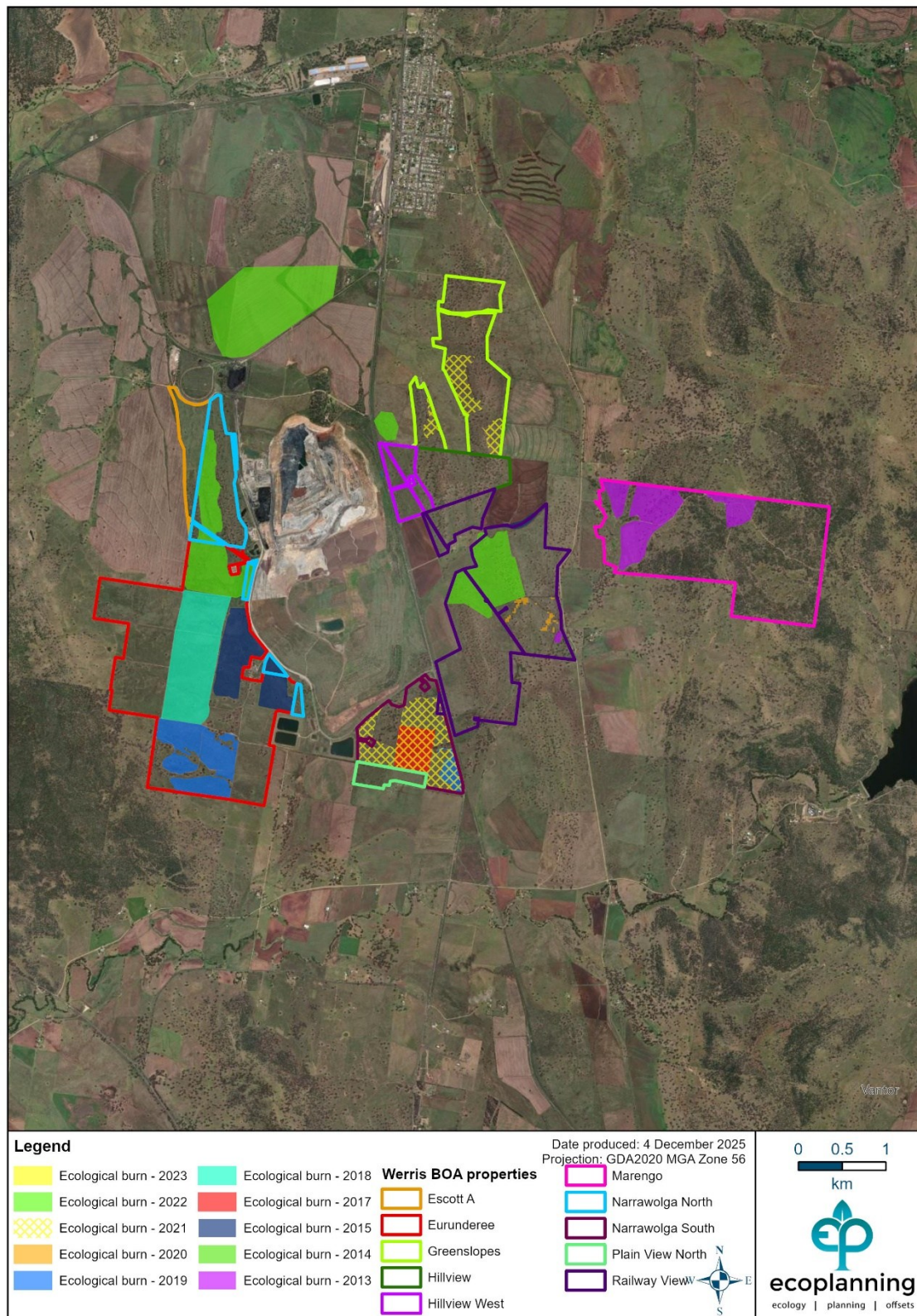
- intervals for grassy woodlands of 8 to 40 years;
- grasslands 3 to 10 years; and
- dry sclerophyll forest shrub/grass sub-formation of 8 to 50 years.

Ecological burns will aim for low to moderate fire intensity burns, by aiming for cool-season burns, when conditions are suitable (generally autumn to spring) to establish a mosaic of different burn ages and fuel loads. In addition, other burn preparations will be undertaken to mitigate impacts to environmental assets (such as hollow bearing trees) and other constraints identified within mapped burn blocks.

In the event of a bushfire within or adjacent to the BOA; WHC will assist bushfire emergency services and neighbours (such as RFS, NPWS and Forestry Corporation NSW) as much as practicable, including but not limited to coordinating access to the BOA as well as facilitating available water sources. The locations of previously undertaken ecological burns and historic burn scar mapping are shown in **Figure 5-2**. WHC will add flora monitoring plots to previously burnt areas to monitor the restoration response and ecological burn treatment management (particularly for BGW).



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**Figure 5-2: Ecological burns and burn scars within Werris BOA**

|                                                                                   |                   |                     |                               |
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#### 5.14 THREATENED FLORA MANAGEMENT

One threatened flora species has been identified within the BOA (**Table 5-9**). WHC will manage, protect and enhance habitat for threatened flora species within and adjacent to WHC mining operations and the BOA (Ecoplanning, 2021b). While the focus is to guide management of those threatened flora species which are known to occur within WHC owned land, general principles and actions are also outlined which will be implemented for any additional threatened flora species detected. Current and future management actions undertaken for the threatened flora species are broadly grouped as:

- Maintenance of Threatened Flora Database, Sighting Register and Spatial Data;
- Habitat Protection with Threatened Flora Fences and Signage;
- Threat abatement and habitat enhancement within the BOA;
- Undertake Translocations and Transplantations where propagative material is available; and
- Monitoring of Threatened Flora habitat and populations.

In summary, to avoid inadvertent disturbance of known populations, WHC will maintain a threatened flora register and spatial database as well install demarcation fencing and signage of known threatened flora sites within the BOA. Additionally, the management program includes routine inspections and monitoring of known threatened flora sites. The aim of the inspections and monitoring is to gain more knowledge of the threatened flora species, identify and respond to any identified threats, and identify potential reproductive material to support specific translocation programs for these species. Restoration and translocation strategies will continue to be developed for those threatened flora species identified across the BOA and Mine Sites. The long-term objectives of these restoration and translocation strategies are to directly support the conservation of the species by maintaining a self-sustaining, genetically diverse population of the species within the offset properties which is capable of surviving in the long term. In the shorter term, actions will be undertaken to meet the requirements of any relevant approvals, identify any propagative material and guide translocations which will either establish new populations or increase the resilience of existing populations.

**Table 5-9: Threatened Flora Species per BOA**

| Threatened Flora Species                       | Offset Properties         |
|------------------------------------------------|---------------------------|
| <i>Digitaria porrecta</i> (Finger Panic Grass) | Narrawolga and Eurunderee |

##### 5.14.1 *Digitaria porrecta*

*Digitaria porrecta* is an erect to ascending perennial grass which grows to 60 cm tall (PlantNET 2026). This species flowers throughout summer with seeds maturing and falling from March to April (Cmlth. TSSC 2008; NSW DCCEEW 2026). It can also reproduce vegetatively by dying back to the tussock base during winter and then resprouting in summer (Cmlth. TSSC 2008). This vegetative reproduction occurs when the central portion of the tussock dies, resulting in a ring of plantlets which eventually become independent tussocks (Cmlth. TSSC 2008).

A Translocation and Propagation Plan (TPP) has been prepared to manage the populations of *Digitaria porrecta* (Finger Panic Grass) found within the Werris Creek BOA (Ecoplanning 2026b; **APPENDIX D**). The *Digitaria porrecta* TPP incorporates multiple translocation methods to increase the likelihood of success should one method prove unsuccessful. For the purposes of the TPP, seed collection and propagation, and the salvage translocation method, are proposed for *Digitaria porrecta* within the Werris Creek BOA.

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Seed collection from natural populations across the offset property in conjunction with the regular inspection regime detailed within the TFPP (Ecoplanning 2021b) is to be undertaken as part of this plan. Seed collection, recipient site selection, and preparation must be undertaken prior to the removal of any 'salvage' plants. Salvage translocation involves digging up individual plants, including as much soil held within the root system as possible (soil plug), and replanting in a suitable location.

Monitoring of translocated *Digitaria porrecta* individuals and habitat is to continue under the TPP. Consistent with monitoring of translocations to date, all translocated seedlings are to be permanently tagged, and data collected prior to planting to enable comparisons between individuals and between recipient sites over time. Monitoring of translocated seedlings is to take place monthly for the first year after a seedling is planted, and quarterly for the following years. Monitoring of translocated plants should continue for at least 2 years after their translocation. Wild populations (reference sites) must also be monitored to provide benchmark data and assist in determining attrition rates or impacts that may be attributed to a natural event (drought, fire, rainfall) that may impact the wild populations and not just the translocated individuals.

Findings from each translocation event and results from quarterly monitoring of both wild and translocated populations are to be provided in a quarterly TPP report in conjunction with the requirements of the TFPP. Additionally, results are to be summarised for provision within the relevant WHC Mine Annual Reviews. Overall, the quarterly report should also provide recommendations for updating current translocation and monitoring methods, where necessary, and inform future translocation projects.

## 5.15 FLORA MONITORING

### **Purpose**

Annual flora monitoring will be undertaken by qualified ecologists to gather floristic data that can track changes in vegetation and habitat values within the BOA and report on the effectiveness of management actions and progress made against annual performance and final completion criteria (**Section 5.17**). Flora monitoring will be on an annual basis in spring, when the highest diversity of plants is expected to be present (Rawlings *et al.*, 2010).

Progress against annual performance and completion criteria is outlined in the annual Spring Flora Monitoring Report. A summary of progress against completion criteria is also outlined in the biodiversity section of the Annual Review.

### **Monitoring Design**

Relevant ecological indicators outlined in **Table 5-10**, based on a modified BioBanking Assessment Methodology (BBAM) (OEH 2014) are monitored annually at treatment plots (within the BOA) and compared to control plot and reference site data (both outside the BOA) over time.

All monitoring plots (treatment, control and reference) are 0.1 ha (20 x 50 m) inclusive of a 20 x 20 m floristic plot and 50 m transect (see **Figure 5-3**).

To determine whether the ecological management objectives are being achieved, the flora monitoring program aims to collect data that can answer four ecological questions:

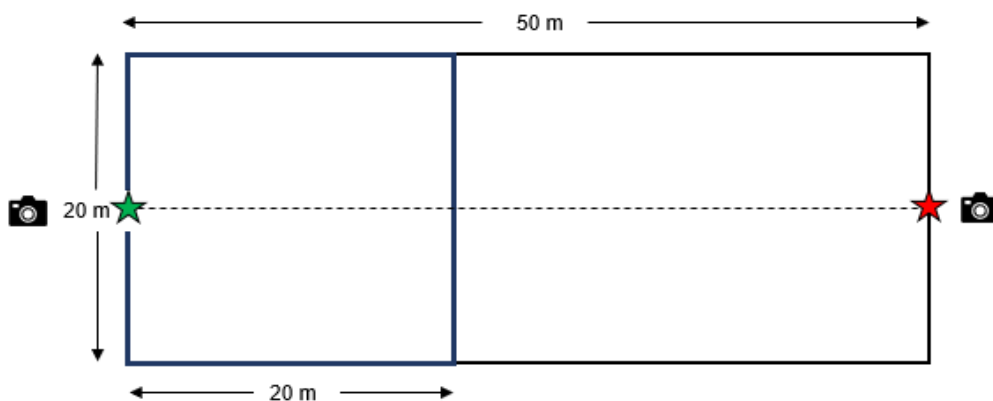
- 1) Do Vegetation Zones (VZs) meet completion criteria?
- 2) Do treatment plots meet annual performance criteria?
- 3) Are treatment plots trending towards completion criteria and/or reference state?



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4) To what extent are management actions within a vegetation zone effective?

The annual reporting requirements for flora monitoring results are outlined in **Section 6.2**.



**Figure 5-3: 20m x 50m monitoring plot – green star represents start of transect**

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**Table 5-10: Flora monitoring attributes**

| Monitoring attributes (Ecological indicators)                                   |                  | Assessment technique                                                                                                                                              | BGW condition indicators | Threatened Fauna Habitat value indicators |
|---------------------------------------------------------------------------------|------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------------------------------|
| Native plant species richness (NPS)                                             |                  | Count utilising a species list recorded within 20 x 20m sub-plot (estimate % cover and abundance of each species)                                                 | ✓                        |                                           |
| Native over storey cover (NOS)                                                  |                  | 10 points along a 50 m transect                                                                                                                                   | ✓ <sup>1</sup>           | ✓                                         |
| Native mid-storey cover (NMS)                                                   |                  | 10 points along a 50 m transect                                                                                                                                   | ✓                        |                                           |
| Native ground cover (grasses) (NGCG)                                            |                  | 50 points along a 50 m transect                                                                                                                                   | ✓                        |                                           |
| Native ground cover (shrubs) (NGCS)                                             |                  | 50 points along a 50 m transect                                                                                                                                   | ✓                        |                                           |
| Native ground cover (other) (NGCO)                                              |                  | 50 points along a 50 m transect                                                                                                                                   | ✓                        |                                           |
| Exotic plant cover (EPC) (calculated as % of total ground and mid-storey cover) | mid-storey cover | 10 points along a 50 m transect                                                                                                                                   | ✓                        |                                           |
|                                                                                 | ground cover     | 50 points along a 50 m transect                                                                                                                                   |                          |                                           |
| Number of standing trees (dead and alive) with hollows (NTH)                    |                  | Count within 20 x 50 m plot                                                                                                                                       | ✓                        | ✓                                         |
| Proportion of over-storey species occurring as regeneration (OR)                |                  | Observation within 20 x 50 m plot (compared to number of native overstorey species occurring within 50 m radius of plot)                                          | ✓                        |                                           |
| Total length of fallen logs (FL)                                                |                  | Measured within 20 x 50 m plot                                                                                                                                    | ✓                        | ✓                                         |
| Exotic plant species richness                                                   |                  | Count utilising a species list recorded within 20 x 20m sub-plot (estimate % cover and abundance of each species)                                                 |                          |                                           |
| Perennial exotic plant cover (PEPC)                                             |                  | % foliage cover recorded within 20 m x 20 mm sub-plot                                                                                                             | ✓                        |                                           |
| Photo points                                                                    |                  | 2 transect photos per plot, taken at chest height from start and end picket                                                                                       | ✓                        |                                           |
| Opportunistic observations                                                      |                  | Record observations of: natural regeneration of disturbed areas, threatened species, fire events, weeds, pest animals, visitor impact, rubbish, other field notes | ✓                        | ✓                                         |

<sup>1</sup>Indicator of water stress

The BOA is mapped and stratified into Vegetation Zones (VZs) (shown **Figure 5-4**) which define areas having the same annual performance criteria, final completion criteria and exposure to the BOA adaptive management actions. VZs within the BOA are defined based on:

- 1) Vegetation Class (Keith 2004) (known herein as Keith Class), and
- 2) Broad condition state (Good, Semi-cleared, DNG/Cleared)

Treatment plots are established in the largest VZs, where the majority of WHC management actions occur, and are replicated based on Biobanking Assessment Method (BBAM) area threshold



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recommendations (OEH 2014). The number of treatment plots within the BOA is shown in **Table 5-11** and **Figure 5-4**. The compensatory revegetation areas of Escott A, Hillview West/Infrastructure, and Plain View North are not currently included in the monitoring program.

**Table 5-11: Number of flora monitoring plots with the Werris BOA.**

| BOA    | Area (ha) | No. VZs to be monitored | No. treatment plots |
|--------|-----------|-------------------------|---------------------|
| Werris | 1,315.44* | 4                       | 25                  |

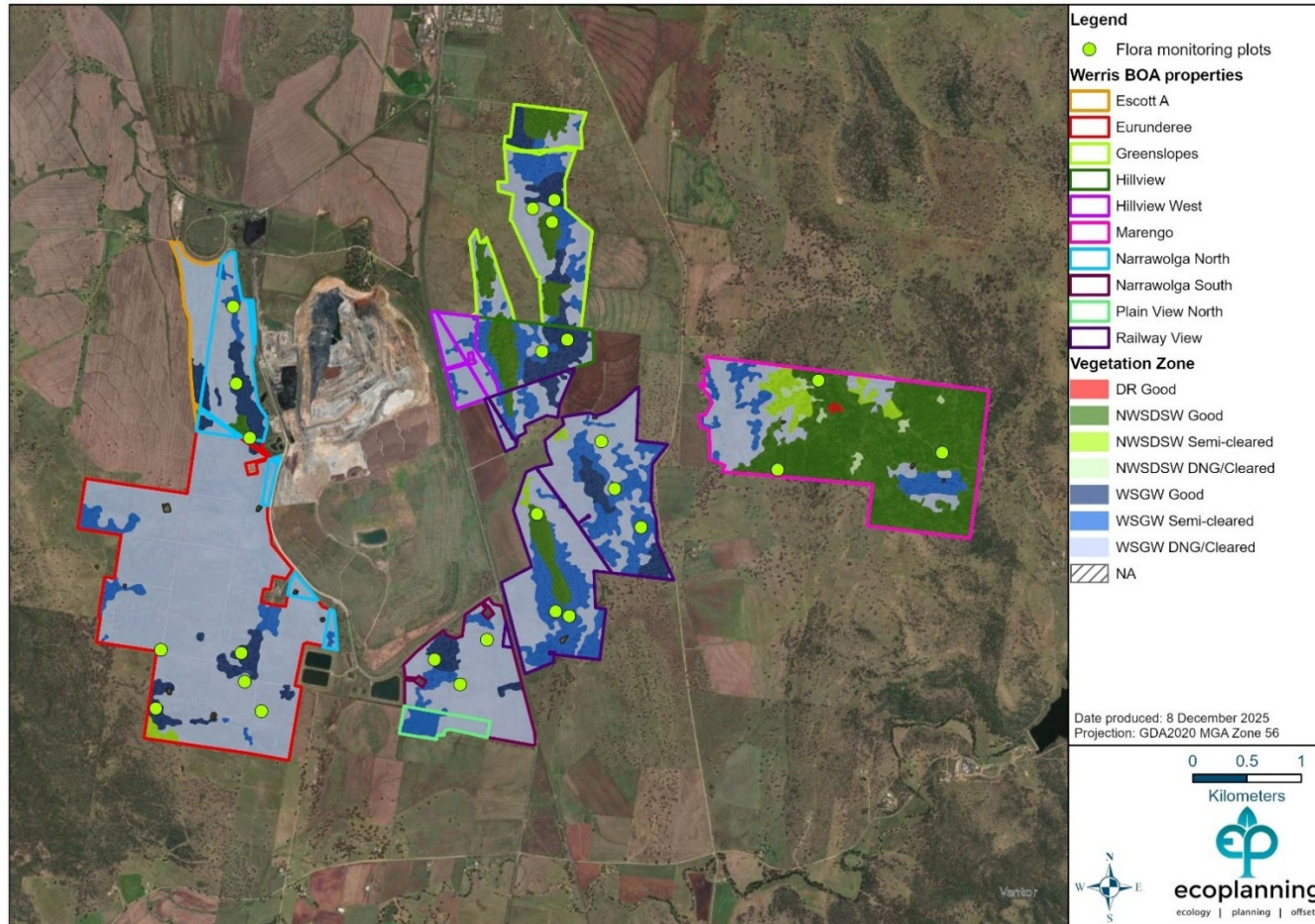
\*Aligns with the Flora Monitoring Project Plan (FMPP) – Whitehaven Coal Biodiversity Offset Areas (Ecoplanning 2023), excluding the compensatory revegetation areas.

Control plots are used to monitor the effectiveness of BOA management actions and are located outside the BOA in DNG and/or semi-cleared areas, within the same Keith Class and IBRA region as the treatment plots to which they are compared. Control plots are situated on land representing a 'business as usual' land management scenario (BCT 2021), where no WHC biodiversity management occurs. Where it is not possible to establish control plots in the same IBRA and Keith Class as treatment plots, control plots within the adjoining IBRA will be used. The comparison of treatment and control plot data aims to account for changes that occur due to background environmental change and indicate whether WHC management actions are effective within each VZ.

Reference plots are located within a 'reference site' outside of the BOA, representing high-quality remnants of Keith Classes monitored within the BOA. The monitoring of reference sites provides local benchmark data for aspirational 100-year targets, achievable beyond WHCs period of management. The comparison of VZ data (with relatively short management history) to the appropriate reference site, is to show that under WHC management VZ restoration is trending towards reference site condition. This gives confidence that it will continue to trend towards reference condition after achievement of completion criteria and the WHC management period ends.

Control and reference sites are to have a minimum of three plots to allow for statistically robust data analysis. Treatment plots are permanently marked with star pickets at the start and end of the 50 m transect and at the four corners of the 20 m x 20 m floristic plot. Control and reference plots will not be permanently marked as they are either in land not under the direct management control of WHC Biodiversity (control plots) or are within public land (reference plots). The location of the start and end of the 50 m transect have been recorded using a GPS. **Figure 5-5** shows the location of the control and reference sites surveyed in parallel with the treatment plots as part of Spring Flora Monitoring.

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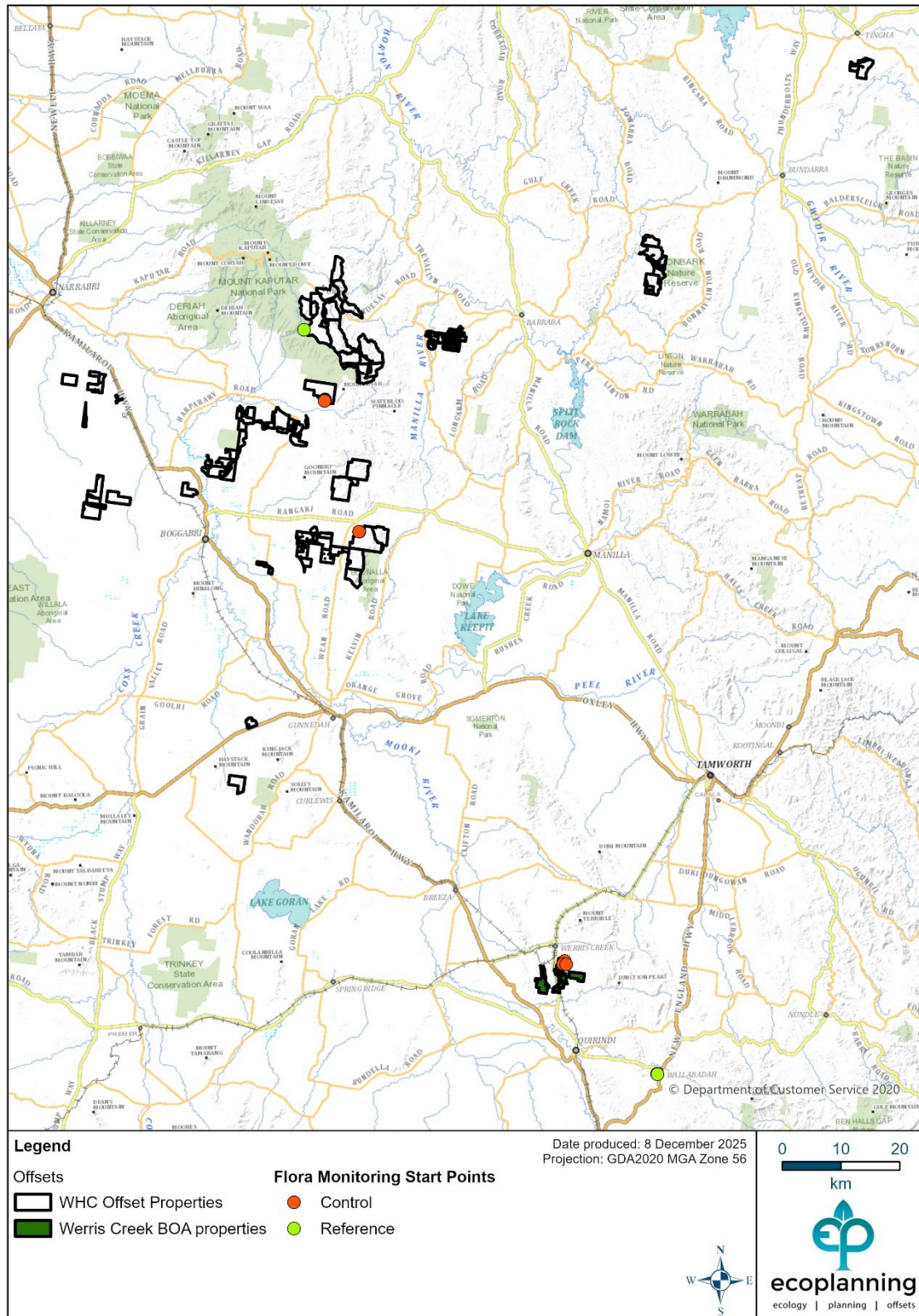


**Figure 5-4: Vegetation zones and monitoring plot locations within Werris Creek BOA.**



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**Figure 5-5: Location of control and reference plots associated with the Werris BOA.**

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### ***Data recording and storage***

WHC utilises an online/electronic application as the Flora Monitoring Database and Reporting tool. The online application is a custom-designed application, accessible in the field via a tablet or smart phone which is used to electronically record floristic and habitat biometric data. Once the data is uploaded from the field it is stored and visible via a web-based login. The biometric data is stored in the electronic database and can be downloaded as Excel spreadsheets.

### **5.16 FAUNA MONITORING**

A 5-year review of the data collected from the Maules Creek and Willeroi Offset Annual Fauna Monitoring Programs surveyed between 2015 and 2019 (AMBS 2020a) indicated that while general trends in species richness and abundance over time were detected by the current survey methodologies and survey effort, the variance in the data set was extremely high and no meaningful statistical analysis linking changes in species richness and abundance to specific variables was possible. A further review was undertaken for all fauna monitoring methodologies and survey designs used across all WHC BOAs (AMBS 2020b) that identified the existing methods were somewhat effective at detecting fauna species richness and abundance, however there were aspects of each monitoring design and methodology that were contributing to high levels of variance in the data set. The previous monitoring design was struggling to deal with the spatial challenges associated with the large area of BOAs required to be monitored by WHC and the associated variables that were generated as a result of the large area. While the methods would continue to generate indicative species richness and abundance data sets, the data sets would not be sufficiently robust to link changes with specific variables including the management actions currently being undertaken by WHC.

Given the challenges faced by the monitoring projects managed by WHC and the strong desire of WHC to generate statistically robust data on the response of fauna assemblages to biodiversity management strategies; a series of structural modifications to the monitoring programs were implemented. The modifications to survey design and methods were selected after undertaking a thorough review of peer reviewed literature and consulting academic and industry experts in the fields of fauna that were being targeted. The modifications aimed to increase the likelihood that informative data on the influence of biodiversity management actions would be collected. The recommended modifications focused on adjustments to the timing of surveys, the number of survey sites, the number of replicates undertaken at each site, the area focused on by the surveys, and the methodology of the surveys. Specific modifications included:

- Changing the frequency of sampling for some monitoring components from annual to biennial, with the purpose of pooling resources for other structural survey modifications such as increasing the number of survey sites and increasing the number of replicates at each site;
- Designing sites to target specific fauna groups rather than having generic sites focusing on all fauna groups.
- Using the focus on target groups to select appropriate seasons for each survey (i.e. bird surveys conducted early spring independent of microbat surveys which are conducted in summer)
- Selecting sites that better sampled revegetation and non-revegetation treatments
- Targeting surveys on spatially explicit focus areas representative of the broader habitat variability of the BOA but likely to show detectable responses to biodiversity management actions that are influencing fauna response while maximising the chance of revealing total BOA species richness.

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Annual monitoring of fauna has therefore been divided into a series of targeted programs focusing on specific fauna guilds.. The surveys are primarily designed to detect changes in species richness and abundance over the duration of the management of each property by WHC. In addition to this overall aim, the monitoring program will attempt to evaluate guild and species level responses to revegetation programs, habitat augmentation and pest animal management. The ecological management objectives relevant to the purpose of fauna monitoring are:

- Protect and enhance existing woodland and forest habitat for Regent Honeyeater and Swift Parrot
- Restore self-sustaining woodland and/or forest within derived native grasslands and ‘non-native/Cleared’ areas to provide habitat for the threatened species listed under the BC Act and EPBC Act

Each survey method will target spatially explicit focus areas. The focus areas were designed to incorporate a matrix of remnant woodland, naturally regenerating woodland and revegetated woodland. As such, properly stratified survey designs should allow for a robust evaluation of fauna assemblage responses to revegetation program by comparing detection to other, non-revegetated habitats. The focus areas are different sizes and in different locations for each fauna guild. The location of all fauna monitoring sites for the BOA are shown in **Figure 5-6**.

#### 5.16.1 Diurnal Bird Surveys

Diurnal bird surveys will be undertaken within target focus areas with the surveys conducted late winter into spring. Each bird survey focus area has been divided into grid areas, with one bird survey site placed within each grid. Bird surveys will be undertaken using a fixed time/area rapid survey design with survey site boundaries defined by having fixed start and end points. Counts of birds will be made for “in plot”, “outside plot, same habitat”, and “outside plot, different habitat”. Survey effort will vary across a biennial schedule. In year one, all sites will be surveyed up to five times and in year two, sites will be surveyed twice. Surveys will be spread between morning and afternoon survey windows, and if possible, on non-consecutive days.

#### 5.16.2 Microbat Surveys

Microbat assemblages will be monitored using a combination of echolocation recorders and harp traps. Echolocation surveys will target focus areas with each microbat focus area divided into a standardised grid appropriate for each focus area. One echolocation recorder will be placed within each grid and units deployed to start recording 30 minutes before last light and will stop recording 2 hours after last light. Survey effort will vary across a biennial schedule. Most sites will be surveyed once every two years while a selection of sites will be sampled annually to act as a control.

#### 5.16.3 Pitfall and Funnel Trap Surveys

Ground dwelling fauna will be monitored using grids of pitfall traps and funnel traps. Pitfall and funnel trap surveys will be conducted biennially within target focus areas. Pitfall trap arrays will be deployed at each focus area with sites paired between remnant woodland areas and revegetated areas. Revegetated areas will further be paired between augmented habitats and non-augmented habitats. Each pitfall trap array will consist of pitfall traps and funnel traps. Pitfall traps will be plastic buckets with lids dug into the ground. Each bucket will be joined by a drift fence. When the sites are open, the lid will be perched above the bucket to provide shade. Funnel traps will be covered with reflective shields or vegetation to ensure trapped fauna can thermally equilibrate. Trap grids, when open, will be checked in the morning and evening. Sites have been selected to evaluate the response of fauna to revegetation and habitat augmentation through the provision of coarse woody debris and rocks.



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#### 5.16.4 Motion Detection Camera Survey

A network of motion detection camera sites have been established across the BOA for the purpose of native and pest animal monitoring (**Figure 5-6**). Site selection was designed on an area grid to maximise the even spread of cameras across the entire area of the BOA with a portion of the motion detection cameras to specifically inform pest animal management (**Section 5.9**). The remaining cameras will be activated annually to target native vertebrate fauna. Motion detection camera survey data will be analysed for the following purposes:

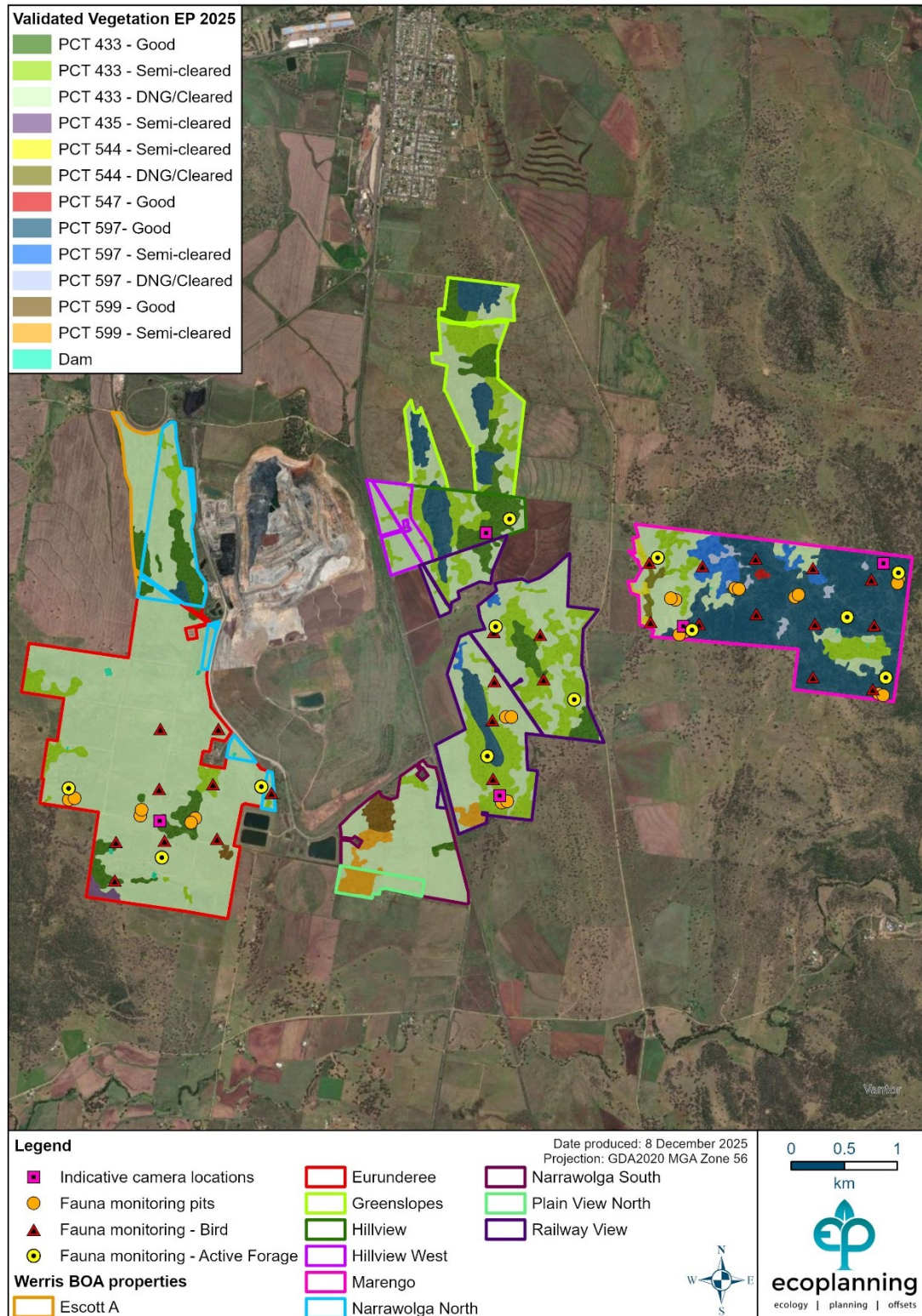
1. Native Fauna – Cameras will be used to detect other native species that don't already have targeted survey methods for and will aim to identify longer-term trends in native animal species richness;
2. Pest Animals - Separate to the monitoring for pest animal management, data will be analysed to identify longer-term trends in pest animal occupancy and identify interaction with native fauna trends.

Cameras activated annually will use bait stations comprising of an enclosed PVC pipe on a small star picket with the other cameras to focus on animal activity points.

Separate to the permanent motion detection camera surveys; WHC habitat augmentation installation areas will be monitored using cameras as follows:

1. Nest Boxes – the results of annual ground-based inspections and 5 yearly direct inspections (either climbing or pole cameras to look inside boxes) will inform where and what boxes are to be targeted with seasonally based camera surveys.
2. Coarse Woody & Rock Debris piles – Annual ground-based inspections will inform where and what piles are to be targeted with seasonally based camera surveys.

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**Figure 5-6: Fauna monitoring sites and indicative camera locations within Werris BOA.**

|                                                                                   |                   |                     |                               |
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### 5.16.5 Winter Bird Survey

The ongoing monitoring for the Regent Honeyeater and Swift Parrot will be undertaken between May and August, coinciding with the likely flowering period for winter-flowering Eucalypts, such as White Box across the BOA. The monitoring program is designed to detect and confirm presence (or absence) of Regent Honeyeater and Swift Parrot in targeted areas with flowering resources to identify the use over time.

The monitoring program is summarised as follows:

1. Trigger point for survey - Starting May each year, relevant personnel will report on any observed presence of Winter flowering eucalypts. This will provide a trigger to initiate the scoping survey. If no trigger is provided, scoping survey to be initiated by the last week in July.
2. Scoping survey - Ecologists traverse the study area noting indicators for survey, such as, flowering eucalypts and/or congregations of nectar feeding birds. Linear, well-connected patches will also be noted. Flower intensity score and patch quality to be used to inform subsequent surveys.
3. Field survey - Ecologists to traverse the study area and conduct bird surveys at previously identified sites (as in the Scoping survey above). Survey effort will be guided by the intensity score at a site. At each site, flowering intensity scores are to be recorded and all bird species (sighted or heard) are to be recorded. A total survey effort cannot be prescribed because this is ultimately dependant on flowering intensity in any one year. However, to meet Commonwealth survey guidelines for targeted surveys (DEWHA 2010), there will be a minimum of 20 hours of bird surveys across 8 days targeted to sampling winter flowering species across all Whitehaven biodiversity offset areas.

The selection of survey locations for the field survey will prioritise high blossom areas within or adjoining known preferred habitat areas (such as high quality riparian areas although riparian Casuarina species and presence of Mistletoe are essentially a summer resource); presence of positively correlated species and absence of negatively correlated species like despotic/aggressive honeyeater species; and consider previous sighting records as well as the existing mapped and potential habitat areas for these species (**Section 4.2**). The existing Winter Bird Survey timing overlaps with the commencement of Regent Honeyeater breeding season; as well as overlapping with the Diurnal Bird Surveys (**Section 5.16.5**), replicating the high survey effort within or adjoining known preferred habitat areas during the breeding season. This will further extend the probability to detect this species.

The application of the above method targeted to the location of and timing for winter flowering trees will enable increased survey effort for nectivorous birds during the optimum seasonal conditions increasing the chance of detection for rare species like Regent Honeyeater and Swift Parrot.

### 5.17 PERFORMANCE AND COMPLETION CRITERIA

Using SMART principles (outlined below), WHC have defined site-specific final completion and annual performance criteria. These criteria provide quantified metrics to measure (within the BOA) the trajectory toward all relevant ecological management objectives i.e.:

- The restoration of BGW CEEC within existing BGW DNG,
- The restoration of woodland and/or forest within DNG and non-native/Cleared areas,
- The protection and enhancement of existing BGW (woodland form),



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- The protection and enhancement of existing woodland and forest habitat for threatened species

SMART principles as outlined in Section 2.1.3 of the RBS-2 (Umwelt 2017) are as follows:

- **Specific** – specific outcomes relevant to biodiversity matters (i.e., specific biometric attributes);
- **Measurable** – include quantifiable performance measures that can be compared over time (i.e., specific numeric and temporal values for the biometric attributes);
- **Achievable** – realistic goals that can be compared to baseline information (i.e., linked to NSW state-wide benchmark data);
- **Relevant** – outcomes are directly relevant to the biodiversity matter (i.e., biometric attributes directly influenced by management to measure condition either for protection/maintenance or improvement/restoration over time)
- **Timely** – includes specific timeframes for the completion of the outcome (i.e., timeframes align with approval based required management periods).

Performance criteria are interim yearly targets for assessing the performance of WHC Biodiversity management activities at plots, while completion criteria are the desired targets to be attained across a VZ, then maintained (at or above the desired target) averaged across five years. Once achieved; completion criteria indicate that management has been successful at obtaining the desired result towards woodland ecological restoration and annual monitoring may be ceased upon the provision of a 'Vegetation Zone Achievement of Completion Criteria' letter. WHC can revise the management actions to reflect the lower intensity management required until the end date of the relevant approval has been reached.

Performance and completion criteria have been defined for selected monitoring attributes (shown in **Table 5-12**) that best assess the trajectory toward ecological management objectives. The monitoring attributes below have been selected as they can directly measure the outcome of biodiversity management being implemented towards restorations of the relevant PCT vegetation/endangered ecological communities and are also suitable as surrogates for monitoring improvements over time to woodland and forest habitat quality for key fauna threatened species (such as Regent Honeyeater and Swift Parrot as per relevant Approvals).

**Table 5-12: Performance and completion criteria for selected monitoring attributes**

| Monitoring attribute/<br>Ecological Indicators | Management Objectives                                                                                                                     | Performance criteria                                                                                          | Completion criteria                                                                                      |
|------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------|
| Native plant species richness (NPS)            | Protect and enhance existing Box-Gum Woodland CEEC (woodland form).                                                                       | Native species diversity trending towards benchmark range for the relevant Keith Class ( <b>APPENDIX A:</b> ) | Native species diversity at or above benchmark value for the relevant Keith Class ( <b>Table 5-13</b> )  |
| Native over storey cover (NOS)                 | Restore self-sustaining woodland within existing areas of Box-Gum Woodland CEEC (derived native grassland).                               | Native overstorey cover trending towards benchmark range for the relevant Keith Class ( <b>APPENDIX A:</b> )  | Native overstorey cover within benchmark range for the relevant Keith Class ( <b>Table 5-13</b> )        |
| Native mid-storey cover (NMS)                  | Restore self-sustaining woodland and/or forest within derived native grasslands and 'non-native/Cleared' areas to provide habitat for the | Native mid-storey cover trending towards benchmark range for the relevant Keith Class ( <b>APPENDIX A:</b> )  | Native mid-storey cover within benchmark range for the relevant Keith Class ( <b>Table 5-13</b> )        |
| Native ground cover (grasses) (NGCG)           |                                                                                                                                           | Native grass groundcover trending towards benchmark range for the relevant Keith Class ( <b>APPENDIX A:</b> ) | Native groundcover grass cover within benchmark range for the relevant Keith Class ( <b>Table 5-13</b> ) |

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| Monitoring attribute/<br>Ecological Indicators | Management Objectives                                | Performance criteria                                             | Completion criteria                                           |
|------------------------------------------------|------------------------------------------------------|------------------------------------------------------------------|---------------------------------------------------------------|
| Perennial exotic plant cover (PEPC)            | listed threatened species listed under the EPBC Act. | An overall decrease in weed cover compared to the previous year. | Perennial weed cover is less than 20% on average across plots |

The benchmark ranges for key biometrics NPS, NOS, NMS and NGCG are sourced from the *BioMetric Vegetation Condition Benchmarks* (OEH, 2017) (**Table 5-13**). These benchmarks are relevant as these were in place at the time of the original Approval and therefore are compatible with the baseline data, subsequent monitoring data, and data collected by WHC in other company-owned biodiversity offset areas which is based on BBAM (OEH, 2014). These benchmarks have an upper and lower threshold value.

**Table 5-13: Key biometric completion criteria values for Keith Classes within the BOA**

| Keith Class                                 | Relevant PCTs | Completion criteria (based on BVT benchmark values [OEH, 2017]) |      |      |       |
|---------------------------------------------|---------------|-----------------------------------------------------------------|------|------|-------|
|                                             |               | NPS                                                             | NOS  | NMS  | NGCG  |
| North-west Slopes Dry Sclerophyll Woodlands | 435, 597      | 26                                                              | 6-25 | 6-25 | 20-30 |
| Western Slopes Grassy Woodlands             | 433, 544, 599 | 23                                                              | 6-25 | 0-5  | 30-40 |

Annual performance criteria in **APPENDIX A:** are calculated by back-extrapolating lower and upper threshold completion criteria over 20 years to Year 0. Analysis of annual performance data aims to track progress towards the vegetation management objectives and allows for timely intervention with remedial action. Plots that fall below upper or lower threshold annual performance criteria will trigger a review of contingency measures as outlined in **Section 5.18**.

## 5.18 POTENTIAL RISKS AND CONTINGENCY MEASURES

### 5.18.1 Contingency Measures

The following Biodiversity Trigger, Action, Response Plan (TARP), consistent with RBS-2 Table 2.4 (Umwelt, 2017), has been aligned to the performance and completion criteria outlined in **Section 5.17**. The TARP shown in **Table 5-14** provides trigger points for contingency measures (corrective actions) to be implemented if the flora monitoring program outlined in **Section 5.14.1** identifies that performance criteria outlined in **Section 5.17** are not being met. Contingency measures may not be limited to those listed.

**Table 5-14: WHC Biodiversity Trigger, Action, Response Plan (TARP)**

| Aspect                    | Trigger                                                                                                                                  | Action/Response                                                                                                                                                                                                                 |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Recruiting canopy species | Recruiting canopy species do not meet completion criteria across Good, or Semi-cleared VZs after 10 years following offset establishment | Review factors leading to below benchmark performance. Evaluate whether additional management (i.e., targeted removal of weeds, pest animal control, thinning, burning and/or supplementary planting of seedlings) is required. |
|                           | Recruiting canopy species do not meet completion criteria across DNG/Cleared VZs after 15 years following offset establishment           | Review factors leading to below benchmark performance. Evaluate whether additional management (i.e. targeted removal of weeds, pest animal control, thinning, burning and/or supplementary planting of seedlings) is required.  |



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| Aspect                              | Trigger                                                                                                                                                                   | Action/Response                                                                                                                                                                                                                                                                                                                       |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| EPBC conformance                    | BGW treatment plots do not meet completion criteria after 10 years following offset establishment                                                                         | Review factors leading to below benchmark performance.<br>Evaluate whether additional management (i.e., targeted removal of non-characteristic species and weeds, following supplementary planting with seedlings and/or seed) is required.<br><br>Consider additional monitoring to examine the establishment of seedlings and seed. |
| Native species richness (NPS)       | 1 <sup>st</sup> TIER - Offset treatment plots are below 80% annual performance benchmark following offset establishment                                                   | Review factors leading to below benchmark performance.<br>Evaluate whether supplementary planting of appropriate seedlings or seeding is required.                                                                                                                                                                                    |
|                                     | 2 <sup>nd</sup> TIER - Offset treatment plots are below 100% annual performance benchmark value but above 80% annual performance benchmark following offset establishment | Determine whether NPS is increasing or decreasing. If decreasing, investigate factors leading to decrease and monitor for further change.                                                                                                                                                                                             |
| Native overstorey cover (NOS)       | 1 <sup>st</sup> TIER - Offset treatment plots are below lower annual performance criteria following offset establishment                                                  | For revegetation younger than five years - no action required, continue to monitor.<br>For revegetation older than five years – Review factors leading to below benchmark performance.<br>For revegetation older than five years – Evaluate whether supplementary planting of appropriate seedlings is required.                      |
|                                     | 2 <sup>nd</sup> TIER - Offset treatment plots are above upper annual performance criteria following offset establishment                                                  | Review factors leading to above benchmark performance such as BVT/PCT assigned to the treatment plot and/or VZ. If shown to be an increasing trajectory overtime, evaluate whether additional management is required.                                                                                                                 |
| Native mid-storey cover (NMS)       | 1 <sup>st</sup> TIER - Offset treatment plots are below lower annual performance benchmark following offset establishment                                                 | Review factors leading to below benchmark performance.<br>Evaluate whether supplementary planting of appropriate seedlings is required.                                                                                                                                                                                               |
|                                     | 2 <sup>nd</sup> TIER - Offset treatment plots are above upper annual performance benchmark following offset establishment                                                 | Review factors leading to above benchmark performance such as BVT/PCT assigned to the treatment site and/or VZ. Evaluate whether additional management is required.                                                                                                                                                                   |
| Native groundcover – Grass (NGCG)   | 1 <sup>st</sup> TIER - Offset treatment plots are below lower annual performance benchmark following offset establishment                                                 | Review factors leading to below benchmark performance.<br>If shown to be an increasing trajectory overtime, evaluate whether additional management (i.e., supplementary seeding or weed control) is required.                                                                                                                         |
|                                     | 2 <sup>nd</sup> TIER - Offset treatment plots are above upper annual performance benchmark following offset establishment                                                 | Review factors leading to above benchmark performance such as BVT/PCT assigned to the treatment site and/or VZ. Evaluate whether additional management (i.e., burning) is required.                                                                                                                                                   |
| Perennial exotic plant cover (PEPC) | 1 <sup>st</sup> TIER - All offset treatment plots across a VZ show an increase in PEPC                                                                                    | Review factors leading to increase in perennial weed cover.<br>Identify the location of weed infestations and review additional management (i.e. the need for control measures such as broad-acre spraying, spot-spraying, slashing, hand-removal or controlled burns).                                                               |

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| Aspect | Trigger                                                             | Action/Response                                                                                                                                                                                                                                               |
|--------|---------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|        | 2 <sup>nd</sup> TIER - Offset treatment plots record PEPC above 20% | Review factors leading to high perennial weed cover. Identify the location of weed infestations and review additional management (i.e. the need for control measures such as broad-acre spraying, spot-spraying, slashing, hand-removal or controlled burns). |

## 6 REPORTING AND REVIEW

In accordance with the various NSW Project/State Significant Development Approvals and EPBC Approvals, this OMP will be effective for the period of effect of each relevant approval. The OMP may be revised from time to time in accordance with those approvals; however once approved, the WHC OMP will be published on each of relevant WHC Mine webpages within one month.

A summary of WHC OMP reporting requirements is provided in **Table 6-1**:

**Table 6-1: Biodiversity Management Reporting frequencies**

| Aspect                              | Section | Frequency/Timing |
|-------------------------------------|---------|------------------|
| Seed Management                     | 5.4     | Annual           |
| Revegetation                        | 5.5     | Annual           |
| Ecological Thinning                 | 5.6     | Annual           |
| Habitat Augmentation                | 5.7     | Annual           |
| Heritage Management                 | 5.8     | Annual           |
| Weed Management                     | 5.9     | Annual           |
| Pest Animal Management              | 5.10    | Annual           |
| Soil Management                     | 5.11    | Annual           |
| Agriculture Management              | 5.12    | Annual           |
| Bushfire Management                 | 5.13    | Annual           |
| Threatened Flora Management         | 5.14    | Quarterly        |
| Flora Monitoring                    | 5.14.1  | Annual           |
| Fauna Monitoring                    | 5.16    | Annual/Biennial  |
| Performance and Completion Criteria | 5.17    | Annual           |
| Risks and Contingency Measures      | 5.18    | As required      |

### 6.1 REPORTING SURVEY DATA

WHC will ensure that survey data will be recorded to conform to data standards notified from time to time by CDCCEEW in accordance with EPBC Approval conditions. If requested by the CDCCEEW, WHC will provide all species and ecological survey data and related survey information from ecological surveys undertaken for the relevant Matters of National Environmental Significance. This survey data will be provided within 30 business days of request, or in a timeframe agreed to in writing by CDCCEEW.

WHC will maintain accurate records substantiating all activities and outcomes associated with or relevant to EPBC Approvals, including measures taken to implement the OMP, and make them available upon request to the CDCCEEW.

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## 6.2 REPORTING REQUIREMENTS

The reporting processes outlined in **Table 6-2** will be undertaken on the management and monitoring programs of the BOA.

**Table 6-2: Reporting Requirements Specific to the BOA.**

| Reporting Requirement                                                                                               | Date Required |
|---------------------------------------------------------------------------------------------------------------------|---------------|
| NSW Project/State Significant Development Approval Review Reporting (also for relevant Commonwealth EPBC Approvals) | 31 March      |
| Commonwealth EPBC Approval Annual Compliance Reporting                                                              | 22 March      |

### 6.2.1 NSW Project/State Significant Development Approval Annual Review Reporting

WCCM is required by their relevant Project/State Significant Development Approvals (WCCM 10\_0059) to submit an Annual Review Report by the end of March annually (or an agreed alternate time) also for relevant Commonwealth EPBC Approvals. Each Annual Review Report outlines the environmental performance of the relevant WHC Mine over the previous calendar year including a detailed summary of their respective BOS and a summary of biodiversity management implemented during that period including:

- Progress against completion criteria;
- the progress of management activities undertaken in the biodiversity offset areas;
- the outcome of those management activities;
- any need for improved management; and
- activities to undertake such improved management.

### 6.2.2 Commonwealth EPBC Approval Annual Compliance Reporting

A report pertaining to the annual compliance will be published on the relevant WHC Mine webpages each year (after the anniversary date of commencement for each respective Mine) in accordance the following EPBC Approvals and their respective end of reporting period and submission deadlines:

- WCCM 2010/5571 - end of reporting period is 22 December and submission deadline is 22 March;

Non-compliance with any of the conditions will be reported to CDCCEEW at the same time as the compliance report is published.

The Annual Review Reporting will be the process by which WHC report to CDCCEEW the progress of management activities undertaken in the BOA and the outcome of those activities, including identifying any need for improved management and activities to undertake such improvement in accordance with relevant conditions of the respective EPBC Approval.

## 6.3 REVIEW AND REVISION OF THE BIODIVERSITY OFFSET MANAGEMENT PLAN

This OMP will be effective for the period of approval and will be reviewed and revised from time to time in accordance with the relevant NSW and Commonwealth Approvals. An overview of the Commonwealth and NSW revision requirements are provided below.

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### ***Commonwealth Requirements***

In accordance with relevant EPBC Approval (WCCM 2010/5571), if WHC wishes to carry out any activity otherwise than in accordance with this OMP then WHC will submit a revised OMP to CDCCEEW for the Minister's written approval. The varied activity shall not commence until the Minister has approved the revised plan in writing. The Minister will not approve a revised plan unless the revised plan would result in an equivalent or improved environmental outcome, therefore, should WHC submit a revised OMP for EPBC Act approval WHC will specify in its submission to the Commonwealth how the revised approved OMP meets this requirement.

### ***NSW Requirements***

In accordance with relevant Project/State Significant Development Approval (WCCM 10\_0059), the OMP will be reviewed, and revised if necessary to the satisfaction of the NSW Secretary of DPHI, within three months of:

- the submission of an annual review;
- the submission of an incident report;
- the submission of an audit report; or
- any modification to the conditions of the consent (unless the conditions require otherwise).

Further, WHC must comply with reasonable requirements of the Secretary of NSW DPHI in respect of the assessment of this OMP or the implementation of actions or measures under this OMP, including any reasonable request to amend this OMP.

## **6.4 BIODIVERSITY AUDIT**

### **6.4.1 Commonwealth Audit**

In accordance with relevant EPBC Approval (WCCM 2010/5571), upon the direction of the Commonwealth Minister, WHC will ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Commonwealth Minister. The independent auditor will be approved by the Commonwealth Minister prior to the commencement of the audit. Audit criteria will be agreed to by the Commonwealth Minister and the audit report will address the criteria to the satisfaction of the Commonwealth Minister.

### **6.4.2 NSW Audits**

#### ***Independent Environmental Audit***

In accordance with relevant Project/State Significant Development Approval (WCCM 10\_0059), an independent audit will be undertaken every 3 years, unless the Secretary directs otherwise. This Environmental Audit will be conducted by a suitably qualified, experienced and independent team of experts whose appointment was endorsed by the NSW Secretary of DPHI. The Independent Environmental Audit will assess the environmental performance of the relevant WHC Mine and its compliance to the conditions of the respective Project/State Significant Development Approvals including the relevant Biodiversity conditions and this OMP.

## **6.5 BIODIVERSITY TRAINING**

Inductions for staff and contractors to the BOAs will be conducted to make them aware of the environmental issues relevant to WHC. Further targeted training (i.e. fire management) is to be undertaken appropriate to their role and responsibilities. Additional training relevant to this OMP will be

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undertaken for the Werris BOA for the management of impacts to biodiversity and records will be retained by WHC.



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## 7 REFERENCES

Advitech (2024). Bio Monthly Weather Data.

AMBS Ecology & Heritage (2023). *Fauna Monitoring of the Whitehaven Coal Biodiversity Offset Properties – July 2020 to June 2023*. Prepared for: Whitehaven Coal Limited.

Australian Government Department of the Environment (DotE) (2015). *Threat abatement plan for predation by feral cats*.

Australian Government Department of the Environment and Energy (DotEE) (2017). *Threat abatement plan for predation, habitat degradation, competition and disease transmission by feral pigs (Sus scrofa)*.

Australian Government Department of the Environment and Energy (DotEE) (2016). *Threat Abatement Plan for Competition and Land Degradation by Rabbits*.

Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2011). *Feral Deer*.

Australian Government Department of Sustainability, Environment, Water, Population and Communities (DSEWPaC) (2012). *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*. Accessed at: [https://www.dcceew.gov.au/sites/default/files/documents/offsets-policy\\_2.pdf](https://www.dcceew.gov.au/sites/default/files/documents/offsets-policy_2.pdf)

Australian Government Department of Climate Change, Energy, the Environment and Water (CDCCEEW) (2024). *Environmental management plan guidelines*. Accessed at: <https://www.dcceew.gov.au/sites/default/files/documents/environmental-management-plan-guidelines.pdf>

Biodiversity Conservation Trust (BCT) (2021) *Livestock Grazing Guidelines*. Accessed at: [https://www.bct.nsw.gov.au/sites/default/files/2022-02/BCT%20livestock%20grazing%20guidelines\\_Feb%202022.pdf](https://www.bct.nsw.gov.au/sites/default/files/2022-02/BCT%20livestock%20grazing%20guidelines_Feb%202022.pdf)

BOM (2025). *Climate statistics for Australian locations*. Accessed at: [https://www.bom.gov.au/climate/averages/tables/cw\\_055049.shtml](https://www.bom.gov.au/climate/averages/tables/cw_055049.shtml)

Bush Fire Coordinating Committee (2008). *Policy no. 1/2008 Bush Fire Risk Management Planning Guidelines for Bush Fire Management Committees*.

Commonwealth Threatened Species Scientific Committee (Cmlth. TSSC) (2008) *Approved Conservation Advice for Digitaria porrecta (Finger Panic Grass)*. Not Current. Available at: chrome-extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.environment.gov.au/biodiversity/threatened/species/pubs/12768-conservation-advice.pdf.

Department of Planning and Environment (DPE) (2020a). Great Soil Group (GSG) Soil Type map of NSW. Accessed at: <https://datasets.seed.nsw.gov.au/dataset/great-soil-group-gsg-soil-type-map-of-nsw>

Department of Planning and Environment (DPE) (2020b). Australian Soil Classification (ASC) soil type map of NSW. Accessed at <https://datasets.seed.nsw.gov.au/dataset/australian-soil-classification-asc-soil-type-map-of-nsw>

Department of Planning, Industry and Environment (DPIE) (2024). Water Management (General) Regulation 2018 Hydro Line spatial data. Accessed at: <https://www.industry.nsw.gov.au/water/licensing-trade/hydroline-spatial-data>

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Department of Environment and Primary Industries (VIC) (2015). *Integrated Hare Control*. Accessed at: <https://agriculture.vic.gov.au/biosecurity/pest-animals/invasive-animal-management/integrated-hare-control>.

Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008a) *Threat Abatement Plan for Competition and Land Degradation by Unmanaged Goats*.

Department of the Environment, Water, Heritage and the Arts (DEWHA) (2008b) *Threat Abatement Plan for Predation by European Red Fox*.

Department of the Environment, Water, Heritage and the Arts (DEWHA) (2010). *Survey guidelines for Australia's threatened birds*.

Department of Primary Industries (DPI) (2018a). *New South Wales Invasive Species Plan 2018-2021*

Department of Primary Industries (DPI) (2018b). *Ecology and Management of Vertebrate Pests in NSW*. Department of Primary Industries (DPI) (2017) *New South Wales Wild Dog Management Strategy 2017-2021*.

Eco Logical Australia (2010) Werris Creek Coal Life of Mine Project - Biodiversity Impact Assessment. Unpublished report prepared for R.W Corkery on behalf of Werris Creek Coal.

Eco Logical (2013). *WHC\_PLN\_WC\_BIODIVERSITY and OFFSET MANAGEMENT PLAN*. Prepared for: Whitehaven Coal Limited.

Ecoplanning (2021a). *Seasonal Weed Assessment Report – Q1 2021*. Prepared for Whitehaven Coal.

Ecoplanning (2021b). *Threatened Flora Project Plan – Whitehaven Coal*. Prepared for Whitehaven Coal.

Ecoplanning (2021c). *2022 Reveg Order Report – Whitehaven Coal Biodiversity Offset Areas*. Prepared for Whitehaven Coal.

Ecoplanning (2020b). *Seasonal Weed Assessment Report – Q4 2020*. Prepared for Whitehaven Coal.

Ecoplanning (2020c). *Seasonal Weed Assessment Report – Q3 2020*. Prepared for Whitehaven Coal.

Ecoplanning (2022). *FY23 Revegetation Order Report – Whitehaven Coal Biodiversity Offset Areas*. Prepared for Whitehaven Coal.

Ecoplanning (2023). *Flora Monitoring Project Plan - Whitehaven Coal Biodiversity Offset Areas*. Prepared for Whitehaven Coal.

Ecoplanning (2026a). Werris Creek Revised Biodiversity Offset Strategy– Werris Creek Road, Werris Creek. Prepared for Whitehaven Coal Pty Ltd.

Ecoplanning (2026b). Werris Creek Offset Properties Translocation and Propagation Plan – *Digitaria porrecta*. Prepared for Whitehaven Coal Ltd..

Environmental Resources Management (ERM), (2020). *Independent Environmental Audit 2020 – Werris Creek Coal Mine*.

Florabank (1999). GUIDELINES KEEPING RECORDS ON NATIVE SEED 4.

FloraSearch (2011). Whitehaven Coal Flora Assessment.

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                   |                   | Document Approver:  | General Manager – Environment |
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Keith (2004). *Ocean Shores to Desert Dunes: The Native Vegetation of New South Wales and the ACT*. Published by NSW Department of Environment and Conservation.

Landcom (2004), *Managing Urban Stormwater: Soils and Construction Volume 1*.

Local Land Services (LLS) (2017). *North West Regional Strategic Weed Management Plan 2017-2022*. Local Land Services - North West.

NSW Department of Climate Change, Energy, Environment and Water (DCCEEW) (2025). BioNet Vegetation Classification. Accessed at: <https://vegetation.bionet.nsw.gov.au>

NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) (2026) *BioNet Atlas of NSW Wildlife, BioNet Atlas of NSW Wildlife*. Available at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet>.

NSW Office of Environment and Heritage (OEH) (2011). *NSW Threat Abatement Plan For Predation by The Red Fox (Vulpes vulpes)*.

NSW Office of Environment and Heritage (OEH) (2014). BioBanking Assessment Methodology 2014, Office of Environment and Heritage, Sydney.

NSW Office of Environment and Heritage (OEH) (2017). *BioMetric Vegetation Condition Benchmarks*.

Murray-Darling Basin Authority (MDBA) (2024). Murray Darling Basin Boundary - Water Act 2007. Accessed at: <https://data.gov.au/data/dataset/murray-darling-basin-boundary>.

Mitchell 2002. Descriptions for NSW (Mitchell) Landscapes Version 2 (2002). Accessed at: <https://www.environment.nsw.gov.au/research-and-publications/publications-search/nsw-mitchell-landscapes-release-notes>

PestSmart (Centre for Invasive Species Solutions) (2021). Management toolkits. Accessed at: <https://pestsmart.org.au/>.

PlantNET (The NSW Plant Information Network System) (2026) *Royal Botanic Gardens and Domain Trust, Sydney*. Available at: <https://plantnet.rbgsyd.nsw.gov.au/>.

Rawlings, K., Freudenberger, D., and Carr, D. (2010). *A guide to managing Box Gum Grassy Woodlands Part 3*. Department of the Environment, Water, Heritage and the Arts, Canberra, ACT.

Standard Australia (2009). *Risk management - Principles and guidelines*. Available at: <https://www.standards.org.au/standards-catalogue/standard-details?designation=as-nzs-iso-31000-2009>

Umwelt (2017). *Leard Forest Regional Biodiversity Strategy Stage 2 – Strategy Report*. Unpublished report for NSW Planning & Environment.

University of Queensland - Cultural and Heritage Unit (2017). *Aboriginal Heritage Conservation Strategy: Maules Creek Coal Mine, Tarrawonga Coal Project, Boggabri Coal Mine, and Related Biodiversity Offset Areas*. Prepared for Whitehaven Coal Limited and Idemitsu Australia Resources

Whincop Archaeology (2021a). *Historical Heritage Management Plan*. Prepared for Whitehaven Coal Ltd

Whincop Archaeology (WHC) (2021b). *Aboriginal Archaeology and Cultural Heritage Management Plan*. Prepared for Whitehaven Coal Ltd

Whitehaven Coal (WHC) (2016). *Werris Creek Coal Mine Biodiversity Management Plan*.

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|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

Whitehaven Coal (WHC) (2025). *Werris Creek Coal Mine Rehabilitation Management Plan*

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|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
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**APPENDIX A: KEY BIOMETRIC ANNUAL PERFORMANCE CRITERIA FOR RELEVANT KEITH CLASSES**



|                                                                                   |                   |                     |                               |
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**Table A-1: Annual performance criteria values for VZs of North-west Slopes Dry Sclerophyll Woodlands (PCTs 435 & 597)**

| Biometric | Threshold - BVT benchmark | Annual performance criteria (Year since offset established/revegetated) |     |     |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------|---------------------------|-------------------------------------------------------------------------|-----|-----|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|           |                           | 1                                                                       | 2   | 3   | 4   | 5   | 6   | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   |
| NPS       | Lower-80% BVT             | 1.0                                                                     | 2.1 | 3.1 | 4.2 | 5.2 | 6.2 | 7.3  | 8.3  | 9.4  | 10.4 | 11.4 | 12.5 | 13.5 | 14.6 | 15.6 | 16.6 | 17.7 | 18.7 | 19.8 | 20.8 |
|           | Upper-100% BVT            | 1.3                                                                     | 2.6 | 3.9 | 5.2 | 6.5 | 7.8 | 9.1  | 10.4 | 11.7 | 13.0 | 14.3 | 15.6 | 16.9 | 18.2 | 19.5 | 20.8 | 22.1 | 23.4 | 24.7 | 26   |
| NOS       | Lower – Min. BVT          | 0.3                                                                     | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1  | 2.4  | 2.7  | 3.0  | 3.3  | 3.6  | 3.9  | 4.2  | 4.5  | 4.8  | 5.1  | 5.4  | 5.7  | 6    |
|           | Upper – Max. BVT          | 1.3                                                                     | 2.5 | 3.8 | 5.0 | 6.3 | 7.5 | 8.8  | 10.0 | 11.3 | 12.5 | 13.8 | 15.0 | 16.3 | 17.5 | 18.8 | 20.0 | 21.3 | 22.5 | 23.8 | 25   |
| NMS       | Lower – Min. BVT          | 0.3                                                                     | 0.6 | 0.9 | 1.2 | 1.5 | 1.8 | 2.1  | 2.4  | 2.7  | 3.0  | 3.3  | 3.6  | 3.9  | 4.2  | 4.5  | 4.8  | 5.1  | 5.4  | 5.7  | 6    |
|           | Upper – Max. BVT          | 1.3                                                                     | 2.5 | 3.8 | 5.0 | 6.3 | 7.5 | 8.8  | 10.0 | 11.3 | 12.5 | 13.8 | 15.0 | 16.3 | 17.5 | 18.8 | 20.0 | 21.3 | 22.5 | 23.8 | 25   |
| NGCG      | Lower – Min. BVT          | 1.0                                                                     | 2.0 | 3.0 | 4.0 | 5.0 | 6.0 | 7.0  | 8.0  | 9.0  | 10.0 | 11.0 | 12.0 | 13.0 | 14.0 | 15.0 | 16.0 | 17.0 | 18.0 | 19.0 | 20   |
|           | Upper – Max. BVT          | 1.5                                                                     | 3.0 | 4.5 | 6.0 | 7.5 | 9.0 | 10.5 | 12.0 | 13.5 | 15.0 | 16.5 | 18.0 | 19.5 | 21.0 | 22.5 | 24.0 | 25.5 | 27.0 | 28.5 | 30   |

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**Table A-2: Annual performance criteria values for VZs of Western Slopes Grassy Woodlands (PCTs 433, 544 and 599)**

| Biometric | Threshold - BVT benchmark | Annual performance criteria (Year since offset established/revegetated) |     |     |     |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |
|-----------|---------------------------|-------------------------------------------------------------------------|-----|-----|-----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|
|           |                           | 1                                                                       | 2   | 3   | 4   | 5    | 6    | 7    | 8    | 9    | 10   | 11   | 12   | 13   | 14   | 15   | 16   | 17   | 18   | 19   | 20   |
| NPS       | Lower-80% BVT             | 0.9                                                                     | 1.8 | 2.8 | 3.7 | 4.6  | 5.5  | 6.4  | 7.4  | 8.3  | 9.2  | 10.1 | 11.0 | 12.0 | 12.9 | 13.8 | 14.7 | 15.6 | 16.6 | 17.5 | 18.4 |
|           | Upper-100% BVT            | 1.2                                                                     | 2.3 | 3.5 | 4.6 | 5.8  | 6.9  | 8.1  | 9.2  | 10.4 | 11.5 | 12.7 | 13.8 | 15.0 | 16.1 | 17.3 | 18.4 | 19.6 | 20.7 | 21.9 | 23   |
| NOS       | Lower – Min. BVT          | 0.3                                                                     | 0.6 | 0.9 | 1.2 | 1.5  | 1.8  | 2.1  | 2.4  | 2.7  | 3.0  | 3.3  | 3.6  | 3.9  | 4.2  | 4.5  | 4.8  | 5.1  | 5.4  | 5.7  | 6    |
|           | Upper – Max. BVT          | 1.3                                                                     | 2.5 | 3.8 | 5.0 | 6.3  | 7.5  | 8.8  | 10.0 | 11.3 | 12.5 | 13.8 | 15.0 | 16.3 | 17.5 | 18.8 | 20.0 | 21.3 | 22.5 | 23.8 | 25   |
| NMS       | Lower – Min. BVT          | 0                                                                       | 0   | 0   | 0   | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    | 0    |
|           | Upper – Max. BVT          | 0.3                                                                     | 0.5 | 0.8 | 1.0 | 1.3  | 1.5  | 1.8  | 2.0  | 2.3  | 2.5  | 2.8  | 3.0  | 3.3  | 3.5  | 3.8  | 4.0  | 4.3  | 4.5  | 4.8  | 5    |
| NGCG      | Lower – Min. BVT          | 1.5                                                                     | 3.0 | 4.5 | 6.0 | 7.5  | 9.0  | 10.5 | 12.0 | 13.5 | 15.0 | 16.5 | 18.0 | 19.5 | 21.0 | 22.5 | 24.0 | 25.5 | 27.0 | 28.5 | 30   |
|           | Upper – Max. BVT          | 2.0                                                                     | 4.0 | 6.0 | 8.0 | 10.0 | 12.0 | 14.0 | 16.0 | 18.0 | 20.0 | 22.0 | 24.0 | 26.0 | 28.0 | 30.0 | 32.0 | 34.0 | 36.0 | 38.0 | 40   |

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## **APPENDIX B:    OFFSET RISK ASSESSMENT**

|                                                                                   |                   |                     |                               |
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The following risk assessment considers impact of risks from management actions in the BOA. The risk model is based on the WHC Risk Matrix. In addition to WCCM policy, this risk assessment addresses DPIE Offset Principle 6 to manage ‘uncertainties and risks associated with actions such as revegetation’.

Risk is defined as the effect of uncertainty on objectives (Standards Australia 2009). The likelihood of risk occurring and the level of impact of that risk are used to assess each risk and inform management responses (**Table B-1:** ). The higher the risk score, the more urgent the response. A ‘critical’ classification denotes risks that significantly exceed the risk acceptance threshold. Immediate attention is required to stop the job. ‘High’ risks exceed the risk acceptance threshold. Additional risk control measures required. If further risk control measures are not practicable the responsible Manager must sign off. A ‘moderate’ risk meets the acceptance threshold. Additional control measures could be implemented to control risks further, with active monitoring of risk control measures required. ‘Low’ risks are below the risk acceptance threshold. No additional control measures are required, however, monitoring of risks may be needed.

|            |                  | CONSEQUENCE   |          |          |          |              |
|------------|------------------|---------------|----------|----------|----------|--------------|
|            |                  | Insignificant | Minor    | Medium   | Major    | Catastrophic |
|            |                  | 1             | 2        | 3        | 4        | 5            |
| LIKELIHOOD | Almost Certain A | Moderate      | High     | High     | Critical | Critical     |
|            | Likely B         | Moderate      | Moderate | High     | High     | Critical     |
|            | Occasional C     | Low           | Moderate | High     | High     | High         |
|            | Unlikely D       | Low           | Low      | Moderate | Moderate | High         |
|            | Rare E           | Low           | Low      | Moderate | Moderate | High         |

**Figure H-1: Risk Assessment of Non-Achievement of OMP Objectives**

To address the risks identified in **Table B-1:** the Manager will:

1. Educate WCCM staff, contractors and neighbouring properties of the BOA objectives and location;
2. Avoid potential impacts by following the recommended protocol in this BMP for each management action;
3. Mitigate potential impacts by regular monitoring and applying corrective action under an adaptive management framework;
4. Report incidences and responses in the Annual Report (**Section 6**) to facilitate managerial review and if necessary, trigger systemic change of practice.

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**Table B-1: Risk Assessment**

| Risk Factor (Hazard) | Impact (Risk)                                                          | Before Management |             |      | Action/Control/Risk Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                        | After Management |             |            |
|----------------------|------------------------------------------------------------------------|-------------------|-------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|------------|
|                      |                                                                        | Likelihood        | Consequence | Risk |                                                                                                                                                                                                                                                                                                                                                                                                                               | Likelihood       | Consequence | Risk Level |
| Substrate            | Poor soil chemistry – depleted soil nutrients                          | B                 | 4           | M    | <ul style="list-style-type: none"> <li>selective use of slow-release fertiliser to promote plant growth (if required); and</li> <li>reuse timber/hollow logs salvaged during vegetation clearance.</li> </ul>                                                                                                                                                                                                                 | C                | 4           | L          |
|                      | Poor soil chemistry - elevated soil nutrients                          | B                 | 4           | M    | <ul style="list-style-type: none"> <li>nutrient reduction options (e.g., crash grazing periodically to remove nutrients locked in weeds)</li> </ul>                                                                                                                                                                                                                                                                           | C                | 4           | L          |
|                      | Erosion and sedimentation                                              | B                 | 4           | M    | <ul style="list-style-type: none"> <li>targeted revegetation along drainage lines and scalded areas to minimise risk of erosion;</li> <li>restriction of livestock access to erosion prone areas (e.g., along watercourses);</li> <li>locate new offset area management infrastructure (e.g., access roads) in stable locations; and</li> <li>maximise the re-use of existing infrastructure (e.g., access roads).</li> </ul> | C                | 4           | L          |
|                      | Soil compaction - inhibits germination of seeds or growth of seedlings | B                 | 4           | M    | <ul style="list-style-type: none"> <li>vehicle access will be predominantly restricted to designated tracks;</li> <li>livestock will be excluded from areas undergoing active revegetation; and</li> <li>site preparation in cleared land (e.g., ripping or use of spiked rollers) and (where relevant) in derived grassland (e.g. use of spiked rollers).</li> </ul>                                                         | C                | 4           | L          |
|                      | Ground disturbance                                                     | C                 | 4           | L    | <ul style="list-style-type: none"> <li>vehicle access will be predominantly restricted to designated tracks;</li> <li>fencing and signage around the perimeter of the offset area; and</li> <li>low disturbance revegetation techniques in existing Box-Gum Woodland and derived grasslands.</li> </ul>                                                                                                                       | D                | 4           | L          |
| Clearing             | Incidental clearing, fragmentation and fire-wood collection            | C                 | 4           | L    | <ul style="list-style-type: none"> <li>restriction of clearing;</li> <li>firewood collection not permitted;</li> <li>fencing and signage around the perimeter of the offset area;</li> <li>locate new offset area management infrastructure (e.g., access roads) preferentially in cleared land; and</li> <li>maximise the re-use of existing infrastructure (e.g. access roads).</li> </ul>                                  | D                | 4           | L          |



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| Risk Factor (Hazard)                                      | Impact (Risk)                                                                                            | Before Management |             |      | Action/Control/Risk Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | After Management |             |            |
|-----------------------------------------------------------|----------------------------------------------------------------------------------------------------------|-------------------|-------------|------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|------------|
|                                                           |                                                                                                          | Likelihood        | Consequence | Risk |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Likelihood       | Consequence | Risk Level |
| Livestock                                                 | Grazing by cattle – ground disturbance, remove or destroy seeds, seedlings or plantings                  | C                 | 2           | H    | <ul style="list-style-type: none"> <li>restrict livestock access to erosion prone areas (e.g. along watercourses);</li> <li>livestock will be excluded from areas undergoing active revegetation;</li> <li>restrict livestock access to areas not already subject to grazing;</li> <li>management of livestock to maintain groundcover and diversity of native plants;</li> <li>restrict livestock access to protect plants that are known to be sensitive to grazing; and</li> <li>controlled grazing management.</li> </ul> | D                | 3           | L          |
| Introduced flora species (weeds)                          | Weed invasion – perennial and annual grasses, perennial herbs, annual and biennial herbs and woody weeds | C                 | 2           | H    | <ul style="list-style-type: none"> <li>provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading;</li> <li>weed management;</li> <li>sowing of Kangaroo Grass; and</li> <li>lightly graze derived grasslands in times of suitable climatic conditions for weed growth.</li> </ul>                                                                                                                                                                                           | D                | 3           | L          |
| Herbicide                                                 | Excessive herbicides – may have negative effects on native species                                       | C                 | 4           | L    | <ul style="list-style-type: none"> <li>herbicides minimised through spot-spraying, basal spraying, stem injection or cut and paint application methods.</li> </ul>                                                                                                                                                                                                                                                                                                                                                            | C                | 4           | L          |
| Impacts from Animals (exotics and grazing native animals) | Grazing by feral pigs and goats                                                                          | B                 | 3           | H    | <ul style="list-style-type: none"> <li>procedures to prevent, monitor and control feral animals; and</li> <li>option for using tree guards to protect young seedlings.</li> </ul>                                                                                                                                                                                                                                                                                                                                             | B                | 5           | L          |
|                                                           | Rabbits and hares                                                                                        | B                 | 3           | H    | <ul style="list-style-type: none"> <li>procedures to prevent, monitor and control feral animals.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                   | B                | 5           | L          |
|                                                           | Grazing native fauna species (e.g., kangaroos)                                                           | B                 | 4           | M    | <ul style="list-style-type: none"> <li>option for using tree guards to protect young seedlings.</li> <li>provision to review the need for kangaroo control measures.</li> </ul>                                                                                                                                                                                                                                                                                                                                               | B                | 5           | L          |
|                                                           | Feral foxes                                                                                              | B                 | 3           | H    | <ul style="list-style-type: none"> <li>procedures to prevent, monitor and control feral animals.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                   | B                | 5           | L          |
|                                                           | Deer                                                                                                     | C                 | 4           | L    | <ul style="list-style-type: none"> <li>provide monitoring of deer and feral cats and control (if required).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                        | B                | 5           | L          |
|                                                           | Feral Cat                                                                                                | B                 | 4           | M    | <ul style="list-style-type: none"> <li>provide monitoring of deer and feral cats and control (if required).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                        | B                | 5           | L          |
| Fire                                                      | Uncontrolled bushfire                                                                                    | B                 | 2           | H    | <ul style="list-style-type: none"> <li>maintaining fire breaks and access;</li> <li>schedule for maintenance of fire breaks and access trails;</li> <li>schedule for assessing fuel loads; and</li> <li>option for using controlled grazing to reduce biomass.</li> </ul>                                                                                                                                                                                                                                                     | D                | 3           | L          |

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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

| Risk Factor (Hazard) | Impact (Risk)                                     | Before Management |             |      | Action/Control/Risk Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | After Management |             |            |
|----------------------|---------------------------------------------------|-------------------|-------------|------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|------------|
|                      |                                                   | Likelihood        | Consequence | Risk |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Likelihood       | Consequence | Risk Level |
| Floristics           | Poor diversity in the seed mix or tube stock      | C                 | 3           | M    | <ul style="list-style-type: none"> <li>procedures for strategic and long term seed collection, management and storage ;</li> <li>procedures for sowing seed (e.g., appropriate sowing depths); and</li> <li>favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required.</li> </ul>                                                                                                                                                                                                                                 | D                | 3           | L          |
|                      | Unsuitable species in the seed mix or tube stock  | C                 | 3           | M    | <ul style="list-style-type: none"> <li>preferential use of local endemic (adapted) species, or the use of a high quality seed source further from the site over a low quality more local seed source; and</li> <li>favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required.</li> </ul>                                                                                                                                                                                                                          | D                | 3           | L          |
|                      | Shortage of sufficient seed or tube stock         | C                 | 3           | M    | <ul style="list-style-type: none"> <li>a seed and tube stock supply strategy to meet demand.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | D                | 3           | L          |
|                      | Poor understorey diversity                        | C                 | 3           | M    | <ul style="list-style-type: none"> <li>application rates for seeds as well as planting densities for tube stock;</li> <li>preferential use of local endemic (adapted) species, or the use of a high quality seed source further from the site over a low quality more local seed source;</li> <li>provision to assess vegetation density and undertake ecological thinning (e.g., through selective clearance or fire) if necessary;</li> <li>measures to improve understorey diversity (e.g., replanting, causing disturbance through fire or grazing); and</li> <li>wide diversity of species in the seed mix.</li> </ul> | D                | 3           | L          |
|                      | Over-collection of seed for revegetation purposes | C                 | 3           | M    | <ul style="list-style-type: none"> <li>a seed and tube stock supply strategy to meet demand; and</li> <li>provide for the preferential use of local endemic (adapted) species, or the use of a high quality seed source further from the site over a low quality more local seed source.</li> </ul>                                                                                                                                                                                                                                                                                                                         | D                | 3           | L          |

|                                                                                   |                   |                     |                               |
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| Risk Factor (Hazard) | Impact (Risk)                                              | Before Management |             |      | Action/Control/Risk Mitigation Measure                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | After Management |             |            |
|----------------------|------------------------------------------------------------|-------------------|-------------|------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|------------|
|                      |                                                            | Likelihood        | Consequence | Risk |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Likelihood       | Consequence | Risk Level |
| Native plant growth  | Poor native plant growth/germination                       | C                 | 3           | M    | <ul style="list-style-type: none"> <li>describe procedures for strategic and long term seed collection, management and storage ;</li> <li>describe procedures for sowing seed (e.g., appropriate sowing depths);</li> <li>describe how livestock will be excluded from areas undergoing active revegetation;</li> <li>provide application rates for seeds as well as planting densities for tube stock to avoid excessive shading;</li> <li>favour natural regeneration in the derived grasslands and woodland areas over seeding or planting in the first instance followed by seeding or planting if required; and</li> <li>preferential use of local endemic (adapted) species, or the use of a high quality seed source further from the site over a low quality more local seed source.</li> </ul> | C                | 4           | L          |
|                      | Dense overstorey and midstory revegetation                 | C                 | 3           | M    | <ul style="list-style-type: none"> <li>include provision to assess vegetation density and undertake ecological thinning (e.g., through selective clearance or fire) if necessary.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | C                | 4           | L          |
|                      | Dense grass cover                                          | C                 | 3           | M    | <ul style="list-style-type: none"> <li>provide measures to improve understorey diversity (e.g. replanting, causing disturbance through fire or grazing).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | C                | 4           | L          |
|                      | Disease (e.g., <i>Phytophthora cinnamomi</i> )             | C                 | 4           | L    | <ul style="list-style-type: none"> <li>include hygiene protocols to minimise the risk of plant diseases (i.e. restricting site access).</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | C                | 4           | L          |
|                      | Fungi or pathogens – may cause germination failure (seeds) | C                 | 4           | L    | <ul style="list-style-type: none"> <li>provide for the preferential use of local endemic (adapted) species, or the use of a high quality seed source further from the site over a low quality more local seed source.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | C                | 4           | L          |
| Fauna habitat        | Lack of suitable vegetation for foraging and/or roosting   | C                 | 4           | L    | <ul style="list-style-type: none"> <li>include the planting (in appropriate soil landscapes) of a variety of box, ironbark and gum eucalypt species which are all known to occur in the Leard State Forest or offset area</li> <li>planting of Acacia species, including both tree and shrub varieties including shrub varieties;</li> <li>planting of a variety of native shrubs; and</li> <li>describe that seed and tube stock used in revegetation will include a variety of grasses, low shrubs, mid-sized shrubs and tall trees to create structurally diverse habitat.</li> </ul>                                                                                                                                                                                                                | C                | 4           | L          |

|                                                                                   |                   |                     |                               |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

| Risk Factor (Hazard) | Impact (Risk) | Before Management |             |      | Action/Control/Risk Mitigation Measure                                                                                                                                                                                                                                                                                                                                   | After Management |             |            |
|----------------------|---------------|-------------------|-------------|------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------|------------|
|                      |               | Likelihood        | Consequence | Risk |                                                                                                                                                                                                                                                                                                                                                                          | Likelihood       | Consequence | Risk Level |
| Weather              | Drought       | C                 | 3           | M    | <ul style="list-style-type: none"> <li>growth and survival of the vegetation sown or planted will be monitored;</li> <li>provide a mechanism to reduce livestock grazing during drought periods;</li> <li>include provision to review the need for kangaroo control measures; and</li> <li>describe procedures to prevent, monitor and control feral animals.</li> </ul> | C                | 4           | L          |
|                      | Wind          | C                 | 4           | L    | <ul style="list-style-type: none"> <li>option for using tree guards to protect young seedlings from browsing or grazing native animals.</li> </ul>                                                                                                                                                                                                                       | C                | 4           | L          |

|                                                                                   |                   |                     |                               |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

**APPENDIX C: WERRIS CREEK REVISED BIODIVERSITY OFFSET STRATEGY  
(ECOPLANNING 2026A)**





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# Werris Creek Revised Biodiversity Offset Strategy



Werris Creek Road, Werris Creek

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Prepared for: Whitehaven Coal Pty Ltd

20 May 2026 Version: 1.7 - Final

|                        |                                                   |           |                                       |                       |
|------------------------|---------------------------------------------------|-----------|---------------------------------------|-----------------------|
| <b>PROJECT NUMBER</b>  | 2024-160-08                                       |           |                                       |                       |
| <b>PROJECT NAME</b>    | Werris Creek Revised Biodiversity Offset Strategy |           |                                       |                       |
| <b>PROJECT ADDRESS</b> | Werris Creek Road, Werris Creek                   |           |                                       |                       |
| <b>PREPARED FOR</b>    | Whitehaven Coal Pty Ltd                           |           |                                       |                       |
| <b>AUTHOR/S</b>        | Angela Bibby, Victoria Atkinson; Sarah Cardenzana |           |                                       |                       |
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|                        | <b>Bionet Sensitive Species Data Licence</b>      |           | 1115                                  |                       |
|                        | <b>Animal Research Authority Ethics Licence</b>   |           | Fauna Surveys and Monitoring (16/346) |                       |
|                        | <b>Scientific Collection - Aquatic</b>            |           | P19/0009-1.0 & OUT19/2602             |                       |



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## Glossary and abbreviations

| Acronym | Description                                                                                                                                   |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| *       | Exotic species                                                                                                                                |
| BBAM    | BioBanking Assessment Method                                                                                                                  |
| BGW     | BC Act and EPBC Act listed CEEC White Box – Yellow Box –Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box Gum Woodland TEC) |
| BMP     | Biodiversity Management Plan                                                                                                                  |
| BOA     | Biodiversity Offset Area                                                                                                                      |
| BOMP    | Biodiversity Offset Management Plan                                                                                                           |
| BOS     | Biodiversity Offset Strategy                                                                                                                  |
| BVT     | Biometric Vegetation Type                                                                                                                     |
| CEEC    | Critically Endangered Ecological Community                                                                                                    |
| DNG     | Derived Native Grassland                                                                                                                      |
| EEC     | Endangered Ecological Community                                                                                                               |
| EPBC    | Environment Protection and Biodiversity Conservation Act 1999                                                                                 |
| GPS     | Global Positioning System                                                                                                                     |
| GSG     | Great Soil Group                                                                                                                              |
| IBRA    | Interim Biogeographic Regionalisation for Australia                                                                                           |
| nMDS    | Non-Metric Multi-dimensional Scaling                                                                                                          |
| OMP     | Offset Management Plan                                                                                                                        |
| PA      | Project Approval                                                                                                                              |
| PCT     | Plant Community Type                                                                                                                          |
| RBOS    | Revised Biodiversity Offset Strategy                                                                                                          |



| Acronym | Description                     |
|---------|---------------------------------|
| SPT     | Scattered Paddock Tree          |
| TEC     | Threatened Ecological Community |
| WCCM    | Werris Creek Coal Mine          |
| WHC     | Whitehaven Coal                 |



# 1 Introduction

The following report provides a summary of the fieldwork and desktop analyses undertaken to inform a Revised Biodiversity Offset Strategy (RBOS) following completion of a high accuracy cadastral survey of the actual offset property boundaries for Werris Creek Coal Mine (WCCM).

The aim of the RBOS is to update the existing vegetation mapping and descriptions contained within the Werris Creek Biodiversity Offset Management Plan (BOMP) (WHC 2013) for Werris Creek Biodiversity Offset Areas (BOAs). This was done by adopting the cadastral survey boundary following comprehensive survey in 2019/20 by Stewart Surveys (SS 2020) as well as contemporising the vegetation classification and mapping from the previous Biometric Vegetation Type (BVT) (OEH 2012) to Plant Community Type (PCT) classification system (DCCEEW 2025a). Vegetation surveys were undertaken during Autumn 2020 (16-20 March and 5-7 April), with all flora and BioMetric plot data (DECC 2008; OEH 2014) uploaded to the Whitehaven ecological survey data repository 'Ecoserver'.

Further, as part of offset area divestment planning for WCCM, the adoption of additional minor boundary realignments and additional vegetation mapping was completed in August 2024. In addition, further analysis and survey were undertaken in 2025 to inform contemporary Box Gum Woodland status, as considerable restoration works had been undertaken within the BOA since the previous survey in 2019 and 2020.

## 1.1 Transformation of WCCM BOS since 2004

The history of the Biodiversity Offset Strategy (BOS) for WCCM has developed since first presented in 2004, focussing on “no net loss” but also “restoration” offset strategies for BC Act and EPBC Act listed CEEC White Box – Yellow Box –Blakely’s Red Gum Grassy Woodland and Derived Native Grassland (Box Gum TEC), and is summarised below.

### *Initial Environmental Impact Statement, DA 172-7-2004*

The initial Environmental Impact Statement by R.W. Corkery (2004) considered the BOS to only cover the original Narrawolga property, which extended both north and south of the originally approved open cut mine (see **Figure 1.1**). However, exploration drilling confirmed the coal deposit extended to the north resulting in the BOS being modified in 2008 (WCC 2008). The BOS was again modified to allow for expansion through the previous underground mine workings (which ceased in 1963) after it was determined to no longer be an impediment to northward progression of the open cut mine in the *Statement of Environmental Effects* (R.W. Corkery 2009) to include the adjacent Eurunderree and Railway View properties (**Figure 1.1**).

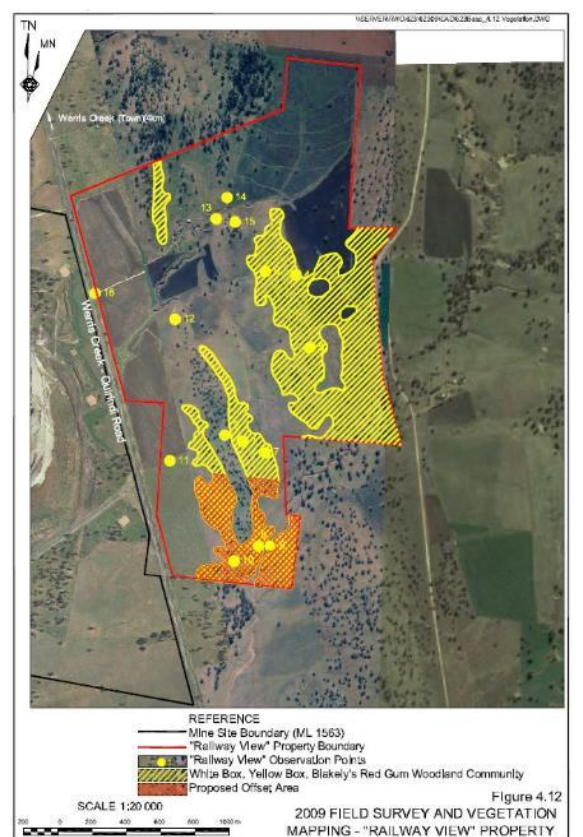
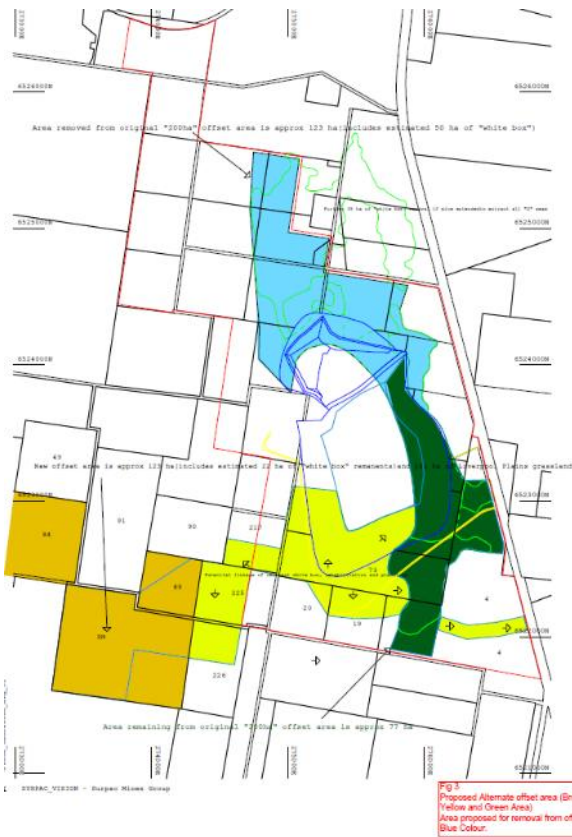
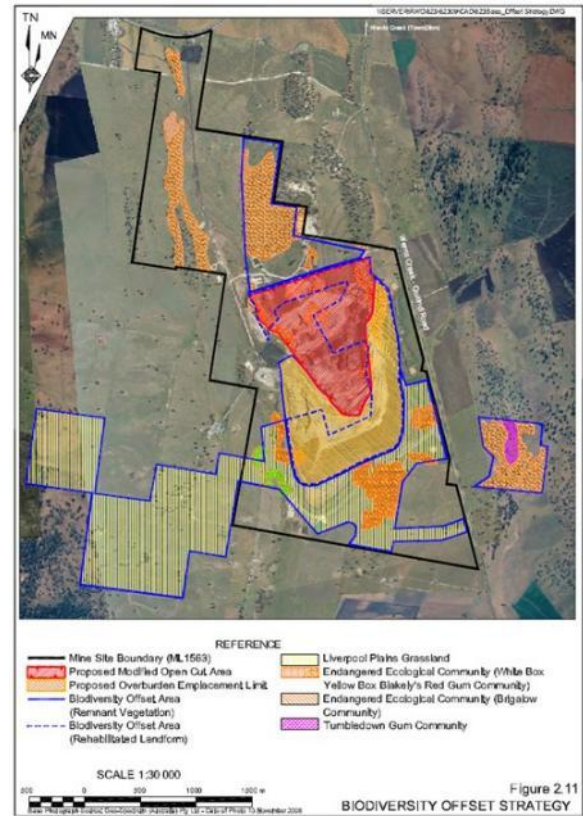
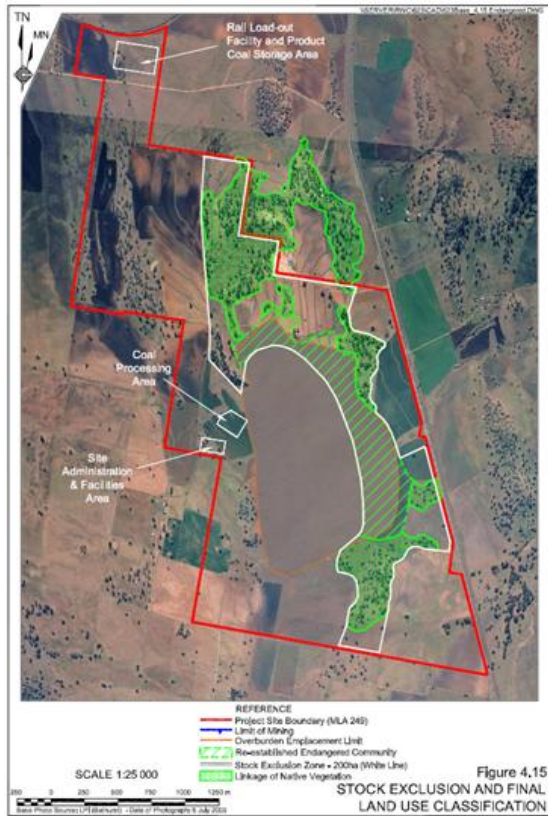


Figure 1.1: BOS presented in 2004 (top left, reproduced from R.W. Corkery 2004, Figure 4.15), 2008 (bottom left, reproduced from WCC 2008, Figure 3) and 2009 (top and bottom right, reproduced from R.W. Corkery 2009, Figures 2.11 and 4.12).

*Life of Mine BOS as approved by Project Approval (PA) 10\_0059 and Commonwealth Environment Protection and Biodiversity Conservation Act 1999 2010/5571*

*Werris Creek Coal Mine Life of Mine Project Environmental Assessment* (R.W Corkery & Co. 2010) described a BOS (ELA 2010) that expanded the area of Box Gum TEC to be protected to include the Narrawolga North and South, Eurunderee, Railway View and Marengo properties (see **Figure 1.2**). The Project Approval (PA) 10\_0059 was approved in 2011 consenting the BOS to include additional areas on the Hillview and Greenslopes properties. The Environment Protection and Biodiversity Conservation Act 1999 (EPBC) approval was also consented in 2011, requiring the BOS to include 310 ha of Regent Honeyeater and Swift Parrot habitat plus 731 ha of Box Gum TEC (as indicated in Condition 2b and Appendix 1 of Approval EPBC 2010/5571).

In the final stages of the Werris Creek EPBC Approval assessment, correspondence from WHC dated 9 November 2011 on behalf of WCC outlined how 731 ha of White Box CEEC and 310 ha of Regent Honeyeater and Swift Parrot habitat would be achieved. WHC committed both White Box Grassy Woodland (Woodland form - Class 4 – 290.56 ha) and White Box Grassy Woodland (DNG form - Class 3a = 211.61 ha), which conformed to the EPBC CEEC definition; as well as the other White Box Grassy Woodland (DNG form - Class 3b – 228.84 ha) not conforming to EPBC CEEC definition in 2011. As the Class 3b DNG would be subject to restoration over time, this was expected to conform to EPBC CEEC definition to achieve the 731 ha of White Box CEEC. For Regent Honeyeater and Swift Parrot habitat, WHC committed White Box Grassy Woodland (Woodland form – Class 4 – 290.56 ha) and Remnant White Box Paddock Trees (Paddock Trees – Class 2 – 19.64 ha), to achieve the 310.2 ha of Regent Honeyeater and Swift Parrot. *Biodiversity Offset Management Plan 2013*

Additional requirements post-approval of PA 10\_0059 and EPBC 2010/5571 were included in the approved BOMP (WHC 2013), which detailed areas of the Greenslopes and Hillview properties to be included in the BOS (see **Figure 1.2**). Subsequent variations of the BOS were incorporated in the PA 10\_0059 Appendix 4 but EPBC Approval 2010/5571 has not been revised since initial approval in 2011. The vegetation mapping by ELA (2011) presented within the approved BOMP (WHC 2013) is displayed with the contemporary Werris BOA boundaries in **Figure 1.3**.

The BOMP (WHC 2013) committed White Box Grassy Woodland (Woodland form - Class 4 – 323.56 ha), White Box Grassy Woodland (DNG form - Class 3a = 259.27 ha), and Yellow Box – Blakeley's Red Gum grassy woodland (Woodland form – Class 4 = 8.15) which conformed to the EPBC CEEC definition; as well as the other White Box Grassy Woodland (DNG form - Class 3b – 408.67 ha) not conforming to EPBC CEEC definition in 2013. As the Class 3b DNG would be subject to restoration over time, this was expected to conform to EPBC BGW CEEC definition to achieve a total of 999.65 ha of BGW CEEC.

The area of suitable habitat for Regent Honeyeater and Swift Parrot within the 2013 BOS includes vegetation communities meeting White Box – Yellow Box – Blakeley's Red Gum Grassy Woodland TEC and in Class 4 condition. This has been extrapolated from the descriptions provided in Section 8.2 and Table 14 of the Werris BOMP (WHC 2013). A total of 489.11 ha was determined to be suitable habitat for Regent Honeyeater and Swift Parrot.

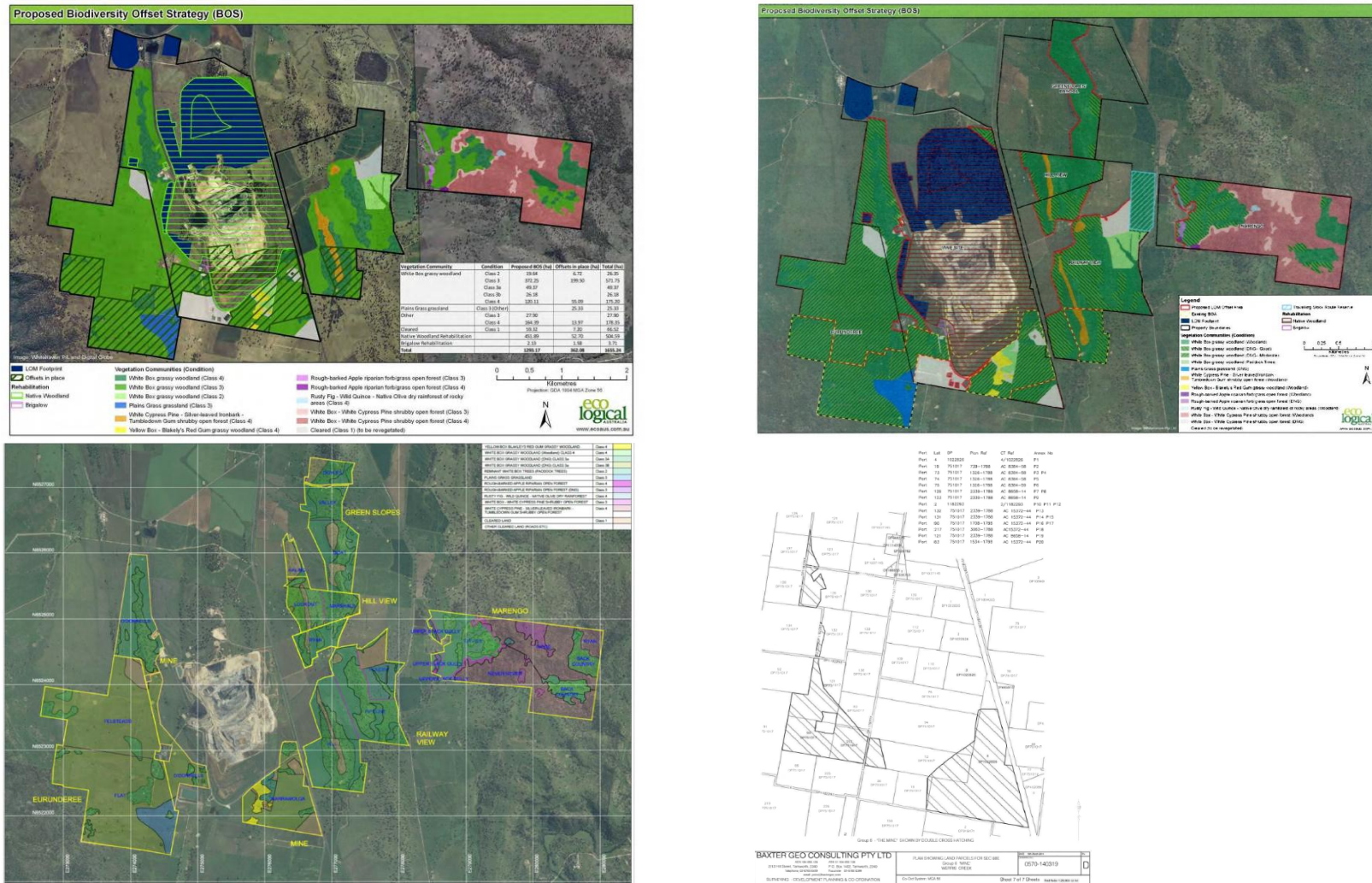


### *BOS Securement under s88E Covenants*

The BOS presented in the BOMP 2013 (WHC 2013) was used as the basis for securement of numerous land titles. However, the BOS boundary (WHC 2013) included Crown Land (paper roads) that were not secured on title, as they were not owned by WCCM at the time. In addition, areas including powerline and water pipeline easements were excluded from the securement. Furthermore, the s88E Covenants (Baxter Geo Consulting 2014, as included in WHC 2018, see **Figure 1.2**) adopted the correct cadastral boundaries between Eurunderee, Narrawolga, Greenslopes and Hillview, which differed from the boundaries shown in WHC (2013). Whilst these boundary discrepancies did not change the overall offset area, it did change the quantum of offset apportioned to each property.

As part of the offset area divestment planning for the WCCM BOA, the Department of Planning, Housing and Infrastructure (DPHI) and DCCEE has requested that the BOA is secured under Biodiversity Stewardship Agreements (BSAs). As a result, six Biodiversity Stewardship Site Assessment Reports (BSSARs) will be required, grouped based on the following properties:

- |                                              |                                                |
|----------------------------------------------|------------------------------------------------|
| 1. Escott A, Narrawolga North and Eurunderee | 4. Hillview and Hillview West & Infrastructure |
| 2. Narrawolga South and Plain View North     | 5. Greenslopes                                 |
| 3. Railway View                              | 6. Marengo                                     |



**Figure 1.2:** BOS presented in 2010 (top left reproduced from Eco Logical 2010, Figure 20), 2011 (top right reproduced from EPBC 2010/5571, Appendix 1), 2013 (bottom left reproduced from WHC 2013, Figure 5) and 2014 (bottom right reproduced from WHC 2008, Figure D).



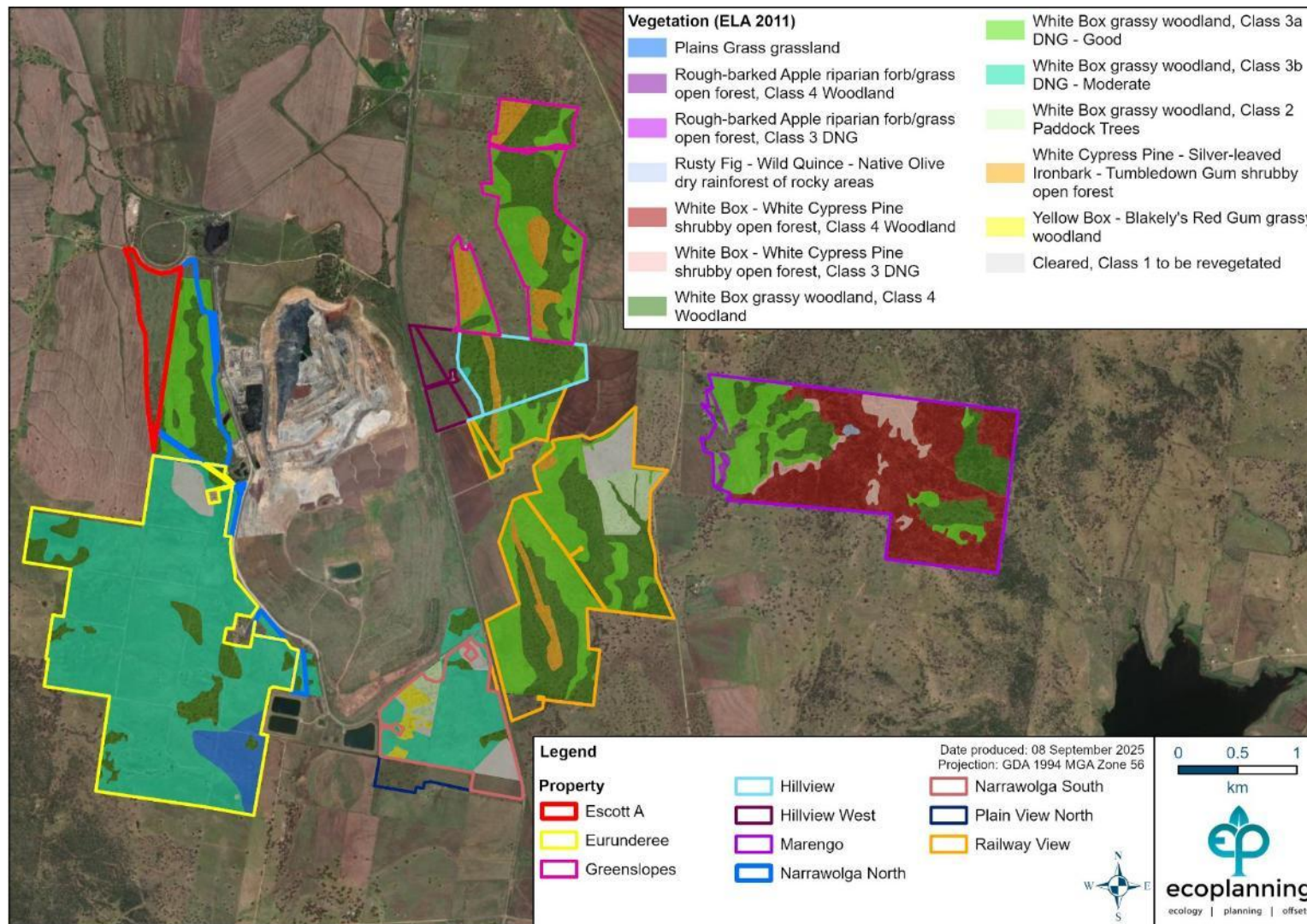


Figure 1.3: Revised Biodiversity Offset Area (Stewart Surveys 2025) with previous vegetation and condition mapping (ELA 2011).

### *Reconciliation and alignment of previous BOSs in current Revised Biodiversity Offset Strategy (RBOS)*

The BOS for WCCM has incrementally been modified over time in response to various approval changes. However, reconciliation of the outcomes of minor items and alignment of the Commonwealth and NSW approved BOS boundaries has not been undertaken within the BOS until now. This RBOS for WCCM now incorporates the following changes:

- **Exclusion of all rehabilitation areas** - The pre-2009 BOS considered incorporating part of the Rehabilitation and some historically disturbed areas to the southern end of the overburden emplacement area adjacent to the mine access road. Whilst the Rehabilitation area is no longer a part of the BOS, the areas historically disturbed for soil stockpiling and dirty water drainage infrastructure were still included in the BOS. As WCCM is now in its mine closure phase, it is considered important to exclude these areas from the BOS to allow for their maintenance and final rehabilitation outside of the BOS;
- **Exclusion of Crown Road reserves and update of cadastral boundaries** - The BOS area for securement on title by the s88E Covenants has not previously been reconciled for excluding numerous Crown Road reserves. In addition, the securement on title utilised the digital cadastre which as an accuracy of +/- 5m and only involved limited boundary definition of the previous cadastre. Since 2017, acquisition of some but not all former Crown Roads have been finalised as well as completion of a high accuracy boundary definition survey that has reconciled (with precision) the original cadastral boundaries of the properties to the intended BOS boundary; and
- **Update of vegetation mapping to Plant Community Types** - Since 2014 a new vegetation classification system called Plant Community Type (PCT) (DCCEEW 2025a) has been introduced and thus this RBOS provided an opportunity to contemporise the vegetation mapping, along with the area and assessed biodiversity values for WCCM, in alignment with the EPBC and PA approvals.

This RBOS addresses the above items and provides a reconciliation to confirm that the currently secured and actual management boundaries of the RBOS satisfy the requirements of the NSW and Commonwealth approvals for WCCM.

## 2 Methods

### 2.1 Initial desktop assessment

Prior to field surveys in 2020, field maps for each of the Werris Creek BOAs were prepared that:

- utilised previous vegetation mapping, undertaken by EcoLogical Australia (ELA) in 2011 and included in the approved BOMP (2013), as the baseline vegetation communities to be field validated, and
- incorporated updates to the cadastral boundaries (as supplied by Stewart Surveys, 2020) of the approved offset properties, and
- indicated the location of 25 existing BioBanking Assessment Method (BBAM) annual floristic monitoring plots, and
- indicated the location of 22 additional BBAM plots to be undertaken for the purpose of ground-truthing the condition of vegetation communities and determining PCTs
- utilised high-res aerial imagery of the Werris Creek BOAs taken in April 2019 (supplied by Whitehaven Coal [WHC])

### 2.2 Field survey

Field survey was undertaken across the BOAs by Elizabeth Norris (Senior Ecologist/Botanist, Ecoplanning), Angela Bibby (Ecologist, Ecoplanning) and Kieren Northam (Ecologist, Ecoplanning) between 16-20 March 2020 and 5-7 April 2020 over a total of 16 person days. The purpose of the field survey was to assess the structure and condition of vegetation within the revised BOA boundary against previous vegetation condition mapping by EcoLogical Australia (ELA) (2011) and to assess all areas resulting from the minor boundary changes due to the high accuracy cadastral survey. This was done using a combination of rapid visual assessment, BBAM plot and transect data, and traversing the BOA to determine boundaries between vegetation types. Ongoing annual spring monitoring of Werris Creek BOA using the BBAM (DECC 2008; OEH 2014) provided floristic data from 2019 at 25 sites, and an additional 22 BBAM plots and transects were undertaken for the purpose of this assessment. All BBAM data was recorded in the field using iPads and uploaded to 'Ecoserver'. Floristic data is provided as a separate Excel workbook. Weather conditions experienced during the 2019 and 2020 survey period were generally warm and dry (see **Table 2-1**). However, total monthly rainfall in the three months preceding 2019 monitoring was considerably below that of the total monthly rainfall in the three months preceding 2020 survey (see **Table 2-2**) and 2019 was the driest year on record (BOM 2020). The three months preceding the 2020 survey period was the reverse of conditions with above average rainfall being recorded prior to March 2020.

**Table 2-1: Weather observations (September 2019 - April 2020) from Narrawolga (95M1) and Marengo (93M1), supplied by WHC.**

| Date       | Weather station | Temp (°C) |     | Rainfall (mm) |
|------------|-----------------|-----------|-----|---------------|
|            |                 | Min       | Max |               |
| 23/09/2019 | Narrawolga      | 0         | 21  | 0             |



| Date       | Weather station | Temp (°C) |     | Rainfall (mm) |
|------------|-----------------|-----------|-----|---------------|
|            |                 | Min       | Max |               |
| 24/09/2019 | Narrawolga      | 1         | 21  | 0             |
| 25/09/2019 | Narrawolga      | 3         | 22  | 0             |
| 26/09/2019 | Narrawolga      | 2         | 24  | 0             |
| 27/09/2019 | Narrawolga      | 3         | 25  | 0             |
| 16/3/2020  | Narrawolga      | 7         | 23  | 0             |
| 17/3/2020  | Narrawolga      | 6         | 24  | 0             |
| 18/3/2020  | Narrawolga      | 7         | 26  | 0             |
| 19/3/2020  | Narrawolga      | 8         | 29  | 0             |
| 20/3/2020  | Narrawolga      | 11        | 31  | 0             |
| 5/4/2020   | Marengo         | 8         | 21  | 0             |
| 6/4/2020   | Marengo         | 9         | 22  | 0             |
| 7/4/2020   | Marengo         | 10        | 24  | 0             |

**Table 2-2: Total monthly rainfall (July 2019 - March 2020) recorded at Narrawolga (95M1), supplied by WHC.**

| Month - Year     | Weather station | Total monthly Rainfall (mm) |
|------------------|-----------------|-----------------------------|
| July - 2019      | Narrawolga      | 12                          |
| August - 2019    | Narrawolga      | 0                           |
| September - 2019 | Narrawolga      | 4                           |
| January - 2020   | Narrawolga      | 151                         |
| February - 2020  | Narrawolga      | 158                         |
| March - 2020     | Narrawolga      | 111                         |



## 2.3 Additional desktop analysis

To assist in assigning PCTs across the BOA, a combination of analyses were undertaken. A list of potential PCTs was generated based on the existing BVT mapping (ELA 2011), the IBRA sub-region (Peel) and known dominant canopy species within the Werris Creek BOA. Species list for each potential PCT were exported from the BioNet Vegetation Classification database (DCCEE 2025a). The condition classes assigned to each vegetation community was based on the descriptions contained in Section 4.3 of WHC 2013, as follows:

*The condition of each vegetation community was assigned to one of four broad condition classes based on the presence/absence of a canopy layer and whether the ground cover was greater than or less than 50% native ground cover. The four condition classes were:*

1. *<50% native ground cover with no native canopy present (Cleared Land);*
2. *<50% native ground cover with a native canopy present (Scattered Trees/Paddock Trees in Poor Condition);*
3. *>50% native ground cover with no native canopy present (Derived Native Grasslands in Moderate-Good Condition). Sub condition classes have been assigned to Class 3 for the purposes of assigning EEC's under the TSC Act and EPBC Act;*
  - *Class 3a (high diversity): no native canopy cover, >11 native perennial understorey species (not including grasses) and at least 1 important species. Where Box-Gum Woodland canopy species are likely to have occurred in this class, this condition class equates to the EPBC Act and TSC Act definition of Box-Gum Woodland DNG*
  - *Class 3b (low diversity): no native canopy cover, native grassy understorey with low diversity of herbs or other perennial understorey species. Where Box-Gum Woodland canopy species are likely to have occurred in this class, this condition class equates only to the TSC Act definition of Box-Gum Woodland DNG; and*
4. *>50% native ground cover with a native canopy present (Native Vegetation in Moderate – Good Condition).*

### *Primer v.6*

Species lists for all 47 x BBAM plots (25 existing, surveyed in September 2019 and 22 additional surveyed in March-April 2020) were exported from Ecoserver. Non-Metric Multidimensional Scaling (nMDS) and cluster analysis was undertaken using PRIMER v.6 (Clarke and Gorley 2006) to determine the level of similarity (using presence/absence data) between species list of each BBAM plot and the species lists for all potential PCTs exported from the BioNet Vegetation Classification database (DCCEE 2025a).

### *Site description*

Field notes containing site descriptions (including dominant species) and photos were utilised to match sites to the PCT vegetation descriptions outlined in the BioNet Vegetation Classification database (DCCEE 2025a) and Benson *et al.* (2010).



## ArcGIS

ArcGIS v10.7 was used to analyse data layers showing Great Soil Groups (GSGs) v3.0 (DPIE 2020) and contours (NSW DFS 2020) within the BOA and was compared against GSG, landform patterns and landform elements descriptions in the BioNet Vegetation Classification database (DCCEE 2025a) and Benson *et al.* (2010) for candidate PCTs.

## 2.4 GIS vegetation mapping

Vegetation mapping undertaken in ArcGIS used a systematic approach that included:

- Working at an average scale of 1:3000 to delineate areas of woodland from areas of Derived Native Grassland (DNG) and Scattered Paddock Trees (SPT). Woodland patches were mapped in areas that contain five or more trees in which no tree is greater than 75 m from another tree (as per the description in TSSC 2006). A consistent buffer of ~20 m was applied around tree crowns to delineate extent of open woodland.
- Boundaries between woodland PCTs were delineated based on field observations that noted change in soil type, landform and/or dominant canopy species. These field observations had been recorded and marked using GPS waypoints in Avenza PDF maps™.
- Using a high-resolution aerial base map (supplied by WHC 2019) along with field validated observations of dominant canopy species and BBAM plot data, woodland areas with an appearance of similar canopy composition were mapped together.
- Boundaries between woodland areas that could not be delineated confidently using the above methods retained the original boundaries of ELA (2011) mapping.

## 2.5 Additional Vegetation Validation

Following the provision of updated cadastral boundaries by Stewart Surveys in 2024 for the contemporary offset properties and imminent approval of Modification 5 PA 10\_0059 compensatory revegetation areas, additional field work was required to validate vegetation in these amended areas. Prior to the fieldwork, field maps for each of the Werris Creek BOAs were prepared showing the validated vegetation mapping undertaken by Ecoplanning 2020, along with the updated cadastral boundaries. The fieldwork was completed by Jai Brian-Cooper (Ecologist, Ecoplanning) on 22 August 2024 and involved using rapid visual assessment for determining PCTs and conditions.

Weather conditions experienced during the 2024 fieldwork were mild and dry (see **Table 2-3**). Rainfall for the three months prior to the August 2024 fieldwork is shown in **Table 2-4** and was slightly above the long-term average (BOM 2025).

**Table 2-3: Weather observations recorded at Narrawolga (95M1) and Marengo (93M1) (supplied by WHC).**

| Date       | Weather station | Temp (°C) |     | Rainfall (mm) |
|------------|-----------------|-----------|-----|---------------|
|            |                 | Min       | Max |               |
| 22/08/2024 | Marengo         | 8         | 20  | 0             |



| Date       | Weather station | Temp (°C) |     | Rainfall (mm) |
|------------|-----------------|-----------|-----|---------------|
|            |                 | Min       | Max |               |
| 22/08/2024 | Narrawolga      | 6         | 20  | 0             |

**Table 2-4: Total monthly rainfall (May – August 2024) recorded at Narrawolga (95M1) (supplied by WHC) compared to long-term average at Quirindi Post Office (BOM station 005049) (BOM 2025).**

| Month - Year  | Weather station | Total monthly Rainfall (mm) | Long-term average (mm) |
|---------------|-----------------|-----------------------------|------------------------|
| May – 2024    | Narrawolga      | 53                          | 43.6                   |
| June - 2024   | Narrawolga      | 75                          | 51.7                   |
| July - 2024   | Narrawolga      | 63                          | 47.3                   |
| August - 2024 | Narrawolga      | 45                          | 44.2                   |

## 2.6 Updates to condition class categories

Following the vegetation mapping updates for the Werris BOA in 2019-20 (as described above), a consolidated Flora Monitoring Project Plan (FMPP) for all WHC Biodiversity Offset Areas (BOAs) was developed in 2022. The aim was to standardise flora monitoring, reporting, annual performance criteria and completion criteria across all WHC BOAs, and to clearly outline the various WHC reporting requirements for all floristic data captured during the Spring Flora Monitoring event. This required all BOAs to be stratified and mapped into vegetation zones based on:

- Vegetation Class (Keith 2004) (herein known as Keith Class), and
- Three broad condition states (Good [Not cleared], Semi-cleared, Derived Native Grassland [DNG]/Cleared)

This resulted in the reclassification of condition classes within the Werris BOA. The four broad condition classes based on the definition outlined in WHC 2013 was replaced with the three broad condition states (Good, Semi-cleared and DNG/Cleared) outlined within the FMPP. Condition mapping updates were undertaken within ArcGIS and utilised previous data sampled. This RBOS has been updated to reflect these changes, which will also align with the condition zones utilised within future BSSARs. The alignment of the superseded condition class with the new condition classes are outlined in **Table 3-4** and **Table 3-5**.

## 2.7 Additional analysis and survey to inform TEC status

The Box Gum Woodland TEC status of vegetation within the Werris BOA was reanalysed in 2025 to inform this version of the RBOS. Considerable restoration works had been undertaken

within the BOA since the previous survey in 2019 and 2020, and as such, it was considered that the status of some vegetation polygons may now achieve BC and/or EPBC status for Box Gum Woodland. Those areas not achieving BC and/or EPBC status for Box Gum Woodland following the 2019/2020 surveys were the focus of this analysis, although all vegetation zones were re-analysed to assist with TEC justification (see **Section 3.2**).

A desktop analysis was initially undertaken which utilised data from 25 spring flora monitoring plots within the Werris BOA that are monitored annually as part of the FMPP. Plot data can be downloaded from Ecoserver and is provided as a separate Excel workbook. The location of the plots are displayed in **Figure 3.4** and **Figure 3.5**. Species composition and structure were analysed temporally between 2021 and 2024, where required, to account for variations in survey timing and rainfall patterns, as significant variation can occur in species structure and composition within plots between years. Average species and composition were calculated from existing plot data across each vegetation zone to assist with determining TEC status.

As part of securing the BOA under Biodiversity Stewardship Agreements (BSAs), eight additional plots were required within vegetation zones that did not contain any spring flora monitoring plots, sampled on 2-3 June 2025. These plots also allowed for a contemporary analysis of TEC status for this RBOS. Plot data for these additional plots can be downloaded from Ecoserver and is provided as a separate Excel workbook. The location of the plots are displayed in **Figure 3.4** and **Figure 3.5**.

In addition to analysing TEC status across entire vegetation zones, specific polygons that had previously not achieved BC and/or EPBC status for Box-Gum Woodland following the 2019/2020 surveys were examined (see **Figure 3.4** and **Figure 3.5** for polygon locations), utilising plot data collected between 2021 and 2025, or if not available, a random meander in the field. The focus of this analysis was to determine whether these areas (all in DNG/Cleared condition) would now meet the final determination (NSW TSSC 2020) and condition thresholds outlined in the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), following restoration works. The random meanders to determine TEC status was undertaken in the field by Jai Brian-Cooper (Ecologist, Ecoplanning) on 2-4 June 2025.

Survey dates and weather conditions experienced during the 2021-2024 spring flora monitoring fieldwork is outlined in **Table 2-5**. Rainfall for the three months prior each spring flora monitoring survey is shown in **Table 2-6**. Weather conditions experienced during the 2025 fieldwork were relatively dry and cool (see **Table 2-7**). Rainfall for the three months prior to the June 2025 fieldwork is shown in **Table 2-8** and was typically well above the long-term average (BOM 2025), which provided optimal conditions for surveying species diversity and cover.

**Table 2-5: Weather observations recorded at Narrawolga (95M1) and Marengo (93M1) (supplied by WHC) during spring flora monitoring surveys from 2021 to 2024.**

| Date        | Site (nearest WHC weather station) | WHC weather station |                |               |
|-------------|------------------------------------|---------------------|----------------|---------------|
|             |                                    | Temp. min. (°C)     | Temp max. (°C) | Rainfall (mm) |
| Spring 2021 |                                    |                     |                |               |
| 1/10/21     | Eurunderee (Marengo)               | 14                  | 24             | 1             |
| 12/10/21    | Eurunderee (Narrawolga)            | 12                  | 18             | 14            |
| 13/10/21    | Eurunderee (Narrawolga)            | 12                  | 22             | 3             |
| 13/10/21    | Greenslopes (Narrawolga)           | 12                  | 22             | 3             |
| 14/10/21    | Eurunderee (Narrawolga)            | 13                  | 26             | 2             |
| 14/10/21    | Railway View (Marengo)             | 14                  | 26             | 1             |
| 15/10/21    | Marengo                            | 8                   | 19             | 3             |
| Spring 2022 |                                    |                     |                |               |
| 5/09/2022   | Eurunderee (Narrawolga)            | 1                   | 17             | 0             |
| 5/09/2022   | Narrawolga                         | 1                   | 17             | 0             |
| 6/09/2022   | Eurunderee (Narrawolga)            | 3                   | 18             | 0             |
| 6/09/2022   | Greenslopes (Marengo)              | 5                   | 19             | 0             |
| 6/09/2022   | Hillview (Marengo)                 | 5                   | 19             | 0             |
| 6/09/2022   | Narrawolga                         | 3                   | 18             | 0             |
| 6/09/2022   | Railway View (Marengo)             | 5                   | 19             | 0             |
| 7/09/2022   | Greenslopes (Marengo)              | 6                   | 20             | 0             |
| 7/09/2022   | Marengo                            | 6                   | 20             | 0             |
| 7/09/2022   | Railway View (Marengo)             | 6                   | 20             | 0             |
| 21/11/2022  | Eurunderee (Narrawolga)            | 8.7                 | 24.2           | 0             |

| Date        | Site (nearest WHC weather station) | WHC weather station |                |               |
|-------------|------------------------------------|---------------------|----------------|---------------|
|             |                                    | Temp. min. (°C)     | Temp max. (°C) | Rainfall (mm) |
| Spring 2023 |                                    |                     |                |               |
| 20/11/2023  | Marengo                            | 16.6                | 21.5           | 10.8          |
| 20/11/2023  | Railway View (Marengo)             | 16.6                | 21.5           | 10.8          |
| 21/11/2023  | Railway View (Marengo)             | 15.9                | 25             | 6.4           |
| 22/11/2023  | Greenslopes (Marengo)              | 16.9                | 27             | 2.4           |
| 22/11/2023  | Hillview (Marengo)                 | 16.9                | 27             | 2.4           |
| 23/11/2023  | Eurunderee (Narrawolga)            | 16.2                | 26.8           | 0.8           |
| 23/11/2023  | Narrawolga                         | 16.2                | 26.8           | 0.8           |
| 24/11/2023  | Eurunderee (Narrawolga)            | 18.2                | 24.7           | 14.2          |
| 24/11/2023  | Narrawolga                         | 18.2                | 24.7           | 14.2          |
| 25/11/2023  | Narrawolga                         | 17.4                | 18.8           | 6.8           |
| 25/11/2023  | Railway View (Marengo)             | 17                  | 18.5           | 6             |
| 30/11/2023  | Greenslopes (Marengo)              | 15.8                | 28.2           | 0             |
| Spring 2024 |                                    |                     |                |               |
| 09/09/24    | Narrawolga                         | 5.6                 | 19.5           | 0.0           |
| 10/09/24    | Narrawolga                         | 2.8                 | 22.7           | 0.0           |
| 11/09/24    | Railway View (Marengo)             | 9.3                 | 23.8           | 17.4          |
| 11/09/24    | Narrawolga                         | 6.0                 | 24.1           | 17.0          |
| 13/09/24    | Narrawolga                         | 6.3                 | 17.4           | 0.0           |
| 13/09/24    | Hillview (Marengo)                 | 7.2                 | 17.3           | 0.0           |
| 14/09/24    | Eurunderee (Marengo)               | 4.6                 | 19.7           | 0.0           |
| 31/10/24    | Eurunderee (Marengo)               | 11.2                | 30.0           | 0.0           |





| Date     | Site (nearest WHC weather station) | WHC weather station |                |               |
|----------|------------------------------------|---------------------|----------------|---------------|
|          |                                    | Temp. min. (°C)     | Temp max. (°C) | Rainfall (mm) |
| 01/11/24 | Marengo                            | 11.4                | 26.8           | 0.0           |
| 08/11/24 | Marengo                            | 15.4                | 29.8           | 0.0           |
| 08/11/24 | Greenslopes (Marengo)              | 15.4                | 29.8           | 0.0           |
| 12/11/24 | Eurunderee (Marengo)               | 15.8                | 26.9           | 6.2           |

**Table 2-6: Total monthly rainfall recorded at Narrawolga (95M1) and Marengo (93M1) (supplied by WHC) in the three-months leading up to the spring flora monitoring surveys (2021 to 2024). Comparison is made to the long-term average at Quirindi Post Office (BOM station 005049) (BOM 2025).**

| Site (nearest WHC weather station) | Weather Station No. | Three months prior to survey | Total rainfall 2024 (mm) | Long-term average (mm) |
|------------------------------------|---------------------|------------------------------|--------------------------|------------------------|
| <b>Spring 2021</b>                 |                     |                              |                          |                        |
| Narrawolga                         | 95 M1               | July - September             | 139                      | 138.5                  |
| <b>Spring 2022</b>                 |                     |                              |                          |                        |
| Eurunderee (Narrawolga)            | 95 M1               | June - August                | 142                      | 143.3                  |
| Greenslopes (Marengo)              | 93 M1               | June - August                | 129                      | 143.3                  |
| Hillview (Marengo)                 | 93 M1               | June - August                | 129                      | 143.3                  |
| Marengo                            | 93 M1               | June - August                | 129                      | 143.3                  |
| Narrawolga                         | 95 M1               | June - August                | 142                      | 143.3                  |
| Railway View (Marengo)             | 93 M1               | June - August                | 129                      | 143.3                  |
| <b>Spring 2023</b>                 |                     |                              |                          |                        |
| Eurunderee (Narrawolga)            | 95 M1               | August - October             | 67.6                     | 151.1                  |

| Site (nearest WHC weather station) | Weather Station No. | Three months prior to survey | Total rainfall 2024 (mm) | Long-term average (mm) |
|------------------------------------|---------------------|------------------------------|--------------------------|------------------------|
| Greenslopes (Marengo)              | 93 M1               | August - October             | 61.6                     | 151.1                  |
| Hillview (Marengo)                 | 93 M1               | August - October             | 61.6                     | 151.1                  |
| Marengo                            | 93 M1               | August - October             | 61.6                     | 151.1                  |
| Narrawolga                         | 95 M1               | August - October             | 67.6                     | 151.1                  |
| Railway View (Marengo)             | 93 M1               | August - October             | 61.6                     | 151.1                  |
| <b>Spring 2024</b>                 |                     |                              |                          |                        |
| Eurunderee (Narrawolga)            | 95 M1               | June - August                | 183.0                    | 143.3                  |
| Greenslopes (Marengo)              | 93 M1               | August - October             | 172.2                    | 151.1                  |
| Hillview (Marengo)                 | 93 M1               | June - August                | 206.0                    | 143.3                  |
| Marengo                            | 93 M1               | August - October             | 172.2                    | 151.1                  |
| Narrawolga                         | 95 M1               | June - August                | 183.0                    | 143.3                  |
| Railway View (Marengo)             | 93 M1               | June - August                | 206.0                    | 143.3                  |

**Table 2-7: Weather observations recorded at Narrawolga (95M1) and Marengo (93M1) (supplied by WHC) during June 2025 field work.**

| Date       | Weather station | Temp (°C) |      | Rainfall (mm) |
|------------|-----------------|-----------|------|---------------|
|            |                 | Min       | Max  |               |
| 02/06/2025 | Marengo         | 9.4       | 18.9 | 0             |
|            | Narrawolga      | 7.1       | 18.7 | 0.2           |
| 03/06/2025 | Marengo         | 6.7       | 16.2 | 0.8           |

| Date       | Weather station | Temp (°C) |      | Rainfall (mm) |
|------------|-----------------|-----------|------|---------------|
|            |                 | Min       | Max  |               |
|            | Narrawolga      | 5.5       | 16.6 | 1.0           |
| 04/06/2025 | Marengo         | 6.4       | 13.4 | 0             |
|            | Narrawolga      | 5.0       | 13.8 | 0.0           |

**Table 2-8: Total monthly rainfall (February – May 2025) recorded at Narrawolga (95M1) and Marengo (93M1) (supplied by WHC) in the three-months leading up to the June 2025 surveys, compared to long-term average at Quirindi Post Office (BOM station 005049) (BOM 2025)..**

| Month & Year | Weather station | Total monthly Rainfall (mm) | Long-term average (mm) |
|--------------|-----------------|-----------------------------|------------------------|
| March 2025   | Marengo         | 138.4                       | 55.5                   |
|              | Narrawolga      | 124.6                       |                        |
| April 2025   | Marengo         | 50.4                        | 41.5                   |
|              | Narrawolga      | 25.2                        |                        |
| May 2025     | Marengo         | 61.0                        | 43.7                   |
|              | Narrawolga      | 55.0                        |                        |

## 3 Results

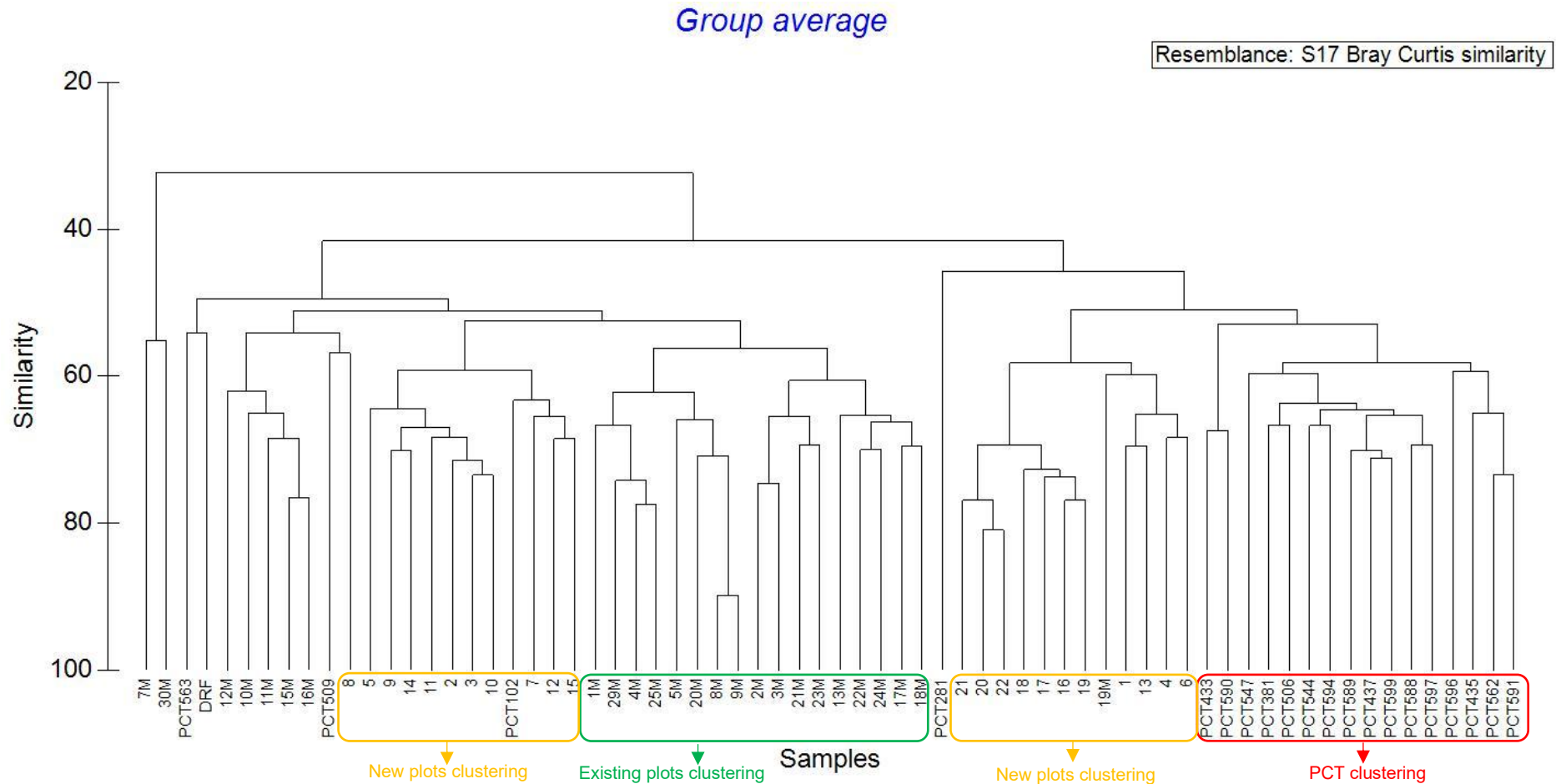
### 3.1 Vegetation mapping

Twenty PCTs were identified during additional desktop analysis as potentially occurring within the Werris Creek BOAs (see **Appendix A**). PCTs with a low classification confidence (Level 4) (DCCEEW 2025a) such as PCT 1383 (White Box grassy woodland of the Nandewar Bioregion and Brigalow Belt South Bioregion) were not included in this list, even though the PCT scientific name may be a good match. DCCEEW (2025b) states that a “*Low Confidence (Level 4) community type is based on informal analysis, anecdotal information, or community descriptions, and are not based on any plot data analysis. Local experts have often identified these types. Although there is a high level of confidence that they represent significant vegetation entities that should be incorporated in the PCT List, it is not clear that they would meet the standard for floristic types in concept or in the PCT classification approach if data were available*”.

The results of the PRIMER v.6 (Clarke and Gorley 2006) nMDS and cluster analysis were considered generally inconclusive (**Figure 3.1**). The PCT datasets tended to cluster together, plots undertaken during 2020 tended to cluster together and plots from existing monitoring locations (surveyed in 2019) tended to cluster together.

To understand factors that may have contributed to the cluster analysis result, the number of species per PCT dataset and BioMetric plot were analysed. **Table 3-1** shows that the number of species per PCT dataset (as exported from the BioNet Vegetation Classification database [DCCEEW 2025a]) exhibited a large range (between 28 and 102 species per PCT) with an average of 56 species per dataset. PCTs 102, 563 and 509 had the lowest number of species and did not cluster together with the other PCTs. PCT 281 had a much higher number of species in its dataset and did not cluster with the others. **Table 3-2** shows that for plots undertaken in 2020, the number of species per plot ranged between 23 and 82 with an average of 47 species per plot. As with the PCT datasets, the plots with lowest number of species tended to cluster away from the others, with plot 8 on its own and plots 7, 12 and 15 clustering together. **Table 3-3** shows that the species range for existing monitoring plots surveyed in 2019 was between 12 and 48 with an average of 31 species per plot. Plots 7 and 30 had the lowest number of species and clustered together away from the other plots (however, these were considered to be poorly located plots that are not representative of the surrounding community).

Site descriptions recorded during field surveys (that included dominant canopy species) used in conjunction with plot data and ArcGIS mapping of site contours and Great Soil Groups (GSGs) (**Figure 3.2**) were found to be more informative for determining PCTs and TECs. Overall, six PCTs were identified within the revised Werris Creek BOA and Compensatory Revegetation Areas that are classified into three broad condition states (**Figure 3.3**; **Table 3-4**; **Table 3-5**). In addition, two TECs listed under the BC Act and EPBC Act were mapped within the BOA (**Figure 3.4**; **Figure 3.5**; **Table 3-4**; **Table 3-5**). Suitable habitat for Regent Honeyeater and Swift Parrot was also mapped within the BOA (**Figure 3.6**; **Table 3-4**; **Table 3-5**). Detailed maps are available in **Appendix B** to **Appendix E**.



**Figure 3.1:** Cluster analysis results from Primer (v6). Plots with suffix 'M' were existing monitoring plots, DRF represents species data recorded within an area of Dry Rainforest (where it was not physically possible to undertake a BBAM plot and transect).



**Table 3-1: Number of species present per PCT dataset (DCCEEW 2025a).**

| PCT no.            | PCT 102   | PCT 281    | PCT 381 | PCT 433 | PCT 435 | PCT 437 | PCT 506 | PCT 509   | PCT 544 | PCT 547 | PCT 562 | PCT 563   | PCT 588 | PCT 589 | PCT 590 | PCT 591 | PCT 594 | PCT 596 | PCT 597 | PCT 599 |
|--------------------|-----------|------------|---------|---------|---------|---------|---------|-----------|---------|---------|---------|-----------|---------|---------|---------|---------|---------|---------|---------|---------|
| <b>No. species</b> | <b>28</b> | <b>102</b> | 64      | 47      | 45      | 63      | 66      | <b>24</b> | 59      | 69      | 44      | <b>31</b> | 64      | 66      | 49      | 45      | 57      | 55      | 73      | 69      |
| <b>Range</b>       | 28 - 102  |            |         |         |         |         |         |           |         |         |         |           |         |         |         |         |         |         |         |         |
| <b>Average</b>     | 56        |            |         |         |         |         |         |           |         |         |         |           |         |         |         |         |         |         |         |         |

**Table 3-2: Number of species per plot undertaken during 2020 survey.**

| 2020 Plot no.      | 1       | 2  | 3  | 4  | 5  | 6  | 7         | 8         | 9  | 10 | 11 | 12        | 13 | 14 | 15        | 16 | 17 | 18 | 19 | 20        | 21 | 22 |
|--------------------|---------|----|----|----|----|----|-----------|-----------|----|----|----|-----------|----|----|-----------|----|----|----|----|-----------|----|----|
| <b>No. species</b> | 52      | 32 | 41 | 46 | 33 | 53 | <b>28</b> | <b>23</b> | 46 | 32 | 36 | <b>27</b> | 41 | 41 | <b>27</b> | 71 | 56 | 60 | 69 | <b>82</b> | 66 | 75 |
| <b>Range</b>       | 23 - 82 |    |    |    |    |    |           |           |    |    |    |           |    |    |           |    |    |    |    |           |    |    |
| <b>Average</b>     | 47      |    |    |    |    |    |           |           |    |    |    |           |    |    |           |    |    |    |    |           |    |    |

**Table 3-3: Number of species per existing monitoring plot during 2019 survey. Plots with suffix 'M' were existing monitoring plots.**

| 2019 Plot no.      | 1M      | 2M | 3M | 4M | 5M | 7M        | 8M | 9M | 10 M | 11 M | 12 M | 13 M | 15 M | 16 M | 17 M | 18 M | 19 M | 20 M | 21 M | 22 M | 23 M | 24 M | 25 M | 29 M | 30 M      |
|--------------------|---------|----|----|----|----|-----------|----|----|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|------|-----------|
| <b>No. species</b> | 42      | 27 | 28 | 38 | 39 | <b>12</b> | 37 | 32 | 25   | 24   | 20   | 33   | 22   | 25   | 35   | 37   | 48   | 34   | 32   | 35   | 30   | 35   | 33   | 34   | <b>17</b> |
| <b>Range</b>       | 12 - 48 |    |    |    |    |           |    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |           |
| <b>Average</b>     | 31      |    |    |    |    |           |    |    |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |      |           |

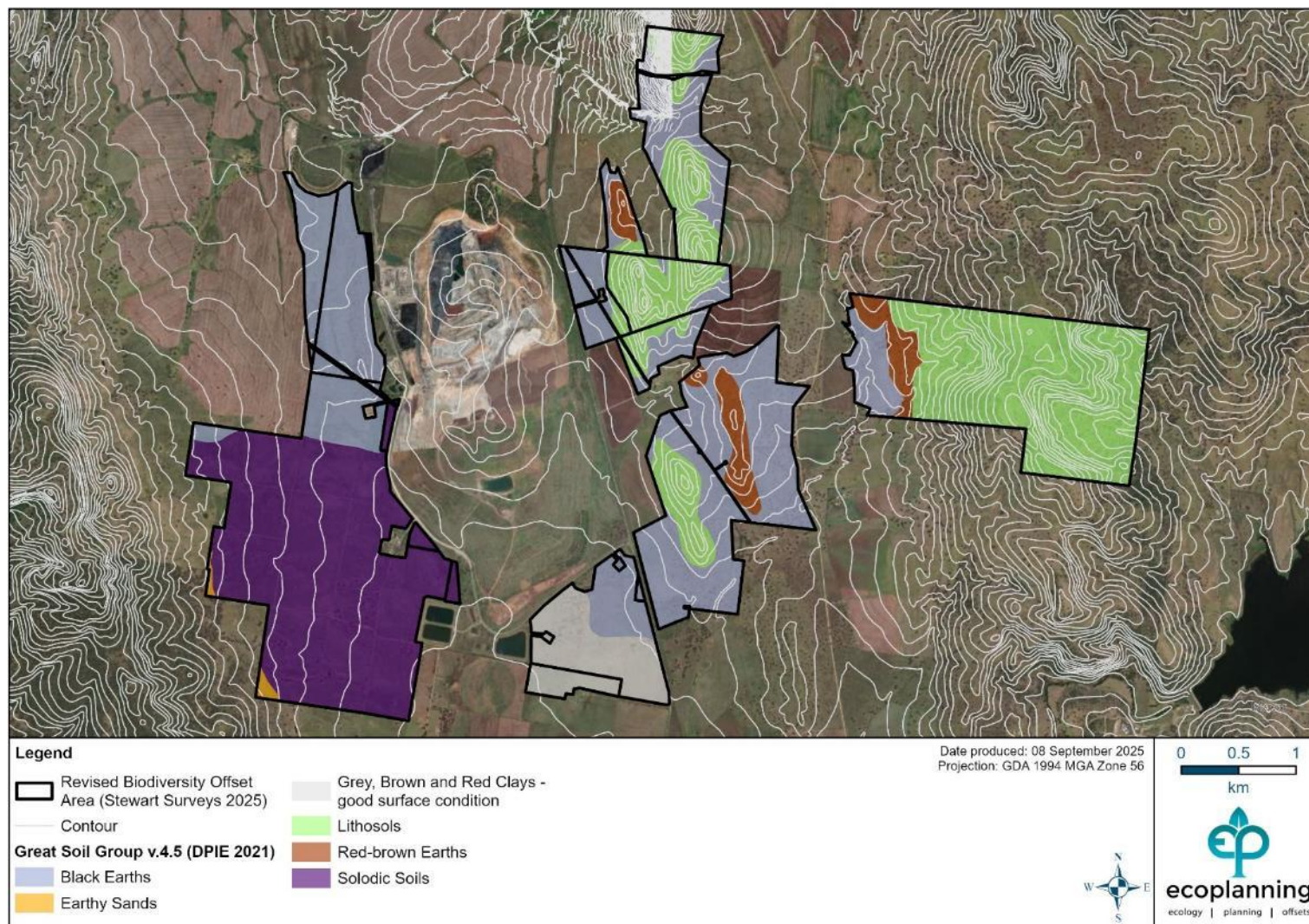
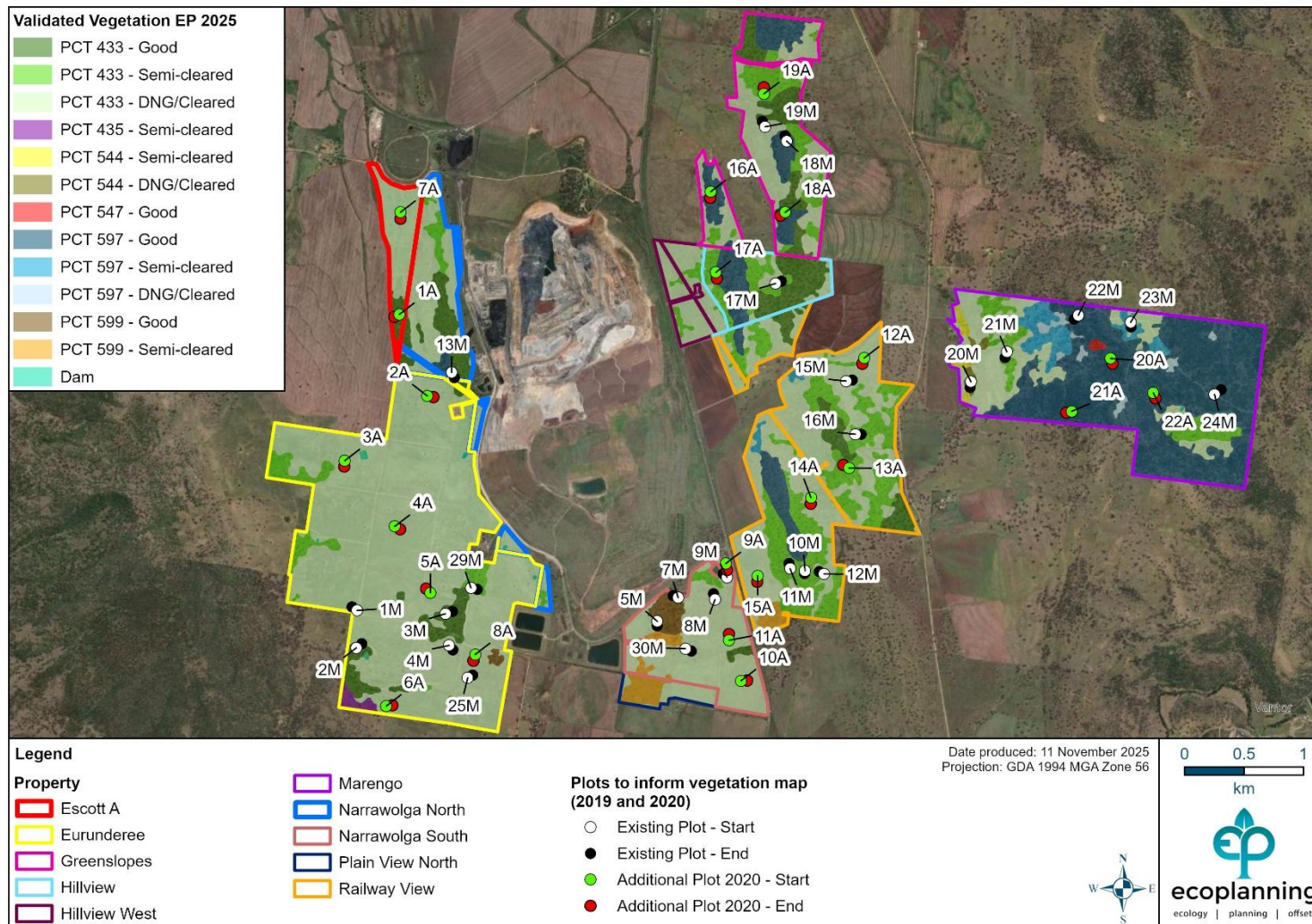


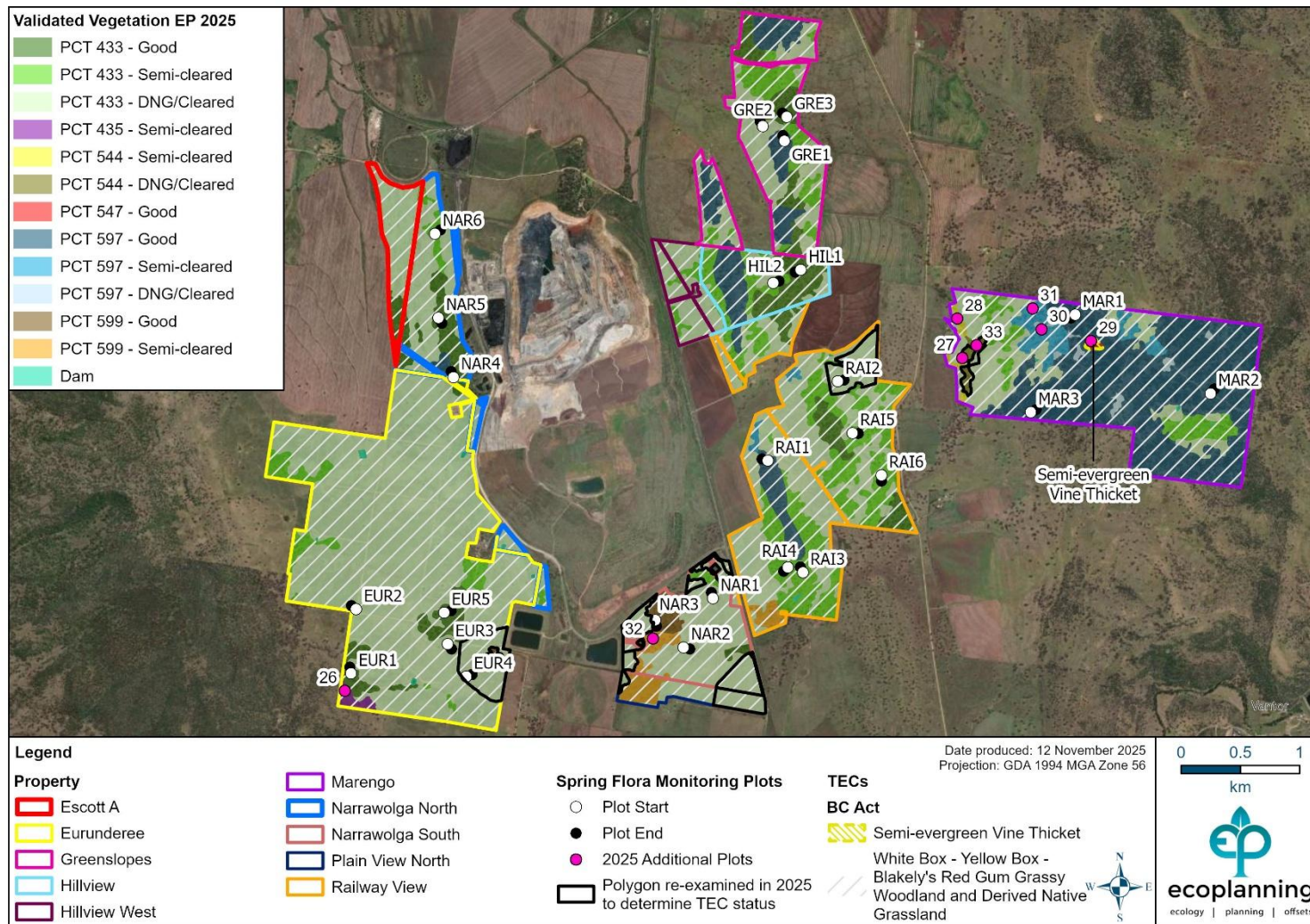
Figure 3.2: Great Soil Group (DPIE 2021).





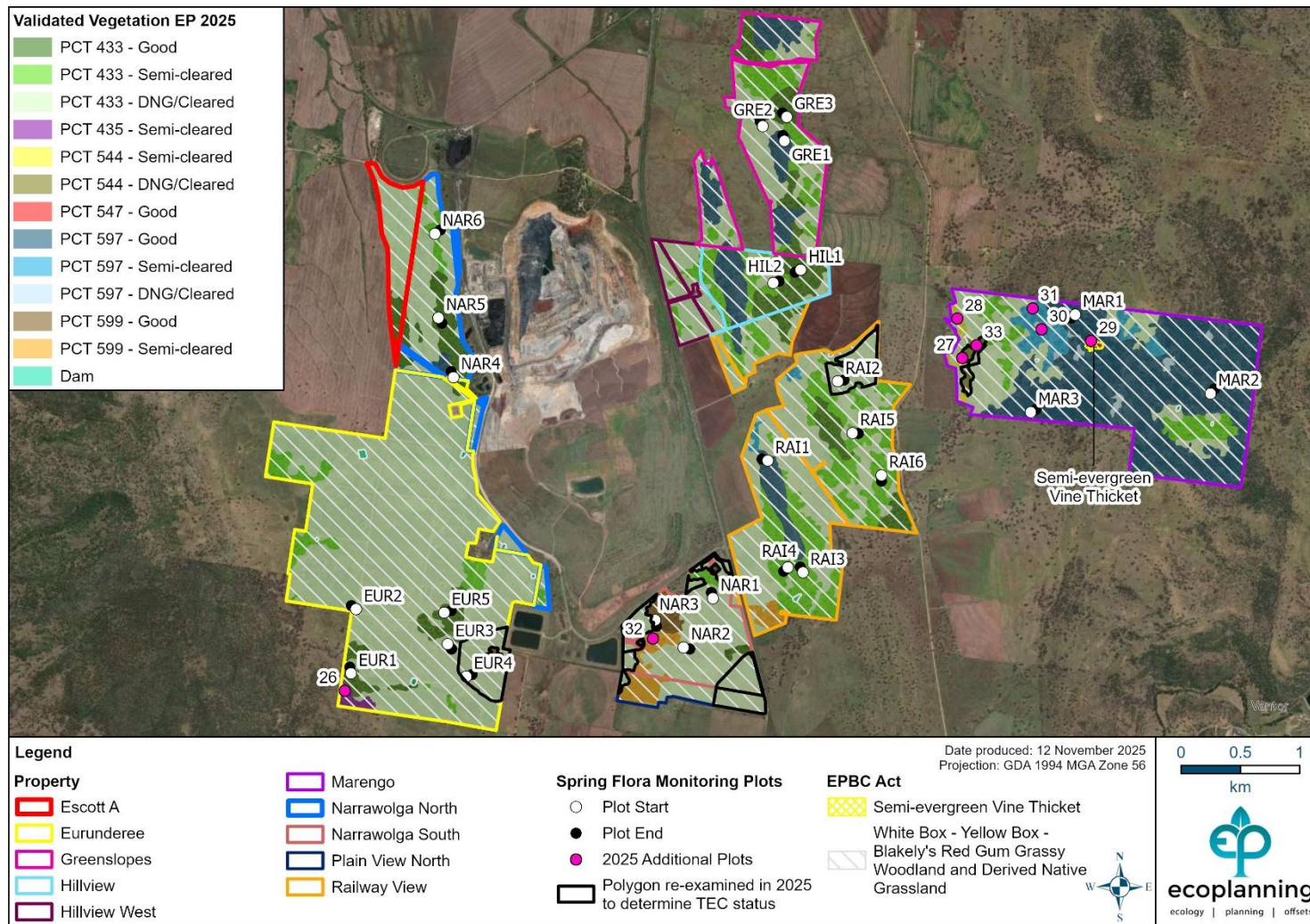
**Figure 3.3: Plant Community Types and condition classes within the Revised Biodiversity Offset Area. Plots used to inform the vegetation map, undertaken in 2019 (M = monitoring) and 2020 (A = additional), are displayed.**





**Figure 3.4:** Threatened Ecological Communities (TECs) listed under the BC Act within the Revised Biodiversity Offset Area. Plots to inform the TEC map are displayed, including Spring Flora Monitoring Plots and additional plots undertaken in 2025.





**Figure 3.5: Threatened Ecological Communities (TECs) listed under the EPBC Act within the Revised Biodiversity Offset Area. Plots to inform the TEC map are displayed, including Spring Flora Monitoring Plots and additional plots undertaken in 2025.**



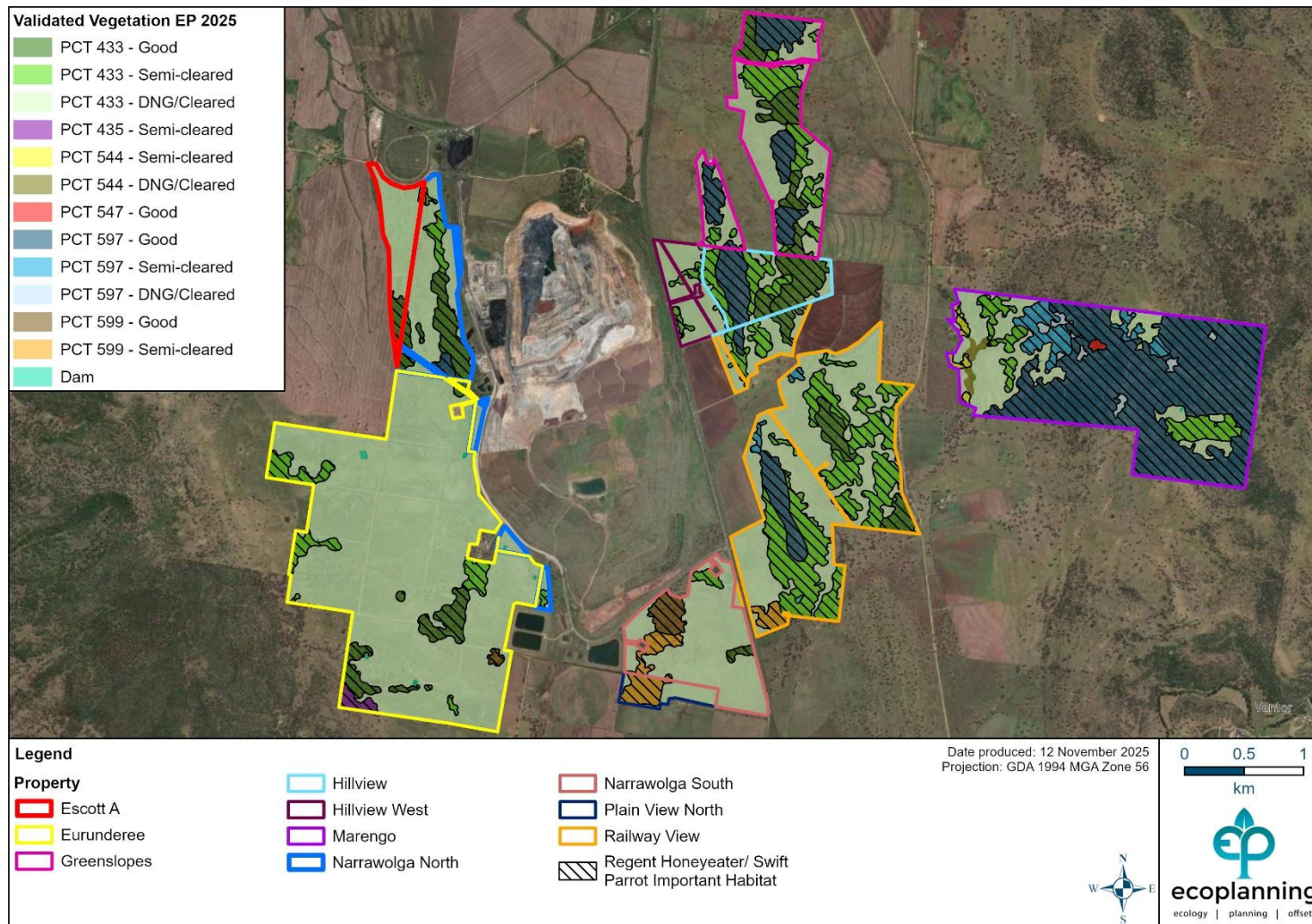


Figure 3.6: Swift Parrot and Regent Honeyeater Habitat within the Revised Biodiversity Offset Area.

**Table 3-4: Plant community types (PCTs) and condition classes found within the revised Werris Creek BOA.**

| PCT no. | PCT Name                                                                                                                                                                 | Superseded Condition Class | New Condition Class | TEC              |                  | Regent Honeyeater/<br>Swift Parrot habitat | Area (ha)* |
|---------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------|------------------|------------------|--------------------------------------------|------------|
|         |                                                                                                                                                                          |                            |                     | BC Act           | EPBC Act         |                                            |            |
| 433     | White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion                                                   | Class 4 Woodland           | Good                | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 95.42      |
|         |                                                                                                                                                                          |                            | Semi-cleared        | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 176.98     |
|         |                                                                                                                                                                          | Class 3a DNG               | DNG/Cleared         | Yes <sup>1</sup> | Yes <sup>1</sup> | No                                         | 731.05     |
|         |                                                                                                                                                                          | Class 3b DNG               |                     | Yes <sup>1</sup> | No               | No                                         | 4.76       |
|         |                                                                                                                                                                          | Class 1 Cleared Land       |                     | No               | No               | No                                         | 0.73       |
| 435     | White Box – White Cypress Pine shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion                                                    | Class 4 Woodland           | Semi-cleared        | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 3.72       |
| 544     | Rough-barked Apple – White Cypress Pine – Blakely's Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion                | Class 4 Woodland           | Semi-cleared        | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 3.95       |
|         |                                                                                                                                                                          | Class 3b DNG               | DNG/Cleared         | Yes <sup>1</sup> | No               | No                                         | 1.58       |
|         |                                                                                                                                                                          | Class 1 Cleared Land       | DNG/Cleared         | No               | No               | No                                         | 2.03       |
| 547     | Wild Quince – Mock Olive – Rusty Fig – Iamboto - Sweet Pittosporum dry rainforest of rocky and scree areas of the Nandewar Bioregion and New England Tableland Bioregion | Class 4 Woodland           | Good                | Yes <sup>2</sup> | Yes <sup>3</sup> | No                                         | 1.00       |

| PCT no.           | PCT Name                                                                                                                                                  | Superseded Condition Class | New Condition Class | TEC              |                  | Regent Honeyeater/<br>Swift Parrot habitat | Area (ha)*       |
|-------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------|------------------|------------------|--------------------------------------------|------------------|
|                   |                                                                                                                                                           |                            |                     | BC Act           | EPBC Act         |                                            |                  |
| 597               | White Box - cypress pine - Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion | Class 4 Woodland           | Good                | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 245.53           |
|                   |                                                                                                                                                           |                            | Semi-cleared        | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 21.02            |
|                   |                                                                                                                                                           | Class 3a DNG               | DNG/Cleared         | Yes <sup>1</sup> | Yes <sup>1</sup> | No                                         | 5.34             |
| 599               | Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion                        | Class 4 Woodland           | Good                | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 9.58             |
|                   |                                                                                                                                                           |                            | Semi-cleared        | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                        | 10.75            |
| NA                | Non PCT - Dam                                                                                                                                             | NA                         |                     | NA               | NA               | No                                         | 1.99             |
| <b>TOTAL AREA</b> |                                                                                                                                                           |                            |                     |                  |                  |                                            | <b>1,315.44*</b> |

\*subject to rounding errors, <sup>1</sup> White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland, <sup>2</sup> Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions, <sup>3</sup> Semi-evergreen Vine Thickets of the Brigalow Belt Bioregions (North and South)

**Table 3-5: Plant community types (PCTs) and condition classes found within the Werris Creek Compensatory Revegetation areas (Escott A, Hillview West/ Infrastructure and Plain View North).**

| PCT no.           | PCT Name                                                                                                                           | Superseded Condition Class | New Condition Class | TEC              |                  | Regent Honeyeater/ Swift Parrot habitat | Area (ha)     |
|-------------------|------------------------------------------------------------------------------------------------------------------------------------|----------------------------|---------------------|------------------|------------------|-----------------------------------------|---------------|
|                   |                                                                                                                                    |                            |                     | BC Act           | EPBC Act         |                                         |               |
| 433               | White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion             | Class 4 Woodland           | Good                | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 4.47          |
|                   |                                                                                                                                    |                            | Semi-cleared        | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 5.09          |
|                   |                                                                                                                                    | Class 3a DNG               | DNG/Cleared         | Yes <sup>1</sup> | Yes <sup>1</sup> | No                                      | 58.76         |
| 599               | Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion | Class 4 Woodland           | Semi-cleared        | Yes <sup>1</sup> | Yes <sup>1</sup> | Yes                                     | 7.71          |
| <b>TOTAL AREA</b> |                                                                                                                                    |                            |                     |                  |                  |                                         | <b>76.03*</b> |

\*subject to rounding errors, <sup>1</sup>White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland

## 3.2 Vegetation descriptions

Vegetation descriptions are to replace the previous descriptions in Section 4.5 of Werris Creek BOMP (WHC 2013).

### 3.2.1 PCT 433: White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion

This community has been mapped in areas of open woodland dominated by *Eucalyptus albens* (White Box), with *Eucalyptus melliodora* (Yellow Box) and *Brachychiton populneus* (Kurrajong) occasionally present. The midstorey is absent whilst the understorey consists of a mix of native and introduced species and tends to be dominated by native grasses such as *Dichanthium sericeum* (Queensland Bluegrass), *Aristida ramosa* (Purple Wiregrass), *Aristida leptopoda* (White Speargrass), *Austrostipa aristiglumis* (Plains Grass), *Digitaria divaricatissima* (Umbrella Grass), *Chloris divaricata* var. *divaricata* (Slender Chloris), *Bothriochloa macra* (Red Grass) and *Rytidosperma bipartitum* (Wallaby Grass). A diverse range of native forbs also occur in this community with species such as *Boerhavia dominii* (Tarvine), *Carex inversa*, *Cullen tenax* (Emu Foot), *Mentha satureioides* (Native Pennyroyal), *Oxalis perennans*, *Rhynchosia minima* and *Wahlenbergia communis* (Tufted Bluebell) present.

Previous mapping (ELA 2011) assigned an area in the south-east of Eurunderee to BVT Plains Grass grassland on basaltic black earth soils mainly on the Liverpool Plain and in the Brigalow Belt South Bioregion (see **Figure 1.3**), which would more closely align to PCT 102 (Liverpool Plains grassland mainly on basaltic black earth soils, Brigalow Belt South Bioregion). ELA (2011) relied on the existing vegetation mapping of GCNRC (2004, 2009), contemporising the classification in that document to be consistent with the BVT classification of DECC (2010). However, field survey and plot data collected indicated that this area is not dominated by *Austrostipa aristiglumis* (Plains Grass) and the soil was not found to be consistent with the description of basaltic black earth soils (see **Figure 3.2** and **Figure 3.12**). PCT 433 was considered a more consistent match for this community in regard to soil type and dominant species composition.

Exotic species such as *Cucumis myriocarpus*\*, *Medicago polymorpha*\* (Burr Medic), *Rapistrum rugosum*\* (Turnip Weed), *Sida spinosa*\*, *Silybum marianum*\* (Variegated Thistle), *Urochloa panicoides*\* (Liverseed Grass) and *Xanthium spinosum*\* (Bathurst Burr) are found to varying extents within this community.

Areas of this community within the revised BOA have been mapped into three broad condition classes: Good, Semi-cleared and DNG/Cleared (**Figure 3.7** to **Figure 3.12**).

#### *White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland TEC*

Approximately 1008.21 ha of PCT 433 within the revised BOA conforms to the BC Act listed CEEC White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland. This was determined by an analysis of the landscape position, geographic location and floristic composition of this CEEC. PCT 433 within the revised BOA occupies an undulating to hilly landscape in the Nandewar IBRA bioregion, which is characteristic of this CEEC (NSW TSSC 2020). In addition, several species characteristic of this CEEC were present within areas of PCT 433, including *Ajuga australis*, *Angophora floribunda*,



*Anthosachne scabra*, *Aristida ramosa*, *Austrostipa aristiglumis*, *Asperula conferta*, *Austrostipa scabra*, *Brachychiton populneus*, *Brunoniella australis*, *Bothriochloa macra*, *Bulbine bulbosa*, *Callitris glaucophylla*, *Cheilanthes sieberi*, *Chloris ventricosa*, *Chrysocephalum apiculatum*, *Convolvulus* spp., *Cymbonotus lawsonianus*, *Cymbopogon refractus*, *Desmodium varians*, *Dianella longifolia*, *Dichanthium sericeum*, *Dichopogon fimbriatus*, *Einadia nutans*, *Eucalyptus albens*, *Eucalyptus blakelyi*, *Eucalyptus melliodora*, *Euchiton sphaericus*, *Euphorbia drummondii*, *Galium* spp., *Geranium solanderi*, *Glycine* sp., *Goodenia pinnatifida*, *Hydrocotyle laxiflora*, *Hypericum gramineum*, *Lomandra filiformis*, *Microlaena stipoides*, *Notelaea microcarpa*, *Oxalis perennans*, *Panicum effusum*, *Plantago debilis*, *Poa sieberiana*, *Rumex brownii*, *Rytidosperma racemosum*, *Schoenus apogon*, *Sida corrugata*, *Sporobolus creber*, *Wahlenbergia communis* and *Wahlenbergia luteola*.

PCT 433 within the study area occurs in varying conditions, from good condition to derived native grassland. These areas typically have a projected foliage cover of <30%, with understorey shrubs sparse or absent, corresponding with the final determination (NSW TSSC 2020). As derived native grasslands form part of this community, most areas of PCT 433 within revised BOA conform to the CEEC listing. The exception being 0.73 ha within the DNG/Cleared vegetation zone that has been subject to earthworks as part of erosion remediation.

PCT 433 in good condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover is dominated by *Eucalyptus albens*, with smaller occurrences of *Angophora floribunda*, *Brachychiton populneus* and *Eucalyptus melliodora*.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses.
- Tussock grass species recorded include *Austrostipa aristiglumis*, *Austrostipa scabra*, *Bothriochloa macra*, *Chloris truncata*, *Chloris ventricosa*, *Dichanthium sericeum*, *Microlaena stipoides* var. *stipoides*, and *Rytidosperma* spp.
- Several forb species have been recorded within the vegetation zone (a total of 31 forb species recorded in spring flora monitoring data across the zone in 2024).
- The vegetation zone has an average shrub cover <30% (an average of <0.2% recorded in plot data across the zone in 2024).

PCT 433 in good condition meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1 ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species, and at least one of the understorey species is recognised as 'important'. The vegetation zone may meet condition Class A, however mature tree numbers were not recorded during the surveys.

PCT 433 in semi-cleared condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover is dominated by *Eucalyptus albens*, with smaller occurrences of *Callitris glaucophylla* and *Eucalyptus dealbata*.

- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses
- Tussock grass species recorded include *Austrostipa aristiglumis*, *Austrostipa verticillata*, *Bothriochloa macra*, *Chloris truncata*, *Chloris ventricosa*, *Cymbopogon refractus*, *Dichanthium sericeum* and *Poa sieberiana*
- Several forb species have been recorded within the vegetation zone (a total of 33 forb species recorded in spring flora monitoring data across the zone in 2024)
- The vegetation zone has an average shrub cover <30% (an average of 0.4% recorded in spring flora monitoring data across the zone in 2024)

This vegetation zone meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1 ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species, and at least one of the understorey species is recognised as ‘important’. The vegetation zone may meet condition Class A, however mature tree numbers were not recorded during the surveys.

Areas of PCT 433 DNG/Cleared that did not achieve BC and/or EPBC status for Box Gum Woodland following the 2019/2020 surveys were analysed further to determine whether they may now achieve BC and/or EPBC status for Box Gum Woodland following restoration works. Spring flora monitoring data or a random meander was utilised to determine the current Box Gum Woodland status of these polygons. Polygons occurred on Eurunderee, Narrawolga, Railway View and Marengo (**Figure 3.4** and **Figure 3.5**).

The polygon on Eurunderee (**Figure 3.4** and **Figure 3.5**) was analysed utilising plot data from EUR-4. This polygon previously met BC Act status but did not meet EPBC Act status. This indicated a predominately native groundlayer, one important understorey species, and twelve non-grass native species recorded between 2021 and 2024. It was thereby determined that this polygon was now meeting EPBC status.

Polygons on Narrawolga (**Figure 3.4** and **Figure 3.5**) were analysed utilising a random meander. These polygons previously met BC Act status but did not meet EPBC Act status. Those areas determined to now meet EPBC status recorded a predominately native groundlayer (perennial grass cover >50%), and 16 non-grass species including *Daucus glochidiatus*, *Asperula conferta*, *Rumex brownii*, *Mentha satureioides*, *Dichondra repens*, *Euchiton sphaericus*, *Geranium solanderi*, *Wahlenbergia communis*, *Bulbine* sp., *Oxalis perennans*, *Grona varians*, *Sclerolaena muricata*, *Leiocarpa* sp., *Vittadinia* sp., *Senecio quadridentatus* and *Solanum esuriale*. At least one of the understorey species is recognised as ‘important’. Areas determined to not meet EPBC status did not have a predominately native groundlayer as defined in the conservation advice (Commonwealth DCCEEW 2023) but remained as meeting BC Act status.

The polygon on Railway View (**Figure 3.4** and **Figure 3.5**) was analysed utilising spring flora monitoring data from RAI-2. This polygon previously met BC Act status but did not meet EPBC Act status. The analysis indicated a predominately native groundlayer, one important understorey species, and fifteen non-grass native species recorded between 2021 and 2024. It was thereby determined that this polygon was now meeting both BC Act and EPBC Act status.

The polygon on Marengo (**Figure 3.4** and **Figure 3.5**) was previously analysed during the 2024 field work to validate vegetation because of updated cadastral boundaries. This area had been

subject to earthworks as part of erosion remediation, and as such, does not meet BC Act or EPBC Act status.

Overall, approximately 731.05 ha of PCT 433 in DNG/Cleared condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover is dominated by *Eucalyptus albens* (albeit with a low cover), with smaller occurrences of *Eucalyptus dealbata* and *Eucalyptus melliodora*.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses.
- Tussock grass species recorded include *Austrostipa aristiglumis*, *Austrostipa scabra*, *Bothriochloa macra*, *Chloris truncata*, *Dichanthium sericeum* and *Rytidosperma* spp.
- Several forb species have been recorded within the vegetation zone (a total of 50 forb species recorded across the zone between 2021-2024).
- The vegetation zone has an average shrub cover <30% (an average of <0.1% recorded across the zone in 2024).

Areas of PCT 433 DNG/Cleared that satisfies the EPBC listing meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1 ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species (sampled between 2021 and 2024), and at least one of the understorey species is recognised as 'important'.



**Figure 3.7: PCT 433 (White Box grassy woodland to open woodland) within the Eurunderee Offset.**





**Figure 3.8: PCT 433 (White Box grassy woodland to open woodland) within the Railway View Offset.**



**Figure 3.9: PCT 433 (White Box grassy woodland to open woodland) in DNG/Cleared condition within the Eurunderee offset.**





**Figure 3.10: PCT 433 (White Box grassy woodland to open woodland) in good condition within the Narrawolga offset.**



**Figure 3.11: PCT 433 (White Box grassy woodland to open woodland) in semi-cleared condition within the Narrawolga offset.**





**Figure 3.12:** Soil present in the south-east of Eurunderee, which was previously assigned to BVT *Plains Grass grassland on basaltic black earth soils* but was found to be inconsistent with basaltic black earth soils.

### 3.2.2 PCT 435: White Box – White Cypress Pine shrub grass hills woodland in the BBS and Nandewar Bioregions

This community has been mapped within the footslope of the south-west corner of Eurunderree Offset where *Callitris glaucophylla* (White Cypress Pine) begins to dominant the canopy. The ground cover is similar to PCT 433 as the two communities intergrade, with native grasses including *Dichanthium sericeum*, *Aristida ramosa*, *Austrostipa scabra* (Speargrass), *Austrostipa verticillata* (Slender Bamboo Grass), *Bothriochloa macra* and *Rytidosperma racemosum*. A diverse range of native forbs also occur in this community with species such as *Calotis lappulacea* (Yellow Burr-daisy), *Einadia nutans* (Climbing Saltbush) and *Wahlenbergia communis*.

Areas of this community have been mapped into one broad condition class: Semi-cleared (**Figure 3.13** and **Figure 3.14**).

#### *White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland TEC*

PCT 435 within the revised BOA conforms to the BC Act listed CEEC White Box – Yellow Box –Blakely’s Red Gum Grassy Woodland and Derived Native Grassland. This was determined by an analysis of the landscape position, geographic location and floristic composition of this CEEC. PCT 435 within the revised BOA occupies an undulating to hilly landscape in the Nandewar IBRA bioregion, which is characteristic of this CEEC (NSW TSSC 2020). In addition, several species characteristic of this CEEC were present within areas of PCT 435, including *Aristida ramosa*, *Austrostipa scabra*, *Bothriochloa macra*, *Cheilanthes sieberi*, *Chloris ventricosa*, *Cymbonotus lawsonianus*, *Cymbopogon refractus*, *Einadia nutans*, *Eucalyptus albens*, *Geranium solanderi*, *Hydrocotyle laxiflora*, *Lomandra filiformis*, *Microlaena stipoides*, *Notelaea microcarpa*, *Panicum effusum*, *Sporobolus creber*, *Themeda triandra* and *Wahlenbergia communis*. PCT 435 within the study area occurs in a semi-cleared condition. This area has a projected foliage cover of <30% and a sparse occurrence of understorey shrubs, corresponding with the final determination (NSW TSSC 2020).

PCT 435 in semi-cleared condition in the BOA satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover is dominated by *Eucalyptus albens* and *Callitris glaucophylla*.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses.
- Tussock grass species recorded include *Austrostipa scabra*, *Bothriochloa macra*, *Chloris truncata*, *Chloris ventricosa*, *Cymbopogon refractus*, *Microlaena stipoides* var. *stipoides*, and *Rytidosperma caespitosum*.
- Several forb species have been recorded within the vegetation zone (a total of 15 forb species recorded in plot data within the zone in 2025).
- The vegetation zone has an average shrub cover <30% (an average of 1.1% recorded in plot data within the zone in 2025).



PCT 435 in semi-cleared condition meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species, and at least one of the understorey species is recognised as 'important'. The vegetation zone may meet condition Class A, however mature tree numbers were not recorded during the surveys.



**Figure 3.13: PCT 435 (White Box – White Cypress Pine shrub grass hills woodland) within the Eurunderee Offset.**



**Figure 3.14: PCT 435 (White Box – White Cypress Pine shrub grass hills woodland) within the Eurunderee Offset.**

### 3.2.3 PCT 544: Rough-barked Apple +/- cypress pine +/- Blakely's Red Gum riparian open forest woodland of the Nandewar and New England Tableland Bioregions

PCT 544 has been mapped along the main drainage lines adjacent to the western boundary of the Marengo offset. Where present, the canopy is dominated by *Angophora floribunda* (Rough-barked Apple). Shrubs are sparse with the occasional *Notelaea microcarpa* (Native Olive). Like PCT 433, the groundlayer is dominated by native grasses such as *Aristida ramosa* and *Dichanthium sericeum*, with other groundlayer species present including *Geranium solanderi* (Native Geranium) and *Rumex brownii* (Swamp Dock).

Several exotic species were observed within this PCT, including *Rapistrum rugosum*, *Centaurea solstitialis*\* (St Barnaby's Thistle), *Hypochaeris radicata*\* (Catsear), *Lysimachia arvensis*\*, *Cirsium vulgare*\* (Spear Thistle), *Plantago lanceolata*\* (Lamb's Tongues) and *Silybum marianum*\*.

Areas of this community within the revised BOA have been mapped into two broad condition classes: Semi-cleared and DNG/Cleared (**Figure 3.15** to **Figure 3.17**).

#### *White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC*

Approximately 5.53 ha of PCT 544 within the revised BOA conforms to the BC Act listed CEEC White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland. This was determined by an analysis of the landscape position, geographic location and floristic composition of this CEEC. The PCT comprises a thin corridor dominated by *Angophora floribunda*, restricted to the main drainage channels on Marengo. The vegetation surrounding this area corresponds to PCT 433 and conforms to the BC Act and EPBC listed Box-Gum Woodland. It is considered that although this area is considered a separate PCT and is not dominated by *Eucalyptus albens*, *Eucalyptus melliodora* or *Eucalyptus blakelyi*, it still forms a contiguous part of the larger patch of Box-Gum Woodland that occurs within the revised BOA. It is also possible that diagnostic species such as *Eucalyptus albens*, *Eucalyptus melliodora* or *Eucalyptus blakelyi* previously occurred within the vegetation zone prior to historical clearing (the vegetation zone is in Semi-cleared and DNG/Cleared condition), as these species are listed to occur within PCT 544 (DCCEEW 2025).

Several species characteristic of the BC Act listed CEEC are present within areas of PCT 544, including *Angophora floribunda*, *Aristida ramosa*, *Austrostipa aristiglumis*, *Asperula conferta*, *Austrostipa scabra*, *Brachychiton populneus*, *Bothriochloa macra*, *Chloris ventricosa*, *Dichanthium sericeum*, *Geranium solanderi*, *Hydrocotyle laxiflora*, *Lomandra filiformis*, *Notelaea microcarpa*, *Oxalis perennans*, *Rumex brownii* and *Wahlenbergia communis*. PCT 544 within the study area occurs in varying conditions, from semi-cleared to derived native grassland. These areas typically have a projected foliage cover of <30%, with understorey shrubs sparse or absent, corresponding with the final determination (NSW TSSC 2020). As derived native grasslands form part of this community, most areas of PCT 544 within revised BOA conform to the CEEC listing. The exception being 2.03 ha within the DNG/Cleared vegetation zone that has been subject to earthworks as part of erosion remediation.



PCT 544 in semi-cleared condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover is dominated by *Angophora floribunda*. However, it is contiguous with a larger patch that would have been dominated by *Eucalyptus albens* (PCT 433), however is currently in DNG/Cleared condition.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses (averaged across the zone from 2025 plot data).
- Tussock grass species recorded include *Austrostipa aristiglumis*, *Austrostipa scabra*, *Bothriochloa macra*, *Chloris ventricosa* and *Dichanthium sericeum*.
- Several forb species have been recorded within the vegetation zone (a total of 12 forb species recorded in plot data across the zone in 2025).
- The vegetation zone has an average shrub cover <30% (an average of 1.4% recorded in plot data across the zone in 2025).

PCT 544 in semi-cleared condition meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species, and at least one of the understorey species is recognised as 'important'. The vegetation zone may meet condition Class A, however mature tree numbers were not recorded during the surveys.

Areas of PCT 544 DNG/Cleared that did not achieve BC and/or EPBC status for Box Gum Woodland following the 2019/2020 surveys were analysed further to determine whether they may now achieve BC/EPBC status for Box Gum Woodland following restoration works. As no spring flora monitoring data occurred within these zones, a random meander was utilised to determine the current Box Gum Woodland status of these polygons, situated on Marengo (**Figure 3.4** and **Figure 3.5**). One polygon was previously analysed during the 2024 field work to validate vegetation because of updated cadastral boundaries. This area had been subject to earthworks as part of erosion remediation, and as such, does not meet BC Act or EPBC Act status. The remaining polygon was analysed during a random meander in June 2025. It was determined that this area met BC Act status but did not meet EPBC status as it did not have a predominately native groundlayer as defined in the conservation advice (Commonwealth DCCEEW 2023).



**Figure 3.15: PCT 544 (Rough-barked Apple +/- cypress pine +/- Blakely's Red Gum riparian open forest) in semi-cleared condition within the Marengo Offset.**



**Figure 3.16: PCT 544 (Rough-barked Apple +/- cypress pine +/- Blakely's Red Gum riparian open forest) in semi-cleared condition within the Marengo Offset.**





**Figure 3.17: PCT 544 (Rough-barked Apple +/- cypress pine +/- Blakely's Red Gum riparian open forest) in DNG/Cleared condition within the Marengo Offset. This area has been subject to earthworks and does not conform to BC Act or EPBC Act Box-Gum Woodland.**

### 3.2.4 PCT 547: Wild Quince – Mock Olive – Rusty Fig – lamboto – Sweet Pittosporum dry rainforest of rocky and scree areas of the Nandewar and New England Tablelands Bioregions

This community has been mapped as a small patch in the centre of the Marengo offset along a minor drainage line and contains an assemblage of dry rainforest species that makes it identifiable as a distinctly different community. The canopy species within the patch consist of *Ficus rubiginosa* (Rusty Fig), *Brachychiton populneus* and *Eucalyptus albens*. Shrubs such as *Olearia elliptica* (Sticky Daisy-Bush), *Geijera parviflora* (Wilga) and *Notelaea microcarpa* are present along with vines *Pandorea pandorana* (Wonga Wonga Vine) and *Clematis aristata* (Old Man's Beard). The understorey consists of a mix of ferns and forbs such as *Adiantum aethiopicum* (Common Maidenhair), *Pellaea falcata* (Sickle Fern), *Chrysocephalum apiculatum* (Common Everlasting), *Desmodium brachypodum* (Large Tick-trefoil) and *Scleria mackaviensis*, with a low abundance of grasses such as *Microlaena stipoides* (Weeping Grass) and *Cymbopogon refractus* (Barbed Wire Grass).

Areas of this community within the revised BOA have been mapped as good condition (**Figure 3.18** and **Figure 3.19**) and conform to the BC Act listed EEC, Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions, and the EPBC Act listed EEC, Semi-evergreen Vine Thickets of the Brigalow Belt Bioregions (North and South).





**Figure 3.18: PCT 547 (Wild Quince – Mock Olive – Rusty Fig – Lamboto – Sweet Pittosporum dry rainforest of rocky and scree areas) in good condition the Marengo offset.**



**Figure 3.19: PCT 547 (Wild Quince – Mock Olive – Rusty Fig – Lamboto – Sweet Pittosporum dry rainforest of rocky and scree areas) in good condition the Marengo offset.**



### 3.2.5 PCT 597: White Box – cypress pine – Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion

This community dominates the Marengo offset but also occurs on hillslopes within Eurunderee, Railway View, Hill View and Greenslopes. The canopy is dominated by *Eucalyptus albens*, *Eucalyptus dealbata* (Tumbledown Gum), *Callitris glaucophylla* and occasionally *Eucalyptus crebra* (Narrow-leaved Ironbark). The midstorey ranges from very sparse to moderately dense with species such as *Notelaea microcarpa*, *Bursaria spinosa* (Blackthorn), *Olearia elliptica* and *Pimelea neo-anglica* (Poison Pimelea). The ground layer is extremely diverse with numerous native grasses and forbs such as *Austrostipa scabra*, *Bothriochloa macra*, *Cymbopogon refractus*, *Chloris truncata*, *Chloris ventricosa*, *Poa sieberiana*, *Dichanthium sericeum*, *Digitaria brownii* (Cotton Finger Grass), *Calotis lappulacea*, *Glossocardia bidens*, *Scleria mackaviensis* and *Oxytes brachypoda*.

PCT 597 within the revised BOA has been mapped into three broad condition classes: Good, semi-cleared and DNG/Cleared (**Figure 3.20** to **Figure 3.24**).

#### *White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland TEC*

PCT 597 within the revised BOA conform to the BC Act listed CEEC White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland. This was determined by an analysis of the landscape position, geographic location and floristic composition of this CEEC. PCT 597 within the revised BOA occupies an undulating to hilly landscape in the Nandewar IBRA bioregion, which is characteristic of this CEEC (NSW TSSC 2020). In addition, several species characteristic of this CEEC were present within areas of PCT 597, including *Acacia implexa*, *Ajuga australis*, *Anthosachne scabra*, *Aristida ramosa*, *Asperula conferta*, *Austrostipa scabra*, *Brachychiton populneus*, *Bothriochloa macra*, *Bulbine bulbosa*, *Brunoniella australis*, *Bursaria spinosa*, *Callitris glaucophylla*, *Cheilanthes sieberi*, *Chloris ventricosa*, *Convolvulus* spp., *Cymbonotus lawsonianus*, *Cymbopogon refractus*, *Desmodium varians*, *Dianella longifolia*, *Dichanthium sericeum*, *Dichopogon fimbriatus*, *Eremophila debilis*, *Einadia nutans*, *Eucalyptus albens*, *Euchiton sphaericus*, *Euphorbia drummondii*, *Galium* spp., *Glycine* spp., *Geranium solanderi*, *Hibbertia obtusifolia*, *Hypericum gramineum*, *Hydrocotyle laxiflora*, *Jasminum suavissimum*, *Lomandra filiformis*, *Microlaena stipoides*, *Olearia elliptica*, *Notelaea microcarpa*, *Oxalis perennans*, *Panicum effusum*, *Plantago debilis*, *Poa sieberiana*, *Rostellularia adscendens*, *Rumex brownii*, *Sida corrugata*, *Sporobolus creber*, *Swainsona*, *galegifolia*, *Themeda triandra*, *Wahlenbergia communis*, *Veronica plebeia*, *Wahlenbergia luteola* and *Wurmbea dioica*.

PCT 597 within the study area occurs in varying conditions, from good condition to derived native grassland. These areas typically have a projected foliage cover of <30%, with understorey shrubs sparse, corresponding with the final determination (NSW TSSC 2020). As derived native grasslands form part of this community, all areas of PCT 597 within revised BOA conform to the CEEC listing.

PCT 597 in good condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover is typically dominated by *Eucalyptus albens*, with *Callitris glaucophylla* a co-dominant species. Other tree species occurring at lower densities include *Brachychiton populneus*, *dealbata*, *Eucalyptus crebra* and *Eucalyptus dealbata*.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses.
- Tussock grass species recorded include *Austrostipa scabra*, *Bothriochloa macra*, *Chloris truncata*, *Chloris ventricosa*, *Cymbopogon refractus*, *Dichanthium sericeum*, *Microlaena stipoides* var. *stipoides*, *Poa sieberiana* and *Rytidosperma* spp.
- Several forb species have been recorded within the vegetation zone (a total of 51 forb species recorded in spring flora monitoring data across the zone in 2024).
- The vegetation zone has an average shrub cover <30% (an average of <7% recorded in spring flora monitoring data across the zone in 2024).

PCT 597 in good condition meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species, and at least one of the understorey species is recognised as 'important'. The vegetation zone may meet condition Class A, however mature tree numbers were not recorded during the surveys.

PCT 597 in semi-cleared condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover is dominated by *Eucalyptus albens*, with smaller occurrences of *Brachychiton populneus*.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses.
- Tussock grass species recorded include *Austrostipa scabra*, *Bothriochloa macra*, *Chloris truncata*, *Dichanthium sericeum* and *Microlaena stipoides* var. *stipoides*.
- Several forb species have been recorded within the vegetation zone (a total of 14 forb species recorded in plot data in 2025).
- The vegetation zone has an average shrub cover <30% (1.3% recorded in plot data in 2025).

PCT 597 in semi-cleared condition meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species, and at least one of the understorey species is recognised as 'important'. The vegetation zone may meet condition Class A, however mature tree numbers were not recorded during the surveys.

PCT 597 in DNG/Cleared condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Although the vegetation is a derived native grassland, tree cover would have likely been dominated *Eucalyptus albens*, considering the vegetation zone is surrounded by wooded areas of PCT 597.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses.
- Tussock grass species recorded include *Austrostipa scabra*, *Bothriochloa macra*, *Chloris ventricosa*, *Cymbopogon refractus* and *Dichanthium sericeum*.
- Several forb species have been recorded within the vegetation zone (a total of 20 forb species recorded in plot data in 2025).
- The vegetation zone has an average shrub cover <30% (no shrubs recorded in plot data in 2025).

PCT 597 in DNG/Cleared condition meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species, and at least one of the understorey species is recognised as 'important'.



**Figure 3.20: PCT 597 (White Box – cypress pine – Silver-leaved Ironbark shrub grass open forest / woodland) with an absent midstorey on Railway View.**



**Figure 3.21: PCT 597 (White Box – cypress pine – Silver-leaved Ironbark shrub grass open forest / woodland) on Marengo.**





**Figure 3.22: PCT 597 (White Box – cypress pine – Silver-leaved Ironbark shrub grass open forest / woodland) in good condition on Greenslopes.**



**Figure 3.23: PCT 597 (White Box – cypress pine – Silver-leaved Ironbark shrub grass open forest / woodland) in semi-cleared condition on Marengo.**





**Figure 3.24: PCT 597 (White Box – cypress pine – Silver-leaved Ironbark shrub grass open forest / woodland) in DNG/Cleared condition on Marengo.**

### 3.2.6 PCT 599: Blakely's Red Gum – Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion

This community is mapped in within the Narrawolga offset, south-west corner of the Railway View offset and a patch of the south-east of Eurunderee. It occurs where the canopy is dominated by *Eucalyptus melliodora* (Yellow Box) and *Angophora floribunda*, with the occasional *Eucalyptus blakelyi* (Blakely's Red Gum) occurring on Narrawolga. The midstorey is typically absent. The ground layer is predominantly native with grasses such *Aristida ramosa*, *Chloris truncata* and *Dichanthium sericeum*, and forbs such as *Geranium solanderi*, *Oxalis perennans*, *Glycine tabacina* and *Wahlenbergia communis*.

Exotic flora recorded in this community includes *Centaurea solstitialis*\*, *Lactuca serriola*\* (Prickly Lettuce), *Silybum marianum*\* (Variegated Thistle) and *Rapistrum rugosum*\*.

PCT 599 within the revised BOA have been mapped into two broad condition classes: Good and Semi-cleared (**Figure 3.25** to **Figure 3.28**).

#### *White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland TEC*

PCT 599 within the revised BOA conform to the BC Act listed CEEC White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland. This was determined by an analysis of the landscape position, geographic location and floristic composition of this CEEC. PCT 599 within the revised BOA occupies an undulating to hilly landscape in the Nandewar IBRA bioregion, which is characteristic of this CEEC (NSW TSSC 2020). In addition, several species characteristic of this CEEC were present within areas of PCT 599, including *Angophora floribunda*, *Aristida ramosa*, *Austrostipa aristiglumis*, *Asperula conferta*, *Bothriochloa macra*, *Cymbonotus lawsonianus*, *Dichanthium sericeum*, *Eremophila debilis*, *Einadia nutans*, *Eucalyptus blakelyi*, *Eucalyptus albens*, *Eucalyptus melliodora*, *Euchiton sphaericus*, *Galium* spp., *Geranium solanderi*, *Oxalis perennans*, *Rumex brownii*, *Sida corrugata*, *Sporobolus creber* and *Wahlenbergia communis*. PCT 599 within the study area occurs in varying conditions, from good condition to semi-cleared. These areas typically have a projected foliage cover of <30%, with understorey shrubs sparse to absent, corresponding with the final determination (NSW TSSC 2020).

PCT 599 in good condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover consists of *Angophora floribunda*, *Eucalyptus albens*, and *Eucalyptus melliodora*.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses.
- Tussock grass species recorded include *Austrostipa aristiglumis*, *Bothriochloa macra*, *Chloris truncata* and *Rytidosperma* spp.
- Several forb species have been recorded within the vegetation zone (a total of 18 forb species recorded in spring flora monitoring data between 2021 and 2024).
- The vegetation zone has an average shrub cover <30% (no shrubs recorded in spring flora monitoring data between 2021 and 2024).

PCT 599 in good condition meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species (sampled between 2021 and 2024), and at least one of the understorey species is recognised as 'important'. The vegetation zone may meet condition Class A, however mature tree numbers were not recorded during the surveys.

PCT 599 in semi-cleared condition satisfies the criteria of the approved conservation advice under the EPBC Act (Commonwealth DCCEEW 2023), including the following key diagnostic attributes:

- Occurs within the Nandewar IBRA bioregion.
- Tree cover is dominated by *Eucalyptus blakelyi* and *Eucalyptus melliodora*.
- >50% of the perennial vegetation cover in the ground layer is made up of native species, predominately native grasses.
- Tussock grass species recorded include *Austrostipa aristiglumis*, *Austrostipa verticillata*, *Bothriochloa macra*, *Dichanthium sericeum* and *Rytidosperma* sp.
- Several forb species have been recorded within the vegetation zone (a total of 14 forb species recorded in plot data in 2025).
- The vegetation zone has an average shrub cover <30% (0.1% recorded in plot data in 2025).

PCT 599 in semi-cleared condition meets condition class B of the approved conservation advice (Commonwealth DCCEEW 2023), as the patch is >0.1ha, the groundlayer is predominately native, the understorey contains at least 12 native, non-grass species, and at least one of the understorey species is recognised as 'important'. The vegetation zone may meet condition Class A, however mature tree numbers were not recorded during the surveys.





**Figure 3.25: PCT 599 (Blakely's Red Gum – Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion) on Railway View.**



**Figure 3.26: PCT 599 (Blakely's Red Gum – Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion) on Narrawolga.**





**Figure 3.27: PCT 599 (Blakely's Red Gum – Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion) in good condition on Narrawolga.**



**Figure 3.28: PCT 599 (Blakely's Red Gum – Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion) in semi-cleared condition on Narrawolga.**

### 3.3 Summary of Threatened Ecological Communities and habitat for Matters of National Environmental Significance

Five PCTs (433, 435, 544, 597 and 599) mapped within the revised BOA are part of the threatened ecological community White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland listed as a CEEC under the BC Act and the EPBC Act. The revised BOA contains 1,309.69 ha of land meeting the criteria for listing under the BC Act (**Table 3-6**). In addition, 1,303.35 ha meets the listing criteria under the EPBC Act, exceeding the minimum area of 731 ha of White Box – Yellow Box –Blakely's Red Gum Grassy Woodland and Derived Native Grassland required by Condition 2bi of EPBC Approval 2010/5571.

Areas of White Box – Yellow Box – Blakely's Red Gum Grassy Woodland in good and semi-cleared condition are considered to represent suitable habitat for Regent Honeyeater and Swift Parrot, both listed as threatened species under the BC Act and EPBC Act (and Matters of National Environmental Significance). **Table 3-6** shows that the revised BOA contains 566.95 ha of suitable habitat for Regent Honeyeater and Swift Parrot. This exceeds the minimum area of 310.2 ha required by Condition 2bi of EPBC Approval 2010/5571.

The BOA also contains 1 ha of PCT 547 which forms part of Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions, listed as an EEC under the BC Act and part of Semi-evergreen Vine Thickets of the Brigalow Belt Bioregions (North and South) listed as an EEC under the EPBC Act (**Table 3-7**).

In addition, **Table 3-8** shows that the three compensatory revegetation areas, comprising of the Escott A, Hillview West/ Infrastructure and Plain View North properties, contain 76.03 ha of land meeting the criteria for listing under the BC Act and EPBC Act. There is also 17.27 ha of suitable habitat for Regent Honeyeater and Swift Parrot. However, these do not form part of the BOA and are not included in the total area calculations for the RBOS.



**Table 3-6: PCTs mapped within the Werris Creek BOA that meet TEC requirements for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland**

| PCT no.            | PCT Name                                                                                                                                                  | Area of TEC (ha)* |                | Area of Regent Honeyeater/ Swift Parrot habitat (ha)* |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|----------------|-------------------------------------------------------|
|                    |                                                                                                                                                           | BC Act            | EPBC Act       |                                                       |
| 433                | White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion                                    | 1008.21           | 1003.46        | 272.40                                                |
| 435                | White Box – White Cypress Pine shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion                                     | 3.72              | 3.72           | 3.72                                                  |
| 544                | Rough-barked Apple – White Cypress Pine – Blakely's Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion | 5.53              | 3.95           | 3.95                                                  |
| 597                | White Box - cypress pine - Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion | 271.89            | 271.89         | 266.55                                                |
| 599                | Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion                        | 20.33             | 20.33          | 20.33                                                 |
| <b>TOTAL AREA*</b> |                                                                                                                                                           | <b>1309.69</b>    | <b>1303.35</b> | <b>566.95</b>                                         |

\*subject to rounding errors

**Table 3-7: PCTs mapped within the Werris Creek BOA that meet TEC requirements for Semi-evergreen Vine Thicket.**

| PCT no.           | PCT Name                                                                                                                                                                 | Area of TEC (ha)* |             | Area of Regent Honeyeater/ Swift Parrot habitat (ha)* |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|-------------|-------------------------------------------------------|
|                   |                                                                                                                                                                          | BC Act            | EPBC Act    |                                                       |
| 547               | Wild Quince – Mock Olive – Rusty Fig – lamboto - Sweet Pittosporum dry rainforest of rocky and scree areas of the Nandewar Bioregion and New England Tableland Bioregion | 1.00              | 1.00        | N/A                                                   |
| <b>TOTAL AREA</b> |                                                                                                                                                                          | <b>1.00</b>       | <b>1.00</b> | <b>N/A</b>                                            |



**Table 3-8: PCTs mapped within the three compensatory revegetation areas that meet TEC requirements for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland.**

| PCT no.            | PCT Name (PCT number)                                                                                                              | Area of TEC (ha)* |              | Area of Regent Honeyeater/ Swift Parrot habitat (ha)* |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------|-------------------|--------------|-------------------------------------------------------|
|                    |                                                                                                                                    | BC Act            | EPBC Act     |                                                       |
| 433                | White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion             | 68.32             | 68.32        | 9.56                                                  |
| 599                | Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion | 7.71              | 7.71         | 7.71                                                  |
| <b>TOTAL AREA*</b> |                                                                                                                                    | <b>76.03</b>      | <b>76.03</b> | <b>17.27</b>                                          |

\*subject to rounding errors

### 3.4 Comparison to existing approved Biodiversity Offset Strategy and relevant approvals

#### 3.4.1 Offset property area

The current total offset property area for the Werris BOA is outlined in **Table 3-9**. This has been compared to the total offset property area indicated in the 2013 BOS (taken from Table 14 of WHC 2013, shown in **Figure 1.2**) and the requirements under Schedule 3, condition 24 of Project Approval (PA) 10\_0059 (MOD5). The total offset area included in the 2025 RBOS represents a deficit of 4.05 ha of land compared to the approved 2013 BOS, a result of adopting the cadastral survey boundary following comprehensive survey in 2019/20 by Stewart Surveys (SS 2020). Nonetheless, the 2025 RBOS represents a surplus of 27.52 ha compared to the BOS conditioned under Project Approval (PA) 10\_0059 (MOD5) (summarised in Table 12 of the PA).

Through the use of high accuracy cadastral survey aligned to the correct property boundaries; the offset area for Hillview and Narrawolga (Minesite) is now below the minimum PA area. This is because for offset area divestment planning and acceptance by DPHI & DCCEEW as BSAs; the true cadastral property boundaries must be adopted. The previous 2013 RBOS did not follow true cadastral property boundaries but rather created “Mine Site” using the Mining Lease. Notwithstanding, this has now been correctly apportioned to the adjacent Eurunderee, Narrawolga North and Narrawolga South properties. In addition, minor boundary adjustments have resulted in surpluses on the remaining properties, compensating for the “perceived” deficit in the Narrawolga North and South properties. Overall, the combined offset area in the Werris Creek RBOS exceeds the minimum requirements of the NSW PA 10\_0059.

**Table 3-9: Comparison of offset property area between approved 2013 BOS and 2025 RBOS.**

| WCC Offset Property                 | Minimum PA 10_0059 Area (ha) | Approved 2013 BOS (ha) | 2025 RBOS (ha) | Surplus/ Deficit (ha) 2025 vs 2013 | Surplus/ Deficit (ha) 2025 vs minimum PA 10_0059 Area (ha) |
|-------------------------------------|------------------------------|------------------------|----------------|------------------------------------|------------------------------------------------------------|
| Eurunderee                          | 363.93                       | 374.84                 | 413.38         | 38.54                              | 49.45                                                      |
| Greenslopes                         | 123.00                       | 123.94                 | 129.20         | 5.26                               | 6.20                                                       |
| Hillview                            | 57.32                        | 57.87                  | 52.24          | -5.63                              | -5.08                                                      |
| Marengo                             | 284.12                       | 284.69                 | 292.59         | 7.90                               | 8.47                                                       |
| Narrawolga (Mine Site) <sup>1</sup> | 215.86                       | 219.22                 | 0 <sup>1</sup> | -219.22                            | -215.86                                                    |
| Narrawolga North                    | 0 <sup>1</sup>               | 0 <sup>1</sup>         | 73.58          | 73.58                              | 73.58                                                      |

| WCC Offset Property | Minimum PA 10_0059 Area (ha) | Approved 2013 BOS (ha) | 2025 RBOS (ha)  | Surplus/ Deficit (ha) 2025 vs 2013 | Surplus/ Deficit (ha) 2025 vs minimum PA 10_0059 Area (ha) |
|---------------------|------------------------------|------------------------|-----------------|------------------------------------|------------------------------------------------------------|
| Narrawolga South    | 0 <sup>1</sup>               | 0 <sup>1</sup>         | 91.21           | 91.21                              | 91.21                                                      |
| Railway View        | 243.69                       | 258.93                 | 263.23          | 4.30                               | 19.54                                                      |
| <b>TOTAL</b>        | <b>1,287.92</b>              | <b>1,319.49</b>        | <b>1,315.44</b> | <b>-4.05</b>                       | <b>27.52</b>                                               |

\*subject to rounding errors, <sup>1</sup>Since the 2013 RBOS, Narrawolga (Mine Site) has been divided following the original cadastral boundaries between Eurunderee and the geographical splitting of Narrawolga North and Narrawolga South  
Green shading indicates surplus; Red shading indicates deficit.

### 3.4.2 Vegetation communities

A comparison of the approved 2013 BOS BVTs and condition classes to the 2025 RBOS PCTs and condition classes is outlined in **Table 3-10**. Comparisons have been made between equivalent BVTs and PCTs, however where equivalent PCTs were not selected due to low confidence, a closely related PCT has been utilised in the comparison.

Variations in BVT/PCT extent between the 2013 BOS and 2025 RBOS are primarily due to the reassessment of PCTs following field validation in 2019 and 2020. As explained in **Section 3.3** the area previously mapped as 'Plains Grass grassland' was reassessed and found to more closely conform to PCT 433 (White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion), therefore the 2025 RBOS does not contain any areas mapped as the equivalent PCT 102 (Liverpool Plains grassland mainly on basaltic black earth soils, Brigalow Belt South Bioregion).

A reduction in PCT 433 occurred on Marengo, as some large patches in the east of the property were considered to more closely conform to PCT 597 (White Box - cypress pine - Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion). In addition, an area previously mapped as 'Rough-barked Apple riparian forb/grass open forest' was found to be more consistent with PCT 433.

Areas previously mapped as 'White Box - White Cypress Pine shrubby open forest' and 'White Cypress Pine - Silver-leaved Ironbark - Tumbledown Gum shrubby open forest', were both found to conform to PCT 597 (White Box - cypress pine - Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion).

Areas previously mapped as cleared land are now classed as PCT 433. Other areas such as roads and rubbish dumps were removed from within the revised BOA boundary, however dams were still mapped accordingly.

**Table 3-10: Comparison of equivalent (or closely associated) vegetation types (BVT and PCT) and conditions within the approved 2013 BOS and 2025 RBOS.**

| Approved 2013 BOS                                                                                                               |           |                     |                        | 2025 RBOS                                                                                                                                                           |              |                     |                        | PCT Surplus/<br>Deficit (ha) |
|---------------------------------------------------------------------------------------------------------------------------------|-----------|---------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|------------------------|------------------------------|
| BVT                                                                                                                             | Condition | Condition Area (ha) | Total area of BVT (ha) | PCT                                                                                                                                                                 | Condition    | Condition Area (ha) | Total area of PCT (ha) |                              |
| Plains Grass grassland on basaltic black earth soils mainly on the Liverpool Plain in the Brigalow Belt South Bioregion (NA181) | Class 3   | 25.51               | 25.51                  | Associated PCT 102 Liverpool Plains grassland mainly on basaltic black earth soils, Brigalow Belt South Bioregion, is not mapped in the 2025 RBOS.                  |              |                     |                        | -25.51                       |
| White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions (NA226)                                            | Class 4   | 323.56              | 1017.36                | PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion                                    | Good         | 95.42               | 1008.94                | -8.42                        |
|                                                                                                                                 | Class 3a  | 259.27              |                        |                                                                                                                                                                     | Semi-cleared | 176.98              |                        |                              |
|                                                                                                                                 | Class 3b  | 408.67              |                        |                                                                                                                                                                     | DNG/Cleared  | 736.54              |                        |                              |
|                                                                                                                                 | Class 2   | 25.86               |                        |                                                                                                                                                                     |              |                     |                        |                              |
| White Box - White Cypress Pine shrubby open forest of the Nandewar and Brigalow Belt South Bioregions (NA225)                   | Class 4   | 157.40 <sup>1</sup> | 178.14                 | PCT 435 - White Box – White Cypress Pine shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion                                     | Semi-cleared | 3.72                | 3.72                   | -174.42                      |
|                                                                                                                                 | Class 3   | 20.74 <sup>1</sup>  |                        |                                                                                                                                                                     |              |                     |                        |                              |
| Rough-barked Apple riparian forb/grass open forest of the Nandewar Bioregion (NA197)                                            | Class 4   | 0.45                | 3.23                   | PCT 544 - Rough-barked Apple – White Cypress Pine – Blakely’s Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion | Semi-cleared | 3.95                | 7.56                   | 4.33                         |
|                                                                                                                                 | Class 3   | 2.78                |                        |                                                                                                                                                                     | DNG/Cleared  | 3.61                |                        |                              |



| Approved 2013 BOS                                                                                      |           |                     |                        | 2025 RBOS                                                                                                                                                                          |              |                     |                        | PCT Surplus/<br>Deficit (ha) |
|--------------------------------------------------------------------------------------------------------|-----------|---------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|------------------------|------------------------------|
| BVT                                                                                                    | Condition | Condition Area (ha) | Total area of BVT (ha) | PCT                                                                                                                                                                                | Condition    | Condition Area (ha) | Total area of PCT (ha) |                              |
| Rusty Fig - Wild Quince - Native Olive dry rainforest of rocky areas of the Nandewar Bioregion (NA198) | Class 4   | 1.00                | 1.00                   | PCT 547 - Wild Quince – Mock Olive – Rusty Fig – lamboto - Sweet Pittosporum dry rainforest of rocky and scree areas of the Nandewar Bioregion and New England Tableland Bioregion | Good         | 1.00                | 1.00                   | 0.00                         |
| White Cypress Pine - Silver-leaved Ironbark - Tumbledown Gum shrubby open forest (NA229)               | Class 4   | 46.11               | 46.11                  | PCT 597 - White Box - cypress pine - Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion                | Good         | 245.53              | 271.89                 | 225.78                       |
|                                                                                                        |           |                     |                        |                                                                                                                                                                                    | Semi-cleared | 21.02               |                        |                              |
|                                                                                                        |           |                     |                        |                                                                                                                                                                                    | DNG/Cleared  | 5.34                |                        |                              |
| Yellow Box – Blakely's Red Gum grassy woodland of the Nandewar Bioregion (NA237)                       | Class 4   | 8.15                | 8.15                   | PCT 599 - Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion                                       | Good         | 9.58                | 20.33                  | 12.18                        |
|                                                                                                        |           |                     |                        |                                                                                                                                                                                    | Semi-cleared | 10.75               |                        |                              |
| Cleared Land                                                                                           | -         | 39.38               | 39.38                  | Other - Dam                                                                                                                                                                        |              |                     |                        | -38.00                       |
| Other – roads, dams, rubbish dump                                                                      | -         | 0.61                | 0.61                   |                                                                                                                                                                                    | -            | 1.99                | 1.99                   |                              |
| <b>TOTAL*</b>                                                                                          | -         | <b>1,319.49</b>     |                        | -                                                                                                                                                                                  | -            | <b>1,315.44</b>     |                        | <b>-4.05</b>                 |

\*subject to rounding errors, <sup>1</sup> There is a typo in Table 14 (WHC 2013) which switches the values for Class 3 and Class 4 White Box – White Cypress Pine shrubby open forest in Marengo. Corrected in this table, <sup>2</sup> Since the 2013 RBOS, Narrawolga (Mine Site) has been divided following the original cadastral boundaries between Eurunderee and the geographical splitting of Narrawolga North and Narrawolga South.  
Green shading indicates surplus; Red shading indicates deficit.

### 3.4.3 Threatened Ecological Communities and habitat for Matters of National Environmental Significance

The current area of the BC Act and EPBC Act listed CEEC White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland within each property of the Werris BOA is outlined in **Table 3-11**, with comparison made to the 2013 BOS (Table 14 of WHC 2013). Although Table 14 of WHC (2013) does not specify the TEC status of each PCT and/condition class, this has been extrapolated from the document. The Biometric vegetation types associated with Box Gum Woodland TEC within the Werris BOMP (WHC 2013) include:

- White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions
- Yellow Box – Blakely's Red Gum grassy woodland of the Nandewar Bioregion

The Werris BOMP (WHC 2013) indicates that these Box Gum Woodland TEC biometric vegetation types occur as five condition classes within the BOA. From the description of vegetation condition classes provided in Section 4.3 of the BOMP (WHC 2013), the following condition classes and associated TEC status for Box Gum Woodland have been presumed:

- Class 4: BC Act and EPBC Act listed
- Class 3a: BC Act and EPBC Act listed
- Class 3b: BC Act listed
- Class 2: BC Act listed.
- Class 1: Not listed.

The Werris BOMP (WHC 2013) committed White Box Grassy Woodland (Woodland form - Class 4 – 323.56 ha), White Box Grassy Woodland (DNG form - Class 3a = 259.27 ha), and Yellow Box – Blakely's Red Gum grassy woodland (Woodland form – Class 4 = 8.15) which conformed to the EPBC CEEC definition; as well as the other White Box Grassy Woodland (DNG form - Class 3b – 408.67 ha) not conforming to EPBC CEEC definition in 2013. As the Class 3b DNG would be subject to restoration over time, this was expected to conform to EPBC BGW CEEC definition to achieve a total of 999.65 ha of BGW CEEC.

The area of Box Gum Woodland TEC on each property and across the overall BOA has increased since the 2013 BOS. This is due to the reclassification of vegetation mapping from BVT to PCTs, resulting in a revised vegetation and condition map, and an increase in the number of PCTs associated with the Box Gum Woodland TEC. In addition, analysis undertaken in mid-2025 resulted in the status of several polygons updated to meet BC and/or EPBC status for Box Gum Woodland, indicating an improvement in native diversity and groundcover since biodiversity management commenced on the site. Minor updates to the boundaries have also contributed to the change.

Overall, the total area of the BC Act listed Box Gum Woodland CEEC within the Greenslopes offset is 129.20 ha (**Table 3-11**), exceeding the minimum requirement of 74 ha as outlined in Schedule 3 Condition 24 of NSW PA 10\_0059. In addition, the total area of EPBC listed White Box- Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community within the BOA is 1,303.35 ha (**Table 3-11**), exceeding the minimum requirement of 731 ha as outlined in the EPBC 2010/5571 approval.

**Table 3-11: Change in area of Box Gum Woodland TEC between approved 2013 BOS and 2025 RBOS.**

| WCC Offset Property                 | BC Act listed BGW      |                |                       | EPBC Act listed BGW    |                |                       |
|-------------------------------------|------------------------|----------------|-----------------------|------------------------|----------------|-----------------------|
|                                     | Approved 2013 BOS (ha) | 2025 RBOS (ha) | Surplus/ deficit (ha) | Approved 2013 BOS (ha) | 2025 RBOS (ha) | Surplus/ deficit (ha) |
| Eurunderee                          | 339.66                 | 412.12         | 72.46                 | 34.78                  | 412.12         | 377.34                |
| Greenslopes                         | 95.70                  | 129.20         | 33.50                 | 95.7                   | 129.20         | 33.50                 |
| Hillview                            | 52.90                  | 52.24          | -0.66                 | 52.34                  | 52.24          | -0.10                 |
| Marengo                             | 102.32                 | 288.58         | 186.26                | 102.32                 | 286.99         | 184.67                |
| Mine Site (Narrawolga) <sup>1</sup> | 203.20                 | 0 <sup>1</sup> | -203.20               | 93.75                  | 0 <sup>1</sup> | -93.75                |
| Narrawolga North                    | 0 <sup>1</sup>         | 73.44          | 73.44                 | 0 <sup>1</sup>         | 73.44          | 73.44                 |
| Narrawolga South                    | 0 <sup>1</sup>         | 91.21          | 91.21                 | 0 <sup>1</sup>         | 86.51          | 86.51                 |
| Railway View                        | 231.73                 | 262.89         | 31.16                 | 212.09                 | 262.84         | 50.75                 |
| <b>TOTAL *</b>                      | <b>1025.51</b>         | <b>1309.69</b> | <b>284.18</b>         | <b>590.98*</b>         | <b>1303.35</b> | <b>712.37</b>         |

\*subject to rounding errors, <sup>1</sup> Since the 2013 RBOS, Narrawolga (Mine Site) has been divided following the original cadastral boundaries between Eurunderee and the geographical splitting of Narrawolga North and Narrawolga South.

Green shading indicates surplus; Red shading indicates deficit.

\* The 2013 BOS committed a total of 590.98 ha meeting BGW EPBC status in 2013, plus an additional 408.67 ha of Class 3b DNG (not conforming to EPBC BGW definition in 2013), that would be subject to restoration over time and expected to meet EPBC BGW status in the future.

Wooded areas of White Box – Yellow Box – Blakely's Red Gum Grassy Woodland are considered to represent suitable habitat for Regent Honeyeater and Swift Parrot, both listed as threatened species under the BC Act and EPBC Act (and Matters of National Environmental Significance). A comparison between the 2013 BOS and 2025 RBOS of suitable habitat for Regent Honeyeater and Swift Parrot is outlined in **Table 3-12**. The area of suitable habitat within the 2013 BOS includes vegetation communities meeting White Box – Yellow Box – Blakely's Red Gum Grassy Woodland TEC and in Class 4 condition. This has been extrapolated from the descriptions provided in Section 8.2 and Table 14 of the Werris BOMP (WHC 2013). The 2025 RBOS calculates suitable habitat as White Box – Yellow Box – Blakely's Red Gum Grassy Woodland TEC in good and semi-cleared condition.

The area of suitable habitat for Regent Honeyeater and Swift Parrot has increased since the 2013 BOS due to of the reclassification of vegetation communities, and an increase in the number of PCTs associated with the White Box – Yellow Box – Blakely's Red Gum Grassy



Woodland TEC. Overall, the total area of suitable habitat for Regent Honeyeater and Swift Parrot is 566.95 ha, exceeding the minimum area of 310.2 ha required by Condition 2bi of EPBC Approval 2010/5571.

**Table 3-12: Comparison of suitable habitat for Swift Parrot and Regent Honeyeater within the approved 2013 BOS and 2025 RBOS.**

| Approved 2013 BOS                                                                                             |           |                                                | 2025 RBOS                                                                                                                                                           |              |                     |                                                | Suitable habitat surplus/ deficit (ha) |
|---------------------------------------------------------------------------------------------------------------|-----------|------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|------------------------------------------------|----------------------------------------|
| BVT                                                                                                           | Condition | Total area of suitable habitat within BVT (ha) | PCT                                                                                                                                                                 | Condition    | Condition Area (ha) | Total area of suitable habitat within PCT (ha) |                                        |
| White Box grassy woodland of the Nandewar and Brigalow Belt South Bioregions (NA226)                          | Class 4   | 323.56                                         | PCT 433 - White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion                                    | Good         | 95.42               | 272.40                                         | -51.16                                 |
|                                                                                                               |           |                                                |                                                                                                                                                                     | Semi-cleared | 176.98              |                                                |                                        |
| White Box - White Cypress Pine shrubby open forest of the Nandewar and Brigalow Belt South Bioregions (NA225) | Class 4   | 157.40 <sup>1</sup>                            | PCT 435 - White Box – White Cypress Pine shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion                                     | Semi-cleared | 3.72                | 3.72                                           | -153.68                                |
| Rough-barked Apple riparian forb/grass open forest of the Nandewar Bioregion (NA197)                          | N/A       | N/A                                            | PCT 544 - Rough-barked Apple – White Cypress Pine – Blakely's Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion | Semi-cleared | 3.95                | 3.95                                           | 3.95                                   |
| White Cypress Pine - Silver-leaved Ironbark - Tumbledown                                                      | N/A       | N/A                                            | PCT 597 - White Box - cypress pine - Silver-leaved Ironbark shrub                                                                                                   | Good         | 245.53              | 266.55                                         | 266.55                                 |

| Approved 2013 BOS                                                                |           |                                                | 2025 RBOS                                                                                                                                    |              |                     |                                                | Suitable habitat surplus/ deficit (ha) |
|----------------------------------------------------------------------------------|-----------|------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|--------------|---------------------|------------------------------------------------|----------------------------------------|
| BVT                                                                              | Condition | Total area of suitable habitat within BVT (ha) | PCT                                                                                                                                          | Condition    | Condition Area (ha) | Total area of suitable habitat within PCT (ha) |                                        |
| Gum shrubby open forest (NA229)                                                  |           |                                                | grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion                                            | Semi-cleared | 21.02               |                                                |                                        |
| Yellow Box – Blakely's Red Gum grassy woodland of the Nandewar Bioregion (NA237) | Class 4   | 8.15                                           | PCT 599 - Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion | Good         | 9.58                | 20.33                                          | 12.18                                  |
|                                                                                  |           |                                                |                                                                                                                                              | Semi-cleared | 10.75               |                                                |                                        |
| <b>TOTAL*</b>                                                                    | -         | <b>489.11</b>                                  | -                                                                                                                                            | -            | -                   | <b>566.95</b>                                  | <b>77.84</b>                           |

\*subject to rounding errors, <sup>1</sup> There is a typo in Table 14 (WHC 2013) which switches the values for Class 3 and Class 4 White Box – White Cypress Pine shrubby open forest in Marengo. Corrected values applied in this table.

Green shading indicates surplus; Red shading indicates deficit.

## 4 Conclusion

### 4.1 Justification for Revised Biodiversity Offset Strategy

The RBOS was prepared to incorporate several key updates affecting the boundaries and classification of vegetation since the previous BOS (WHC 2013), specifically:

- Exclusion of all rehabilitation areas;
- Exclusion of Crown Road reserves and easements;
- Updates to cadastral boundaries, following completion of high accuracy boundary definition survey;
- Update of vegetation mapping from BVT to PCTs;
- Update of condition class categories; and
- Improvement in vegetation condition following biodiversity restoration works.

### 4.2 Discussion and summary reconciliation of outcomes

Extensive fieldwork and desktop analyses was undertaken to update vegetation mapping to PCTs and inform the RBOS, which is to accompany a revised Offset Management Plan (OMP). It was found that nMDS and cluster analysis, undertaken for the purpose of aligning PCTs to BioMetric plots, was generally uninformative due to PCT datasets clustering together. PCT allocation was therefore not based on nMDS and cluster analysis but rather site descriptions (that included dominant canopy species) used in conjunction with plot data and ArcGIS mapping of site contours and Great Soil Groups (GSGs).

Vegetation conditions for each PCT were updated within this version of the RBOS to reflect the three broad condition classes utilised in the FMPP, which standardises flora monitoring (including condition classification) across all WHC BOAs. This will also standardise the vegetation conditions utilised in any future BSSARs.

The RBOS identified six PCTs occurring within the Werris Creek revised BOA:

- White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion (433)
- White Box – White Cypress Pine shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion (435)
- Rough-barked Apple – White Cypress Pine – Blakely's Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion (544)
- Wild Quince – Mock Olive – Rusty Fig – lamboto - Sweet Pittosporum dry rainforest of rocky and scree areas of the Nandewar Bioregion and New England Tableland Bioregion (547)
- White Box - cypress pine - Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion (597)
- Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion (599)

All PCTs form part of a threatened ecological community.

The 2025 RBOS indicates 1,315.44 ha of land to be managed in accordance with the revised Werris OMP (in preparation). The total offset area included in the 2025 RBOS represents a



deficit of 4.05 ha of land compared to the approved 2013 BOS, a result of adopting the cadastral survey boundary following comprehensive survey in 2019/20 by Stewart Surveys (SS 2020). Nonetheless, the 2025 RBOS represents a surplus of 27.52 ha compared to the BOS conditioned under Project Approval (PA) 10\_0059 (MOD5) (summarised in Table 12 of the PA).

The 2025 RBOS demonstrates the total area of EPBC listed White Box- Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland Ecological Community within the BOA is 1,303.35 ha, exceeding the minimum requirement of 731 ha as outlined in the EPBC 2010/5571 approval. In addition, the total area of the BC Act listed Box Gum Woodland CEEC within the Greenslopes offset is 129.20 ha, exceeding the minimum requirement of 74 ha as outlined in Schedule 3 Condition 24 of NSW PA 10\_0059.

The area of suitable habitat for Regent Honeyeater and Swift Parrot has increased since the 2013 BOS due to of the reclassification of vegetation communities, and an increase in the number of PCTs associated with the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland TEC. Overall, the total area of suitable habitat for Regent Honeyeater and Swift Parrot is 566.95 ha, exceeding the minimum area of 310.2 ha required by Condition 2bi of EPBC Approval 2010/5571.

In addition, two PCTs were identified within the WCCM Compensatory Revegetation Area that are classified into two broad condition states for a total area of 76.03 ha; of which all meets the criteria for listing as TECs under the BC Act and EPBC Act. Further 17.27 ha of suitable habitat for Regent Honeyeater and Swift Parrot is present in the WCCM Compensatory Revegetation Area. The WCCM Compensatory Revegetation Area does however not form part of the BOA and are not included in the total area calculations for the RBOS.

## References

- Australian Bureau of Meteorology (BOM) (2025). Climate Data Online- Monthly rainfall (Quirindi Post Office). Accessed at: [http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p\\_nccObsCode=139&p\\_display\\_type=ataFile&p\\_startYear=&p\\_c=&p\\_stn\\_num=055049](http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=ataFile&p_startYear=&p_c=&p_stn_num=055049)
- Australian Bureau of Meteorology (BOM) (2020). Climate Data Online- Monthly rainfall (Gunnedah Pool). Accessed at: [http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p\\_nccObsCode=139&p\\_display\\_type=ataFile&p\\_startYear=&p\\_c=&p\\_stn\\_num=055023](http://www.bom.gov.au/jsp/ncc/cdio/weatherData/av?p_nccObsCode=139&p_display_type=ataFile&p_startYear=&p_c=&p_stn_num=055023)
- Benson, J.S., Richards, P.G., Waller, S., & Allen C.B. (2010). New South Wales Vegetation Classification and Assessment: Part 3 Plant communities of the NSW Brigalow Bet South, Nandewar and west New England Bioregions and update of NSW Western Plains and South-western Slopes plant communities, Version 3 of the NSWVCA database, Cunninghamia. 11(4): 457-579
- Clarke, K.R., Gorley, R.N. (2006). Primer v6: User manual – tutorial. Plymouth Marine Laboratory, United Kingdom
- Eco Logical Australia (ELA) (2011). WerrisCreek\_Vegetation\_ELA2011.shp
- Eco Logical Australia (ELA) (2010) Biodiversity Impact Assessment for Werris Creek Coal Mine Life of Mine Project. Prepared by: EcoLogical Australia Pty Ltd Specialist Consultant Studies Compendium Volume 2, Part 5
- GCNRC (2004), Flora Assessment for the Proposed Werris Creek Coal Mine. Prepared on behalf of Werris Creek Coal Pty Limited - Part 4 of the Specialist Consultant Studies Compendium. Geoff Cunningham Natural Resource Consultants Pty Ltd
- GCNRC (2009), Flora Assessment for the Proposed Modification to the Werris Creek Coal Mine. Prepared on behalf of Werris Creek Coal Pty Limited - Part 4 of the Specialist Consultant Studies Compendium. Geoff Cunningham Natural Resource Consultants Pty Ltd.
- NSW Department of Environment and Climate Change (DECC) (2008). BioBanking Assessment Methodology
- NSW Department of Finance and Services (DFS) (2020). Cadastral and Imagery Data for Liverpool Plains Accessed at: <https://maps.six.nsw.gov.au>
- NSW Department of Climate Change, Energy, Environment and Water (DCCEEW) (2025). BioNet Vegetation Classification. Accessed at: <https://vegetation.bionet.nsw.gov.au>
- NSW Threatened Species Scientific Committee (NSW TSSC) (2020). White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland - Critically Endangered Ecological Community listing. Accessed at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2020/white-box-yellow-box-critically-endangered-ecological-community-listing>



NSW Threatened Species Scientific Committee (NSW TSSC) (2011). Semi-evergreen Vine Thicket in the Brigalow Belt South and Nandewar Bioregions - Determination to make a minor amendment to Part 3 of Schedule 1 of the Threatened Species Conservation Act. Accessed at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations/2011-2012/semi-evergreen-vine-thicket-in-the-brigalow-belt-south-minor-amendment-determination>

Commonwealth Department of Climate Change, Energy, the Environment and Water (Commonwealth DCCEEW) (2023). *Conservation Advice for the White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*. Accessed at: <http://www.environment.gov.au/biodiversity/threatened/communities/pubs/43-conservation-advice.pdf>.

Threatened Species Scientific Committee (TSSC) (2006). Commonwealth Listing Advice on White Box -Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland. Department of Environment, Climate Change and Water NSW, Sydney. Accessed at: <http://www.environment.gov.au/biodiversity/threatened/recovery-plans/white-box-yellow-box-blakelys-red-gum-grassy-woodland-and-derived-native-grassland-national>

Werris Creek Coal (WCC) (2008). Statement of Environmental Effects

Whitehaven Coal (WHC) (2018). S88E Covenants – Group 6 Restriction

Whitehaven Coal (WHC) (2013). Biodiversity and Offset Management Plan. Prepared by Eco Logical Australia and Werris Creek Coal staff on behalf of Werris Creek Coal Pty Ltd

## Appendix A Candidate Plant Community Types (PCTs)

| PCT no. | PCT Common Name                                                                                                                                                                        |
|---------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 102     | Liverpool Plains grassland mainly on basaltic black earth soils, Brigalow Belt South Bioregion                                                                                         |
| 281     | Rough-Barked Apple - red gum - Yellow Box woodland on alluvial clay to loam soils on valley flats in the northern NSW South Western Slopes Bioregion and Brigalow Belt South Bioregion |
| 381     | Rough-barked Apple - Yellow Box grass/shrub footslope open forest, Brigalow Belt South Bioregion                                                                                       |
| 433     | White Box grassy woodland to open woodland on basalt flats and rises in the Liverpool Plains sub-region, BBS Bioregion                                                                 |
| 435     | White Box - White Cypress Pine shrub grass hills woodland in the Brigalow Belt South Bioregion and Nandewar Bioregion                                                                  |
| 437     | Yellow Box grassy woodland on lower hillslopes and valley flats in the southern NSW Brigalow Belt South Bioregion                                                                      |
| 506     | Black Cypress Pine - White Box - Tumbledown Gum shrubby open forest / woodland mainly in the Mt Kaputar region, Nandewar Bioregion                                                     |
| 509     | Blakely's Red Gum - White Cypress Pine - Rough-barked Apple grassy open forest of drainage lines of the northern Nandewar Bioregion and New England Tableland Bioregion                |
| 544     | Rough-barked Apple - White Cypress Pine - Blakely's Red Gum riparian open forest / woodland of the Nandewar Bioregion and New England Tableland Bioregion                              |
| 547     | Wild Quince - Mock Olive - Rusty Fig - Lamboto - Sweet Pittosporum dry rainforest of rocky and scree areas of the Nandewar Bioregion and New England Tableland Bioregion               |
| 562     | Tumbledown Red Gum - White Cypress Pine - Caley's Ironbark shrubby open forest of the Nandewar Bioregion and western New England Tableland Bioregion                                   |
| 563     | White Box - Silvertop Stringybark +/- White Cypress Pine grass shrub open forest of the southern Nandewar Bioregion and New England Tableland Bioregion                                |
| 588     | White Box - White Cypress Pine shrubby hills open forest mainly in the Nandewar Bioregion                                                                                              |
| 589     | White Box - White Cypress Pine - Silver-leaved Ironbark grassy woodland on mainly clay loam soils on hills mainly in the Nandewar Bioregion                                            |



| PCT no. | PCT Common Name                                                                                                                                           |
|---------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| 590     | White Box grassy woodland on the Inverell basalts mainly in the Nandewar Bioregion                                                                        |
| 591     | White Box shrubby open forest on hills mainly in the Nandewar Bioregion                                                                                   |
| 594     | Silver-leaved Ironbark - White Cypress Pine shrubby open forest of Brigalow Belt South Bioregion and Nandewar Bioregion                                   |
| 596     | Tumbledown Red Gum - White Cypress Pine - Silver-leaved Ironbark shrubby woodland mainly in the northern Nandewar Bioregion                               |
| 597     | White Box - cypress pine - Silver-leaved Ironbark shrub grass open forest / woodland of the northern Brigalow Belt South Bioregion and Nandewar Bioregion |
| 599     | Blakely's Red Gum - Yellow Box grassy tall woodland on flats and hills in the Brigalow Belt South Bioregion and Nandewar Bioregion                        |

## Appendix B Detailed PCT mapping

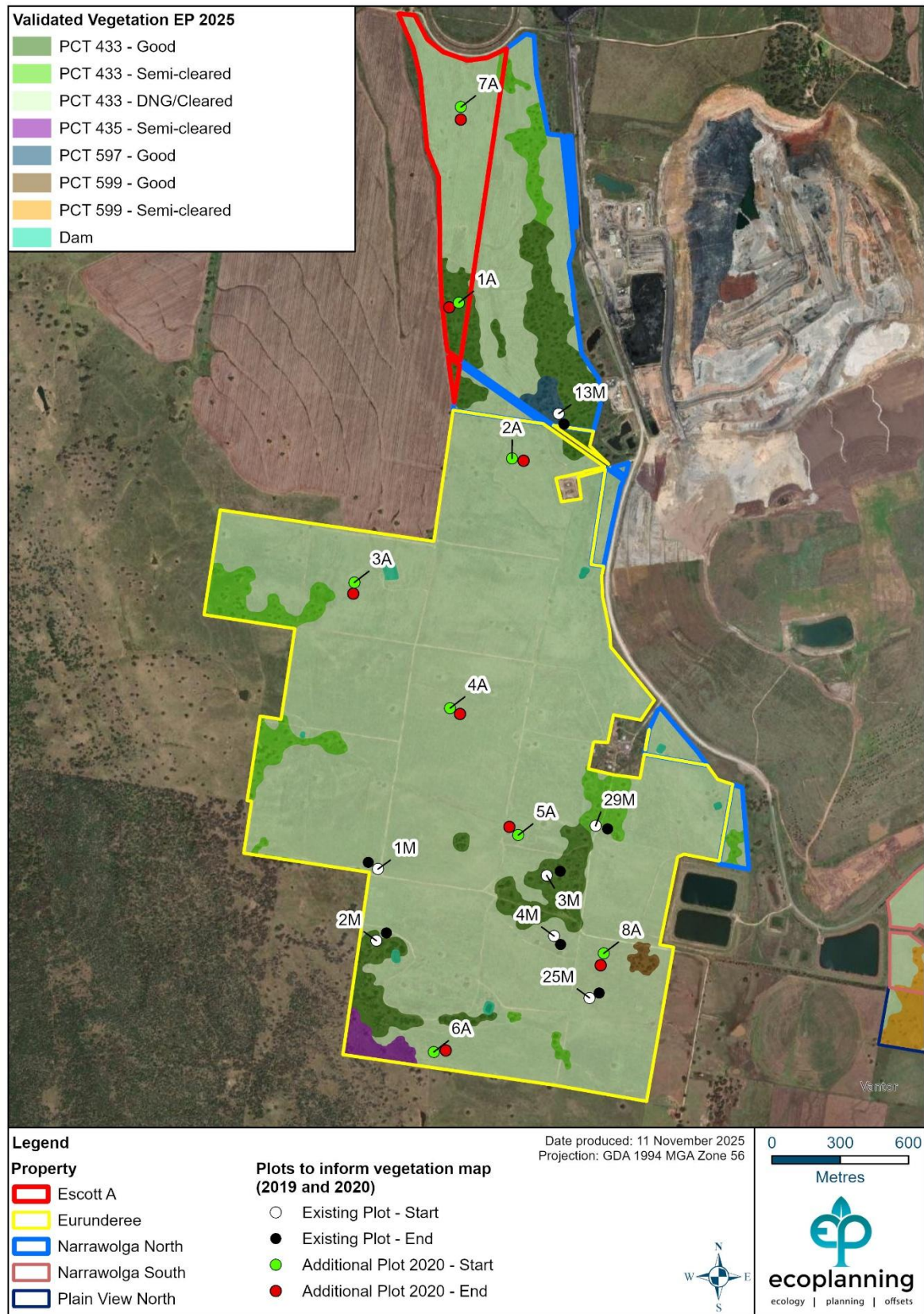


Figure A- 1: Plant Community Type (PCT) mapping for Escott A, Eurunderee and Narrawolga North.



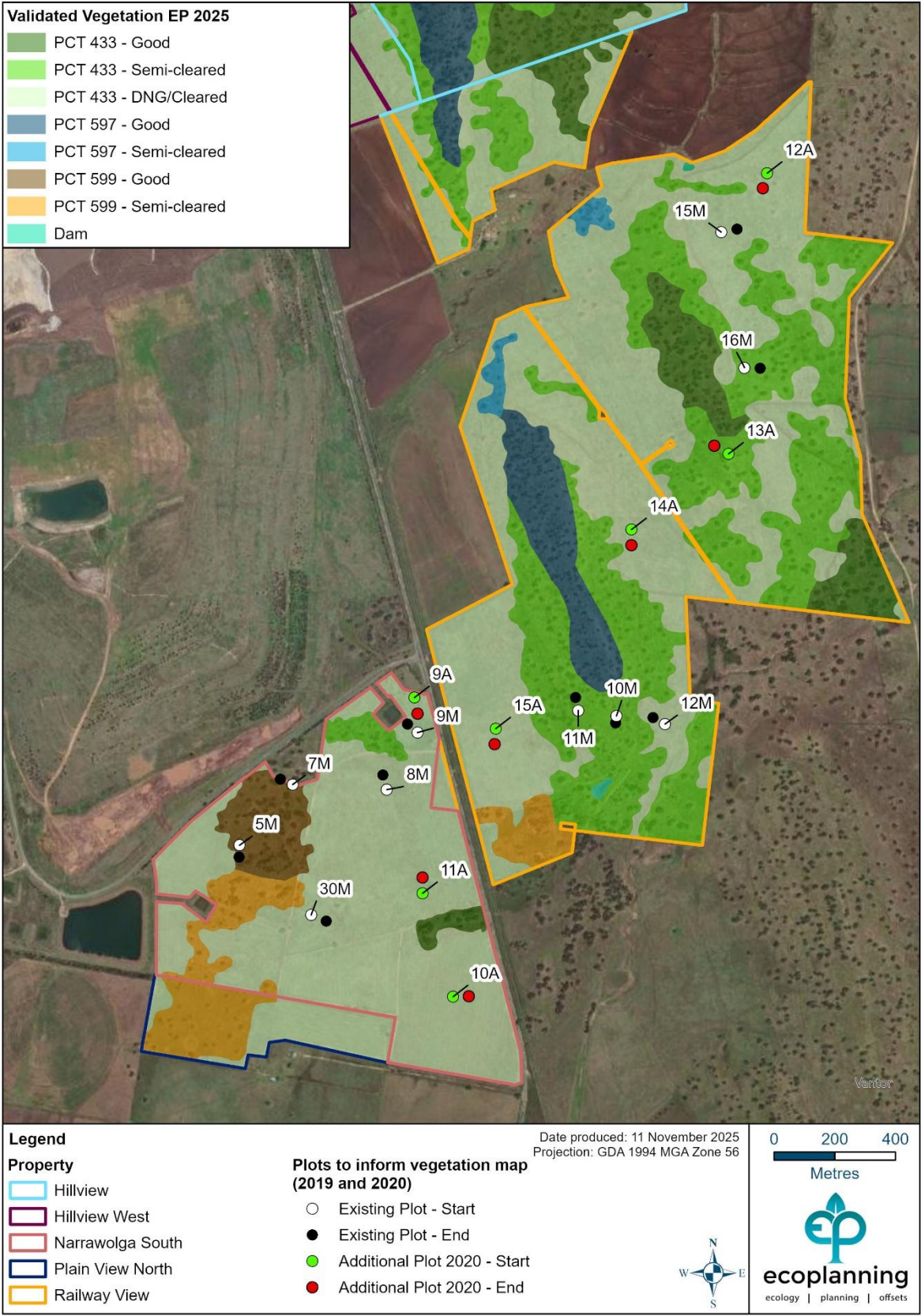


Figure A- 2: Plant Community Type (PCT) mapping for part Narrawolga South, Railway View and Plain View North.



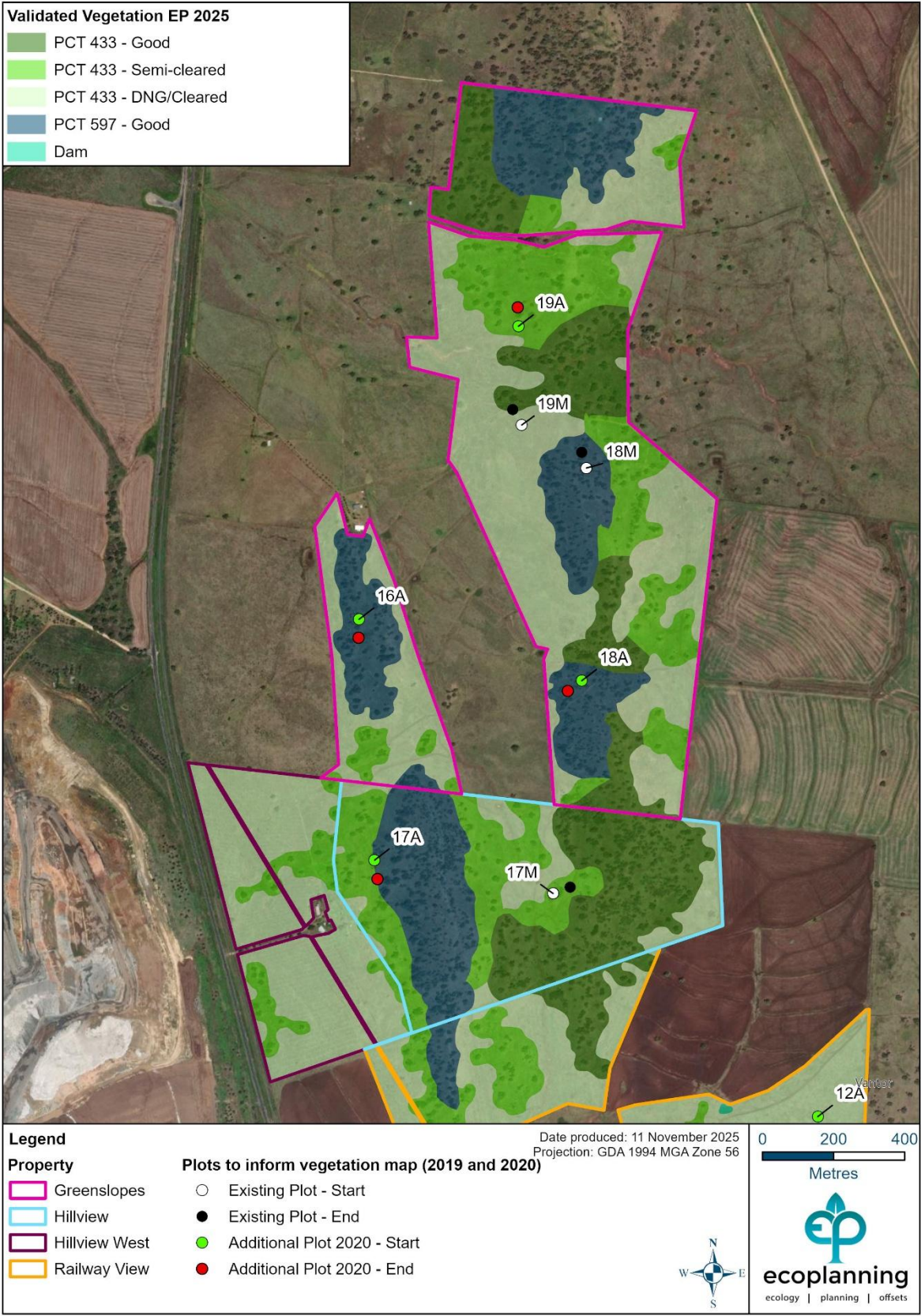


Figure A- 3: Plant Community Type (PCT) mapping for Greenslopes, Hillview and Hillview West.



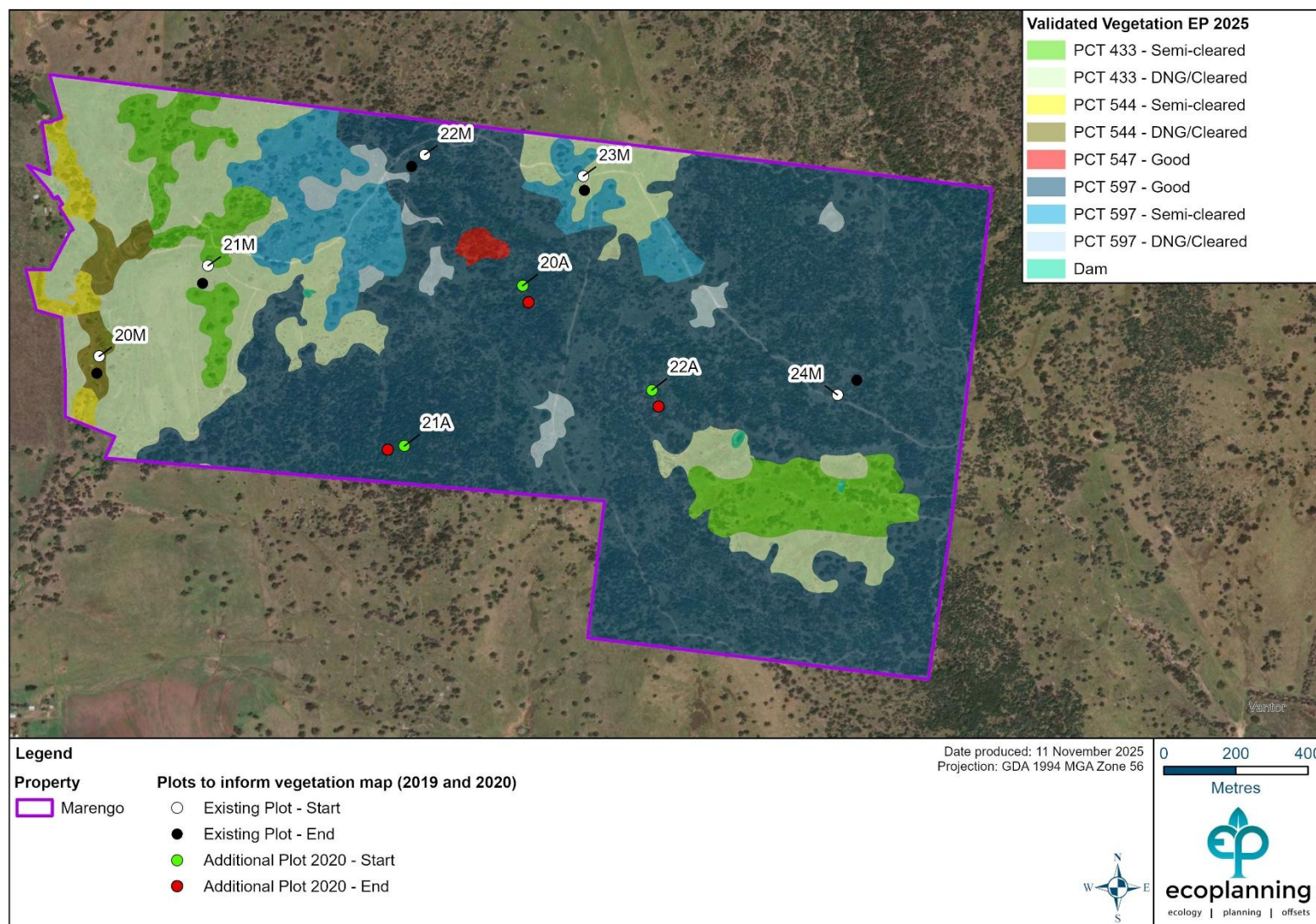


Figure A- 4: Plant Community Type (PCT) mapping for Marengo.



## Appendix C Detailed TEC mapping (BC Act)

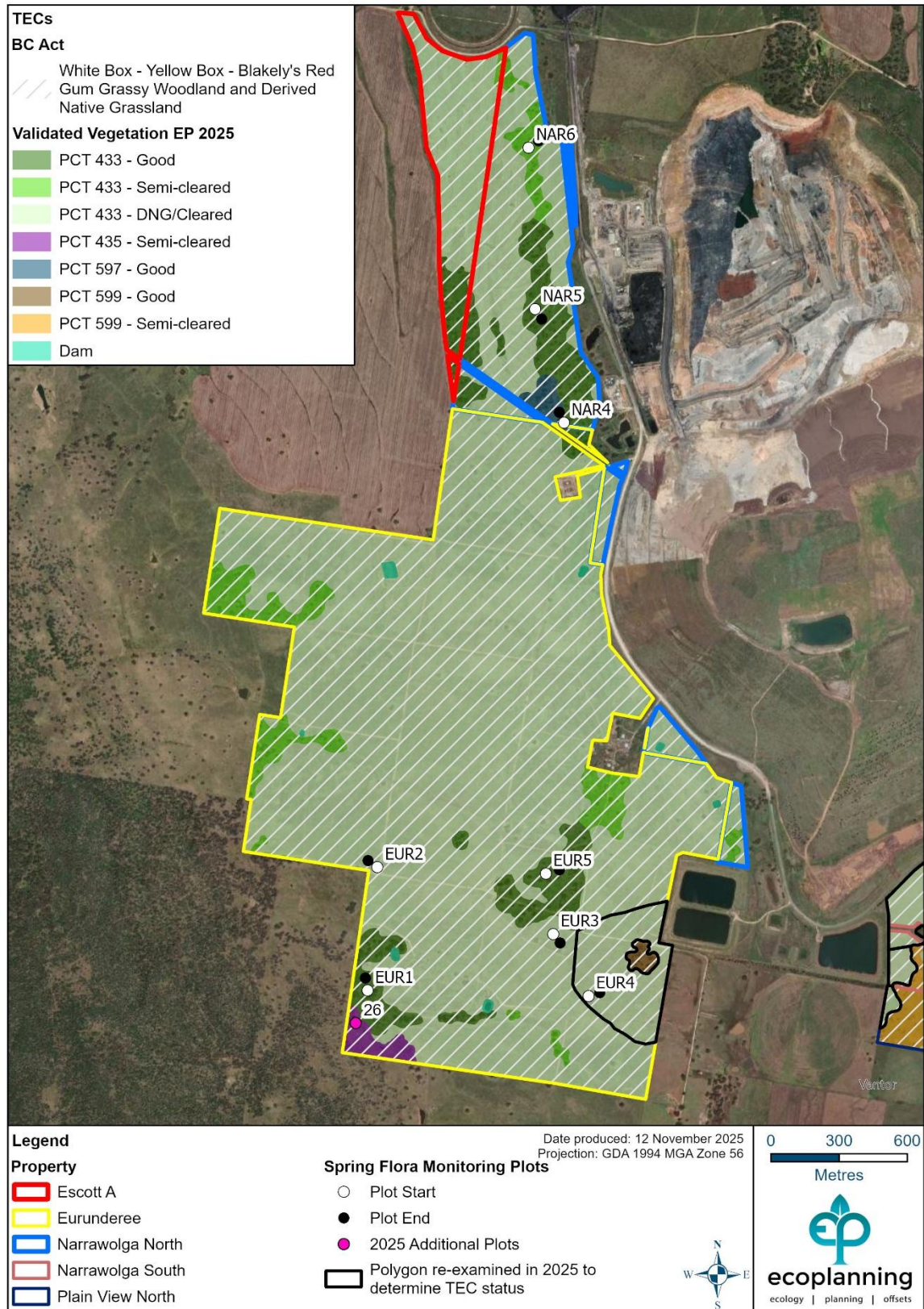


Figure A- 5: Threatened ecological community (TEC) mapping (BC Act) for Escott A, Eurunderee and Narrawolga North.



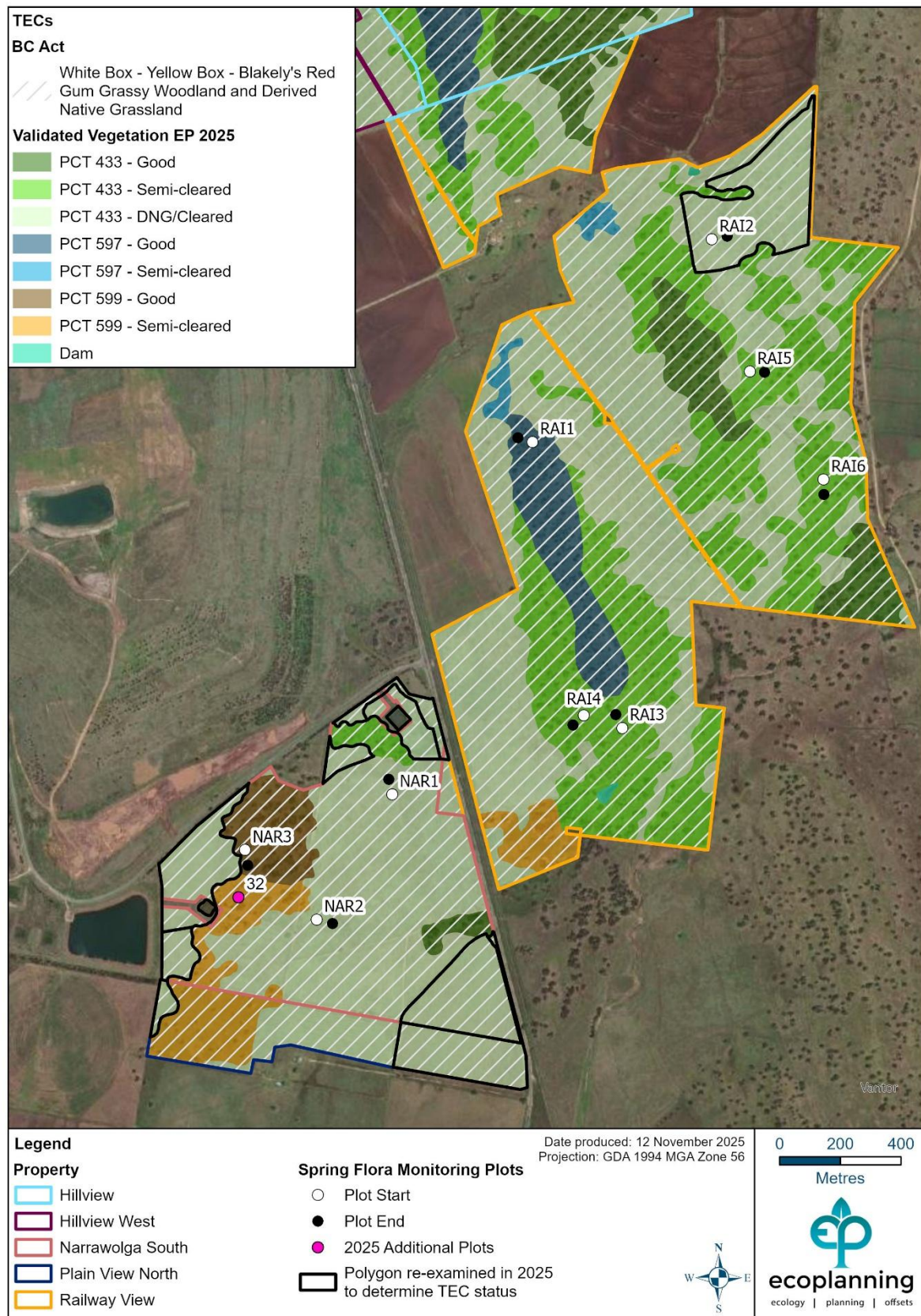


Figure A- 6: Threatened ecological community (TEC) mapping (BC Act) for part Narrawolga South, Railway View and Plain View North.



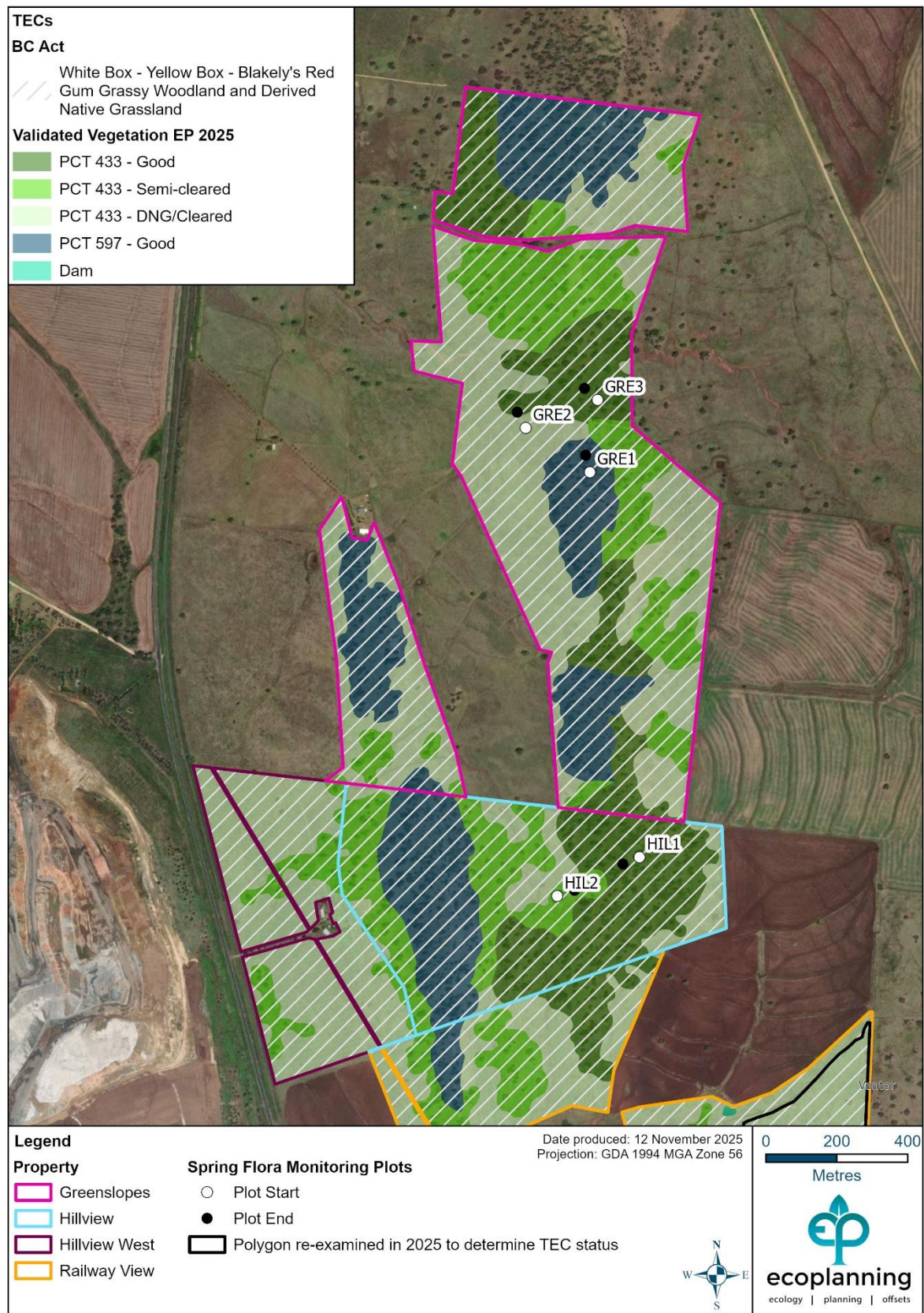


Figure A- 7: Threatened ecological community (TEC) mapping (BC Act) for Greenslopes, Hillview and Hillview West.



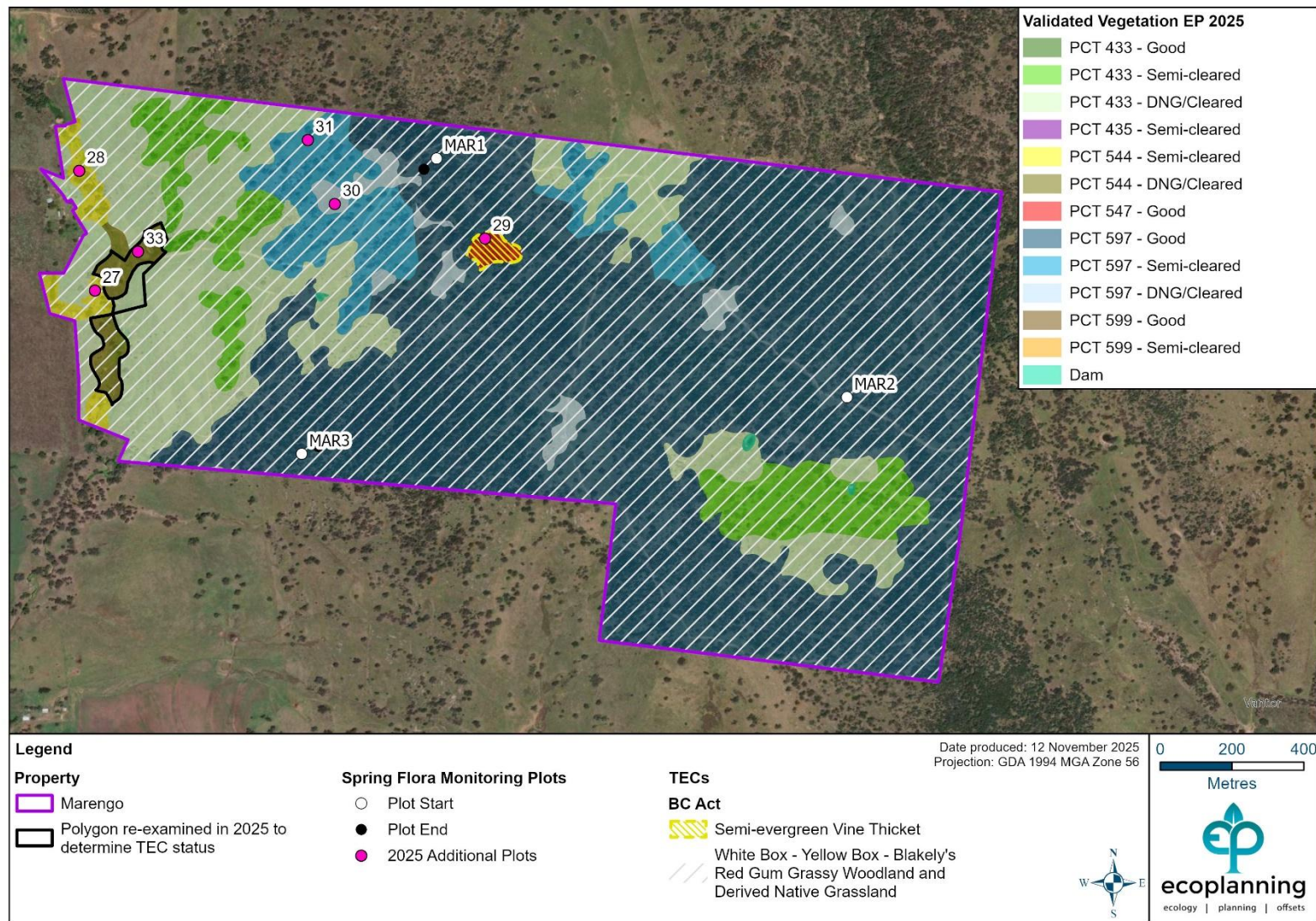


Figure A- 8: Threatened ecological community (TEC) mapping (BC Act) for Marengo.



## Appendix D Detailed TEC mapping (EPBC Act)

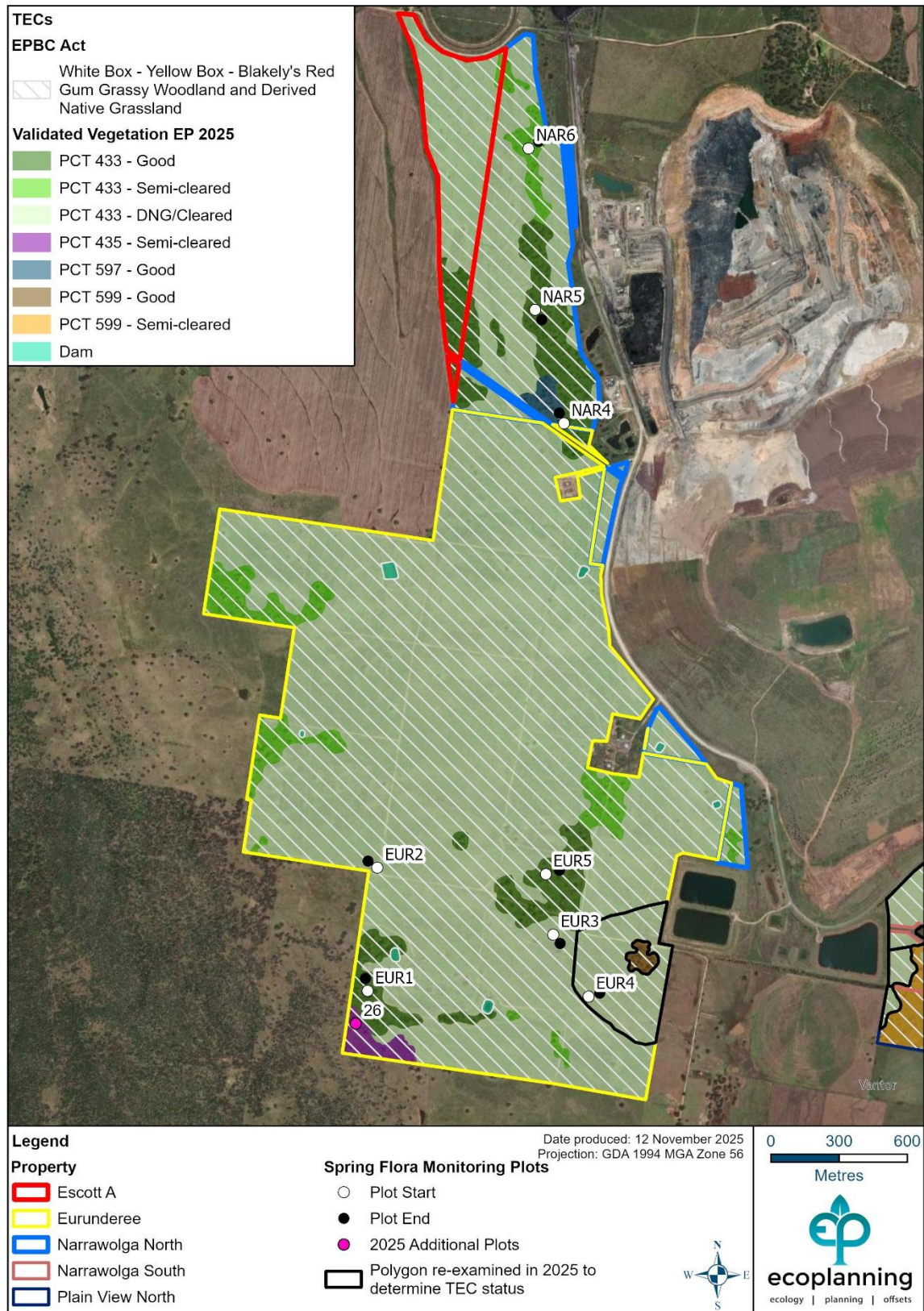


Figure A- 9: Threatened ecological community (TEC) mapping (EPBC Act) for Escott A, Eurunderee and Narrawolga North.



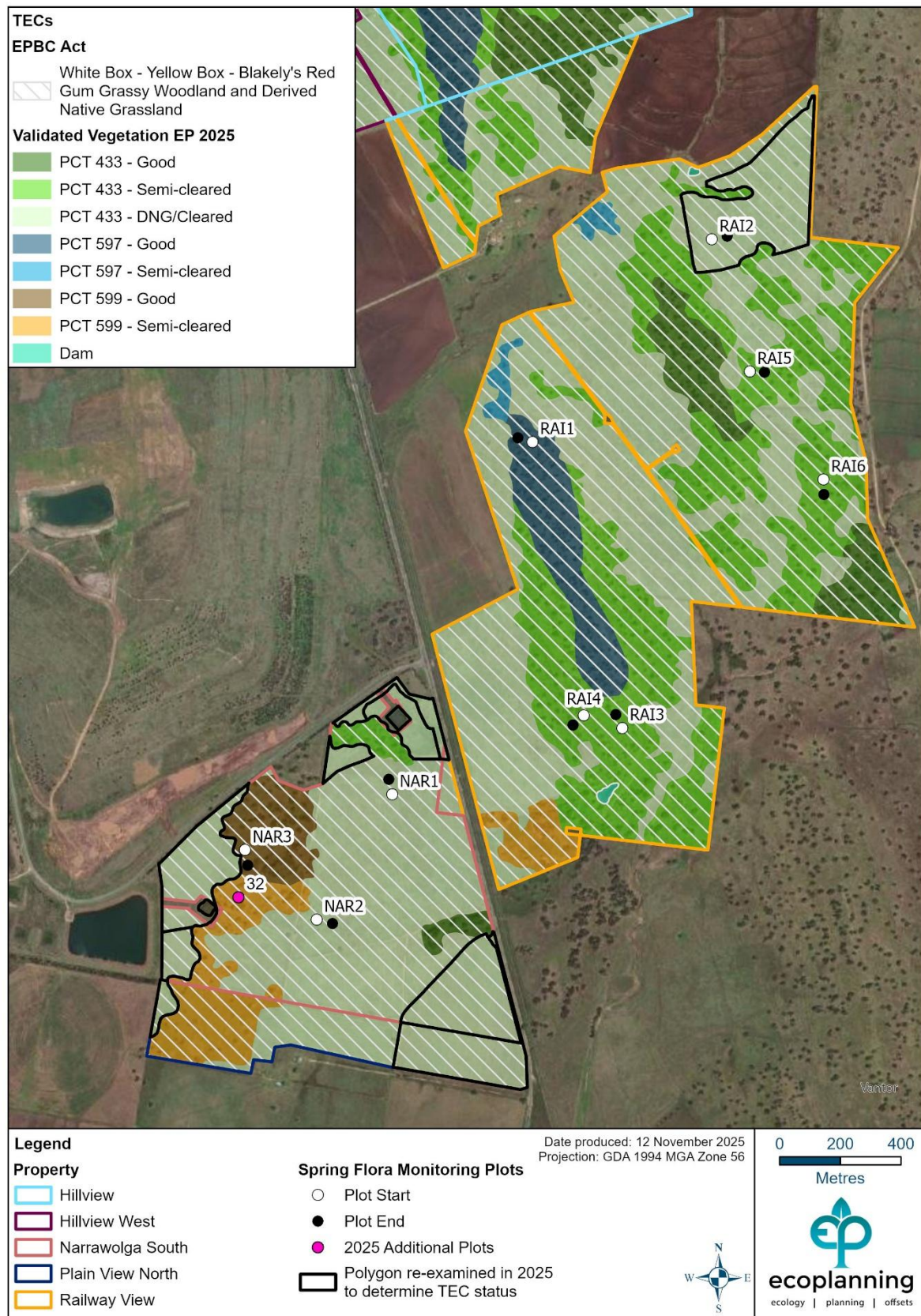


Figure A- 10: Threatened ecological community (TEC) mapping (EPBC Act) for part Narrawolga South, Railway View and Plain View North.



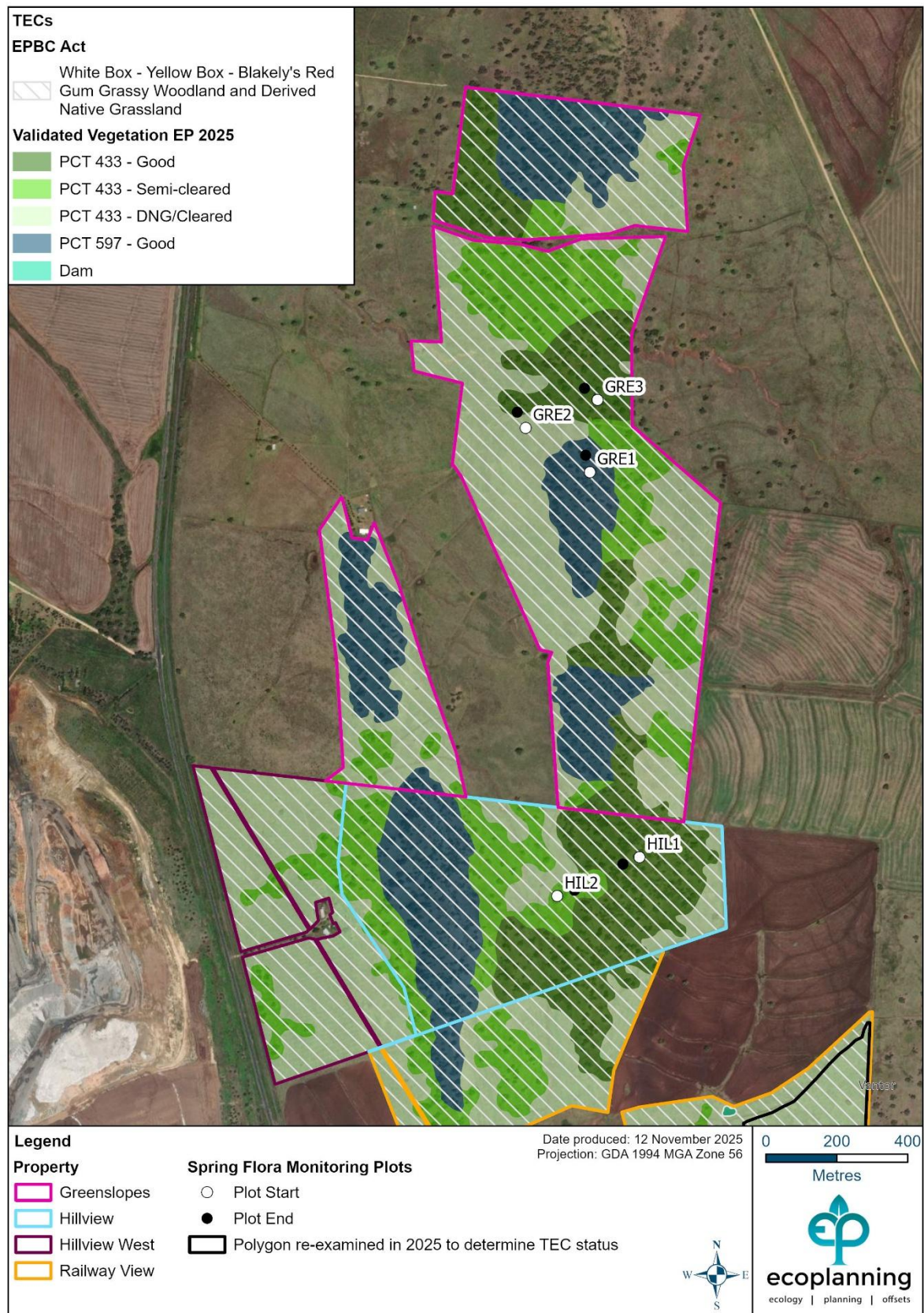


Figure A- 11: Threatened ecological community (TEC) mapping (EPBC Act) for Greenslopes, Hillview and Hillview West.



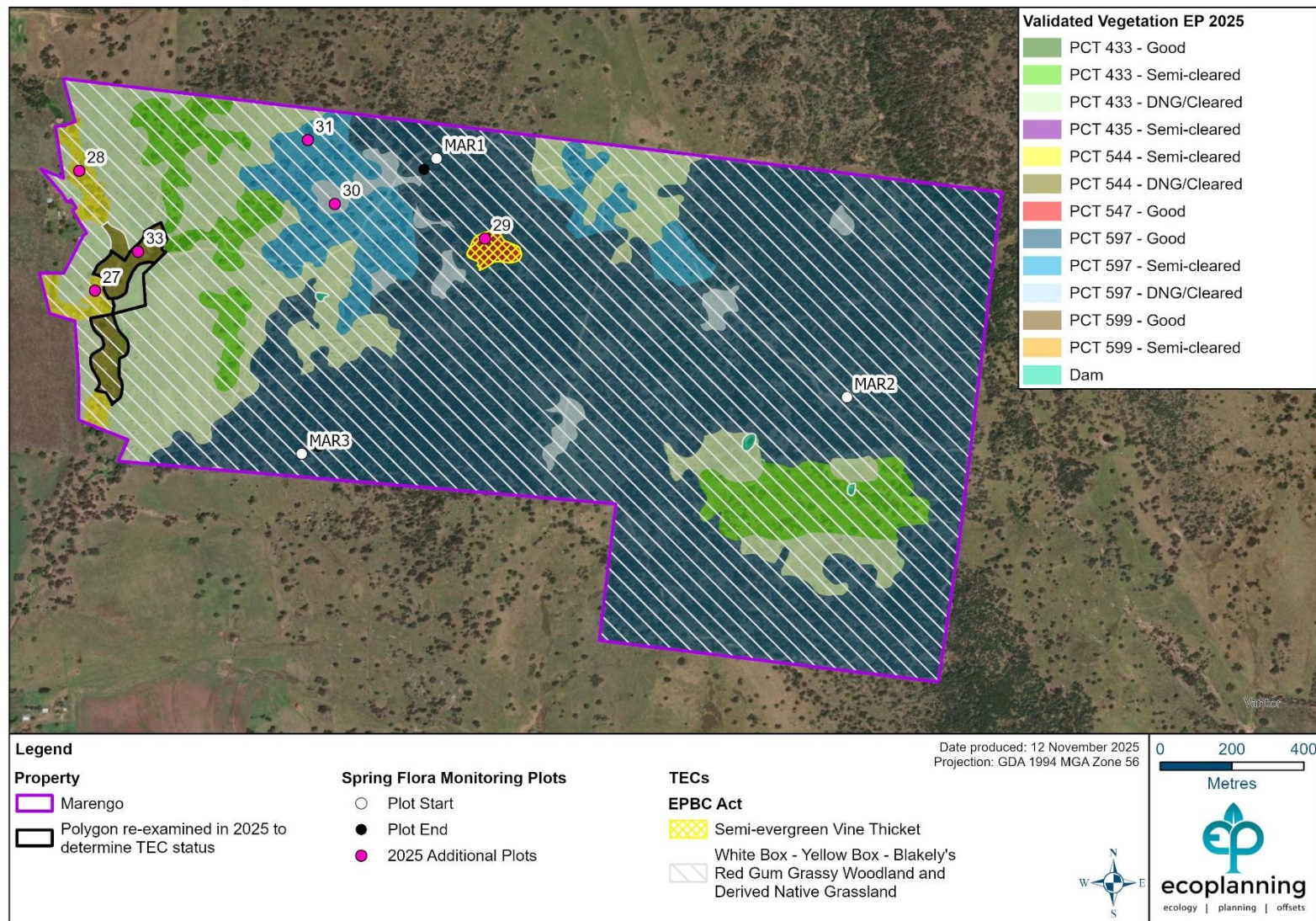


Figure A- 12: Threatened ecological community (TEC) mapping (BC Act) for Marengo.



## Appendix E Detailed Regent Honeyeater and Swift Parrot habitat mapping

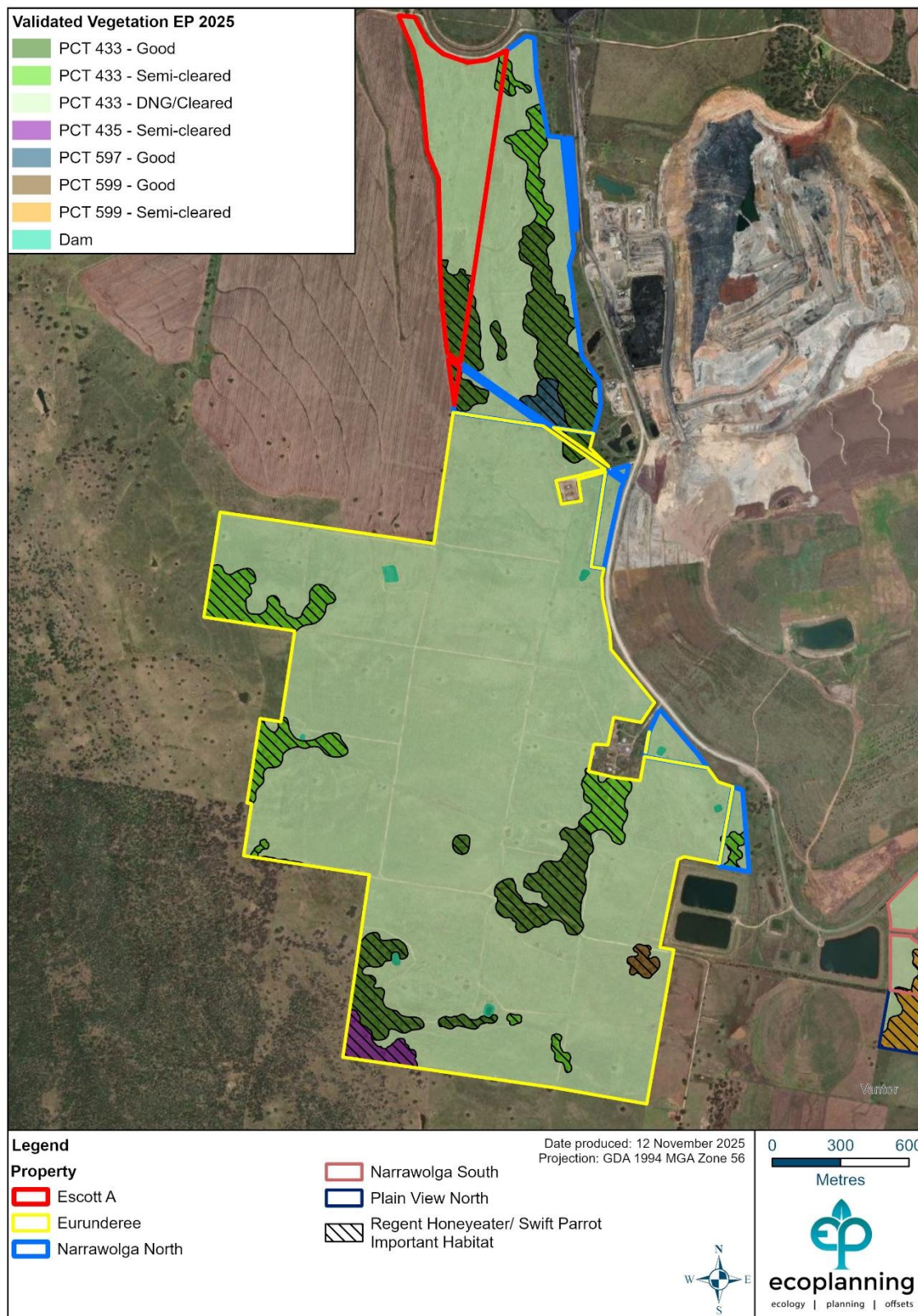


Figure A- 13: Regent Honeyeater/Swift Parrot habitat mapping for Escott A, Eurunderree and Narrawolga North.



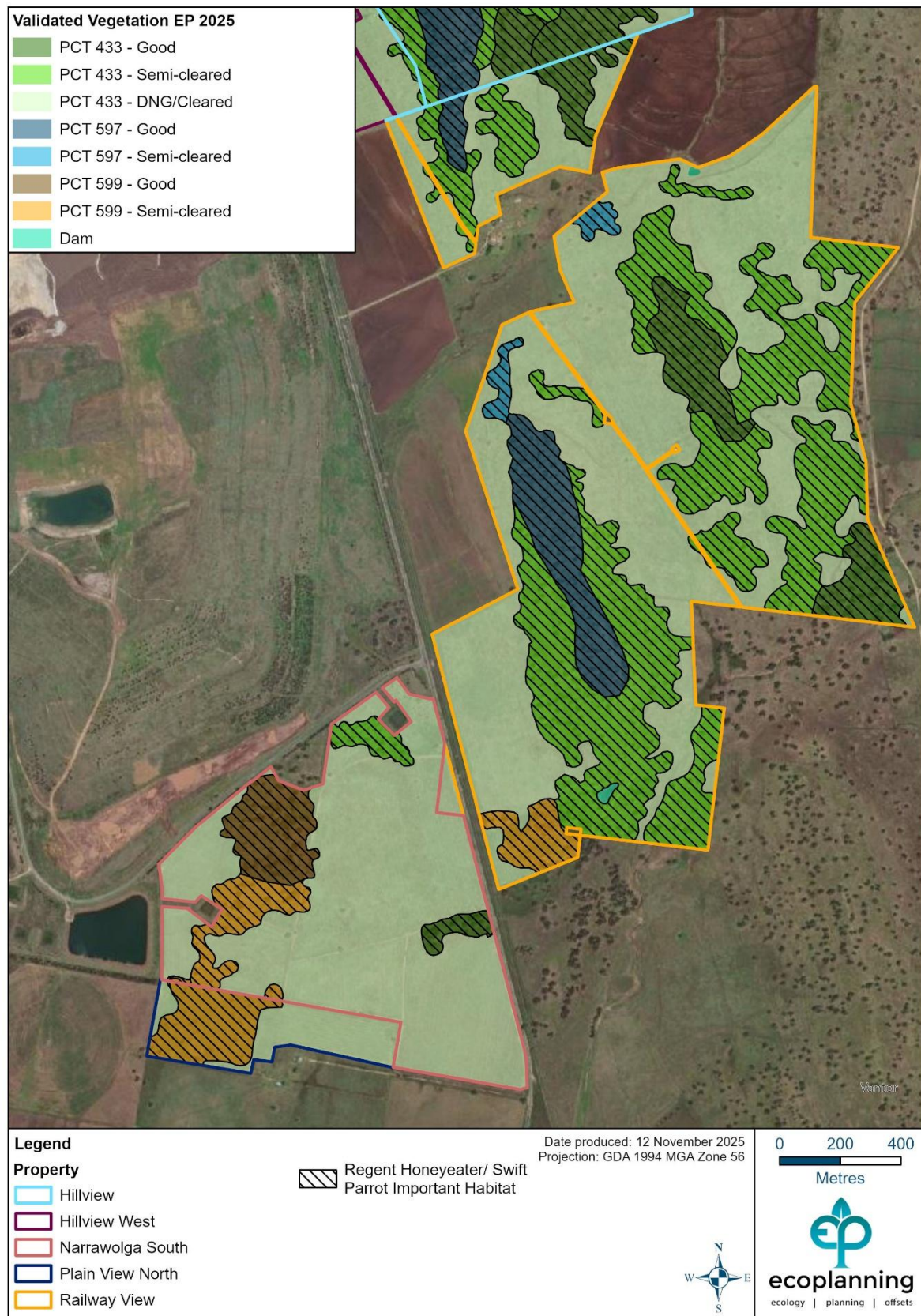
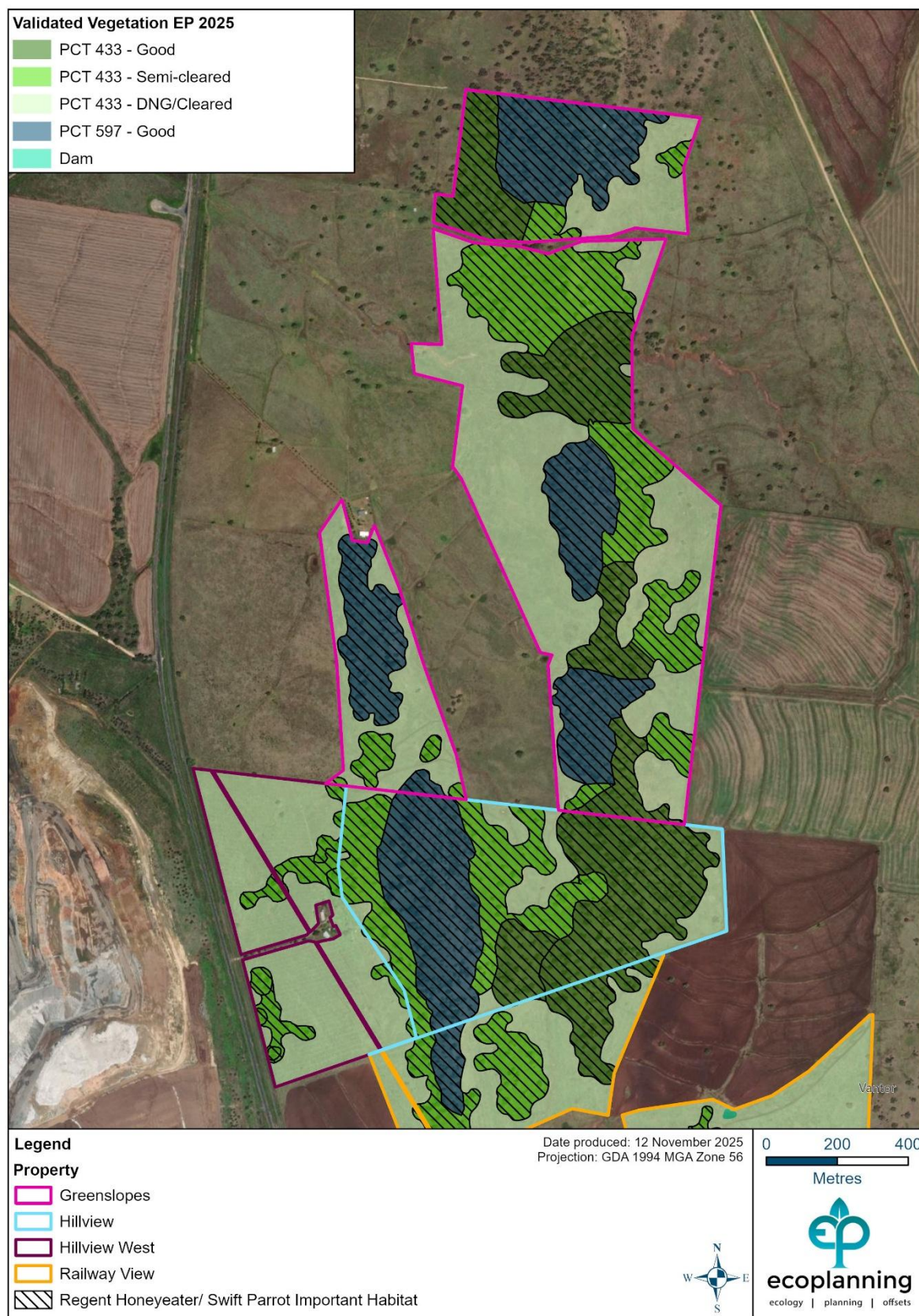


Figure A- 14: Regent Honeyeater/Swift Parrot habitat mapping for part Narrawolga South, Railway View and Plain View North.





**Figure A- 15: Regent Honeyeater/Swift Parrot habitat mapping for Greenslopes, Hillview and Hillview West.**



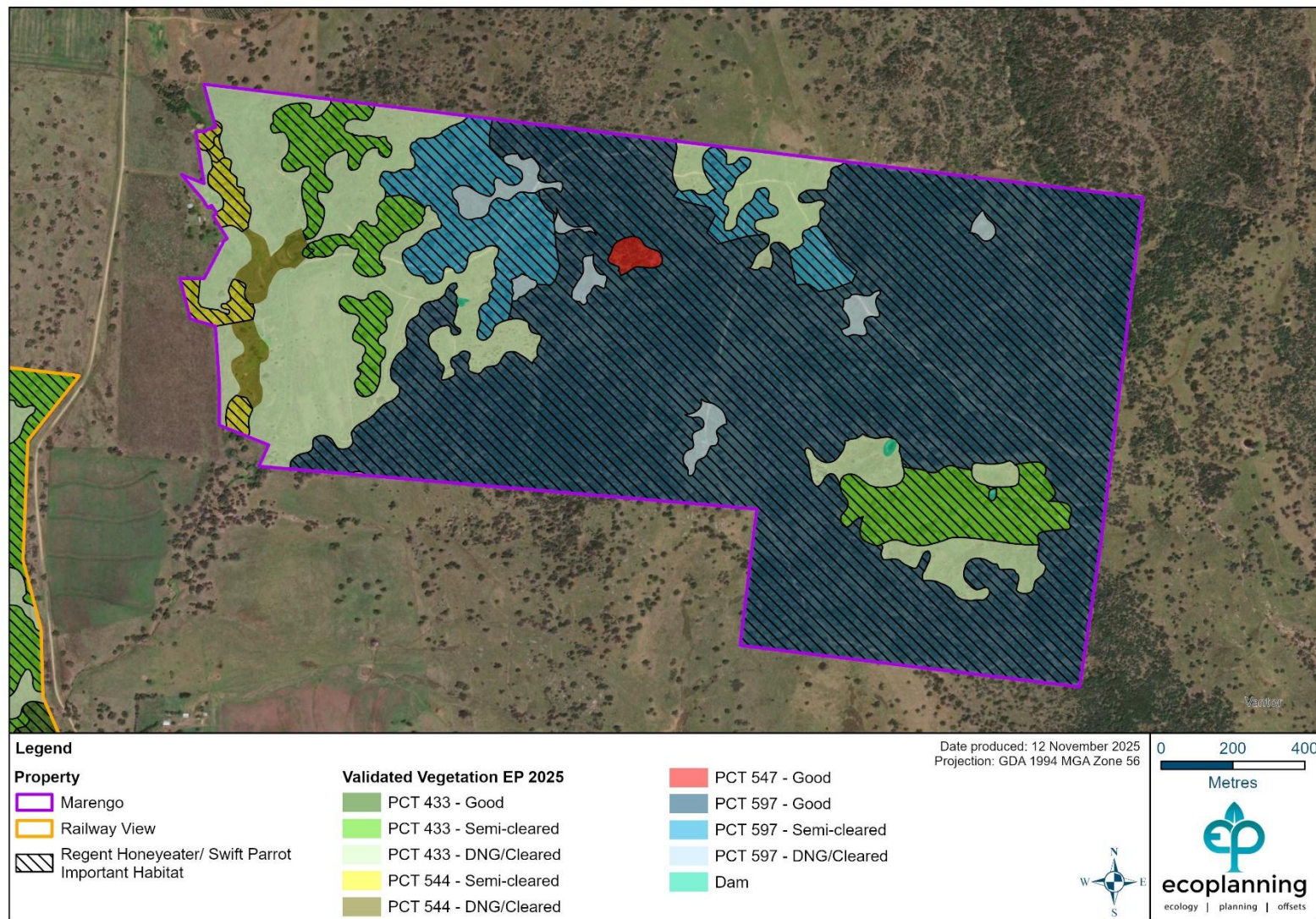


Figure A- 16: Regent Honeyeater/Swift Parrot habitat mapping for Marengo

|                                                                                   |                   |                     |                               |
|-----------------------------------------------------------------------------------|-------------------|---------------------|-------------------------------|
|  | <b>Werris OMP</b> | Document Owner:     | Group Manager - Biodiversity  |
|                                                                                   |                   | Document Approver:  | General Manager – Environment |
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| <b>WERRIS OFFSET MANAGEMENT PLAN (EPBC 2010/5571)</b>                             |                   |                     |                               |

**APPENDIX D: WERRIS CREEK OFFSET PROPERTIES TRANSLOCATION AND PROPAGATION PLAN – DIGITARIA PORRECTA (ECOPLANNING 2026B)**





**ecoplanning**  
ecology | planning | offsets

# **Werris Creek Offset Properties Translocation and Propagation Plan – *Digitaria porrecta***



Werris Creek Coal Mine and Offset Properties

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Supporting document of the Werris Creek Offset Management Plan

Prepared for: Whitehaven Coal Ltd.

20 May 2026 Version: 0.1 – Final

|                        |                                                                                                |           |                                       |                       |
|------------------------|------------------------------------------------------------------------------------------------|-----------|---------------------------------------|-----------------------|
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| <b>PROJECT NAME</b>    | Werris Creek Offset Properties Translocation and Propagation Plan – <i>Digitaria porrecta</i>  |           |                                       |                       |
| <b>PROJECT ADDRESS</b> | Werris Creek Coal Mine and Offset Properties                                                   |           |                                       |                       |
| <b>PREPARED FOR</b>    | Whitehaven Coal Ltd.                                                                           |           |                                       |                       |
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| <b>COVER PANNEL</b>    | Images showing the growth habit and panicle of <i>Digitaria porrecta</i> (Finger Panic Grass). |           |                                       |                       |
| <b>LICENCES</b>        | <b>Scientific Licence</b>                                                                      |           | SL101557                              |                       |
|                        | <b>Bionet Sensitive Species Data Licence</b>                                                   |           | 1115                                  |                       |
|                        | <b>Animal Research Authority Ethics Licence</b>                                                |           | Fauna Surveys and Monitoring (16/346) |                       |
|                        | <b>Scientific Collection - Aquatic</b>                                                         |           | P19/0009-1.0 & OUT19/2602             |                       |

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## Glossary and abbreviations

| Acronym       | Description                                                                   |
|---------------|-------------------------------------------------------------------------------|
| BC Act        | NSW Biodiversity Conservation Act 2016                                        |
| BMA           | Biodiversity Managed Area                                                     |
| cm            | Centimetres                                                                   |
| Cmlth. DCCEEW | Commonwealth Department of Climate Change, Energy, the Environment, and Water |
| EPBC Act      | Commonwealth Environment Protection and Biodiversity Conservation Act 1999    |
| ha            | Hectares                                                                      |
| NSW DCCEEW    | NSW Department of Climate Change, Energy, the Environment, and Water          |
| OMP           | Offset Management Plan                                                        |
| TFPP          | Threatened Flora Project Plan                                                 |
| TPP           | Translocation and Propagation Plan                                            |
| VCM           | Vickery Coal Mine                                                             |

# 1 Introduction

This Translocation and Propagation Plan (TPP) has been prepared to manage the populations of *Digitaria porrecta* (Finger Panic Grass) found within the Werris Creek Offset Areas that form part of Biodiversity Managed Areas (BMA; **Figure 1.1**). Methodologies outlined in this TPP are informed by a review of the ecology of the species as well as other Threatened Flora monitoring programs across Whitehaven Coal (WHC) BMA. This TPP forms part of the Werris Creek Offset Management Plan (OMP) and the WHC Threatened Flora Project Plan (TFPP) (Ecoplanning 2026). The TFPP provides overarching guidance on the management of habitat for threatened flora species within and adjacent to WHC mining operations and BMAs. As a component of the TFPP, translocation and propagation strategies have been developed for individual threatened flora species to outline species specific strategies to protect and where possible supplement existing populations within the WHC BMAs.

This TPP adopts the definition of ‘translocation’ as included in the ‘Guidelines for the Translocation of Threatened Plants in Australia 3<sup>rd</sup> Edn’ (Commander et al.2018), which is:

*“... the deliberate transfer of plants or regenerative plant material from an ex-situ collection or natural population to a new location, usually in the wild. It includes reintroduction, introduction, reinforcement, assisted migration and assisted colonization. Translocations involve a diverse range of methods including: seed collection and propagation; propagation via cuttings or tissue culture; planting of containerised plants; direct seeding; transplantation of whole plants from one site to another; and the transfer of soil, leaf litter, brush or pollen.”*

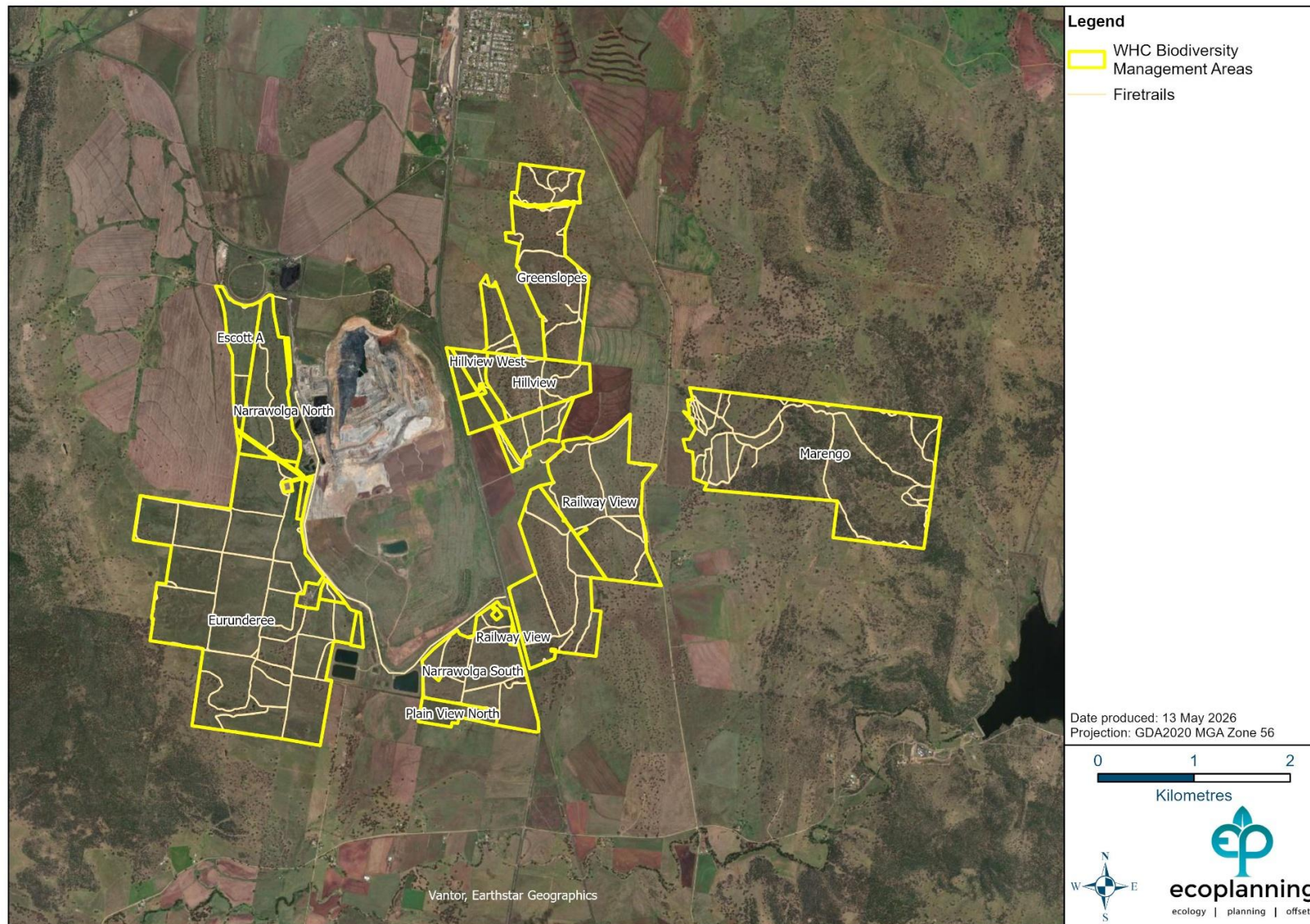
## 1.1 Aims and objectives

The overall aim of this TPP is to directly support the conservation of *Digitaria porrecta*, and to maintain a self-sustaining, genetically diverse population of the species within the WHC BMAs, which can survive in the long term. Specific objectives of this strategy include the following:

- Conserve the genetic diversity within the existing sub-populations of *Digitaria porrecta* within WHC BMA.
- Increase resilience of the existing sub-populations of *Digitaria porrecta* to protect against genetic, demographic, and environmental stochasticity.
- Guide the successful translocation of *Digitaria porrecta* to suitable habitat within the protected areas of the WHC BMA that form part of the Werris Creek Offset Area.
- Provide clear management and monitoring measures to ensure the long-term success of the translocation program.

This TPP primarily represents a ‘reinforcement’ translocation according to the definitions of Commander et al. (2018). That is, translocations aim to transfer regenerative material to locations where there is an existing population of *Digitaria porrecta*, or in proximity to existing populations. The source of regenerative material may include material collected from natural sub-populations across WHC BMAs.





**Figure 1.1: Werris Creek Biodiversity Offset Areas a part of WHC BMA**



## 1.2 *Digitaria porrecta* ecology and distribution

### 1.2.1 Description

*Digitaria porrecta* is an erect to ascending perennial grass which grows to 60 cm tall (PlantNET 2026; **Figure 1.2.A**). This species flowers throughout summer with seeds maturing and falling from March to April (Cmlth. TSSC 2008; NSW DCCEE 2026). It can also reproduce vegetatively by dying back to the tussock base during winter and then resprouting in summer (Cmlth. TSSC 2008). This vegetative reproduction occurs when the central portion of the tussock dies, resulting in a ring of plantlets which eventually become independent tussocks (Cmlth. TSSC 2008).



**Figure 1.2:** Images of *Digitaria porrecta* showing; growth habit and habitat (A), secondary branching of spikelets on raceme (B), secondary branching on raceme (C), and woolly branch axils (D)

There are two species of *Digitaria* which have features closely resembling *Digitaria porrecta* and which also occur within the same range, namely; *Digitaria coenicola* and *D. divaricatissima* (PlantNET 2026). A review of each of these species descriptions on indicate that *Digitaria porrecta* differs from *D. coenicola* and *D. divaricatissima* by the differences in the leaves,

racemes, and spikelets (PlantNET (2026)). The full summary of this review is presented in **Appendix A**, and a summary of the most easily distinguishable features is presented below.

*Digitaria porrecta* is most distinguishable from other *Digitaria* species in having secondary branching of its lower racemes (**Figure 1.2.B**) and hairs on branch axils which are 1-3 mm long (**Figure 1.2.C**). *Digitaria coenicola* also has hairs on its branch axils that are 1-3 mm long however lacks secondary branching. *Digitaria divaricatissima* also lacks secondary branching and branch axial hairs are shorter (<1 mm long). Spikelets of *Digitaria porrecta* are 5-7 mm while spikelets of the other two species are always <5 mm long.

When not in flower, the leaves can be used to differentiate the three species. Sheathes of *Digitaria porrecta* are hairy with the blade being 2-3 mm wide and having well developed spicules on the margins. *Digitaria coenicola* develops sheathes and leaves that are densely woolly, with the leaf blade being 2-6 mm wide with undulating margins. Only the lower sheathes of *Digitaria divaricatissima* are pubescent, with the upper sheathes being glabrescent and blades are 3-6 mm wide with undulating thickened margins.

## 1.2.2 Habitat

Across its range *Digitaria porrecta* occurs in grasslands, woodlands and open forests which reside on fertile, dark and fine textured soils derived from basaltic geology and alluvium. Soils in which *Digitaria porrecta* are known to grow in also undergo seasonal cracking (Clth. TSSC 2008). Soils from primary habitat of *Digitaria porrecta* are generally known as 'black cracking clays' (**Table 1.1**). A review of habitat descriptions of *Digitaria porrecta* collections held in the NSW BioNet Atlas also refers to dark cracking clay soils derived generally from basaltic geologies with some records occurring clay soils derived from alluvium. Further discussion on the typical soil characteristics of known locations of the species is discussed further in **Section 3.1**.

The species is known to persist in disturbed environments such as roadsides and stock routes but its ability to maintain a viable population in such environments is unknown (Cmlth. DCCEEW 2026).

**Table 1.1: Summary of *Digitaria porrecta* soil requirements from relevant sources**

| Source                         | Description of required soil characteristics                                                             |
|--------------------------------|----------------------------------------------------------------------------------------------------------|
| Ayers, Nash and Baggett (1996) | 'Grows on dark and fine textured clays, usually highly fertile.'                                         |
| NPWS (2003)                    | 'Highly fertile, dark fine textured clays with a degree of seasonal cracking derived from basalt rocks.' |
| Qld DETSI (2026)               | '...invariably on heavy, cracking clays, sometimes of alluvial origin.'                                  |

In NSW, the most frequently associated tree species include *Eucalyptus albens* (White Box) and *Acacia pendula* (Weeping Myall) (NSW DCCEEW 2026). Other commonly associated species include the grasses *Austrostipa aristiglumis*, *Enteropogon acicularis*, *Dichanthium sericeum*, *Panicum decompositum*, *Digitaria divaricatissima*, *Aristida leptopoda* and *Themeda*

*avenacea*, and the herbs *Boerhavia dominii*, *Mentha satureioides*, *Sclerolaena muricata*, *Tribulus micrococcus* and *Cyperus bifax* (NSW DCCEEW 2026).

### 1.2.3 Distribution

The species is found throughout central Queensland south to the north-western slopes and plains of NSW (NSW DCCEEW 2026). In NSW it occurs from near Moree south to Tambar Springs and from Tamworth to Coonabarabran (NSW DCCEEW 2026). Records of *Digitaria porrecta* from the NSW Liverpool Plains (i.e., between Narrabri, Werris Creek, and Coonabarabran) are illustrated in **Figure 1.3**. The total population of *Digitaria porrecta*, based upon surveys conducted in 1995, was estimated to be 200,000 individuals (NSW DCCEEW 2026). Currently, the total population of *Digitaria porrecta* in NSW is uncertain.

*Digitaria porrecta* is known to occur within 11 WHC BMAs (**Figure 1.4**), this includes the Escott, Eurunderee, and Narrawolga North and South BMAs which form part of the Werris Creek OMP. Occurrences of *Digitaria porrecta* within the Werris Creek Offset Area are identified within White Box grassy woodland and Yellow Box – Blakely’s Red Gum grassy woodland vegetation communities and areas of derived native grassland. The total population of *Digitaria porrecta* within WHC BMAs is not known but likely fluctuates annually dependant on the frequency and amount of seasonal rainfall and ambient temperature.

### 1.2.4 Threats

The main threats to *Digitaria porrecta* include habitat loss, inappropriate fire regimes, trampling and grazing by livestock and competition from introduced grasses such as *Hyparrhenia hirta*\* (Coolatai Grass), *Chloris gayana*\* (Rhodes Grass), and *Urochloa panicoides*\* (Liverseed Grass) (Booth 2012; TSSC 2008). The species is also at risk from pesticide over-spray where it occurs in proximity to cropping (NSW DCCEEW 2026).

The species is known to persist in areas that are occasionally burnt (NSW DCCEEW 2026) and it is likely that plants resprout from the tussock base following low intensity fires and from seed buried in the soil following more intense fires. Identifying appropriate fire intensities and fire intervals to promote seed germination and establishment is one of the regional recovery actions (TSSC 2008).



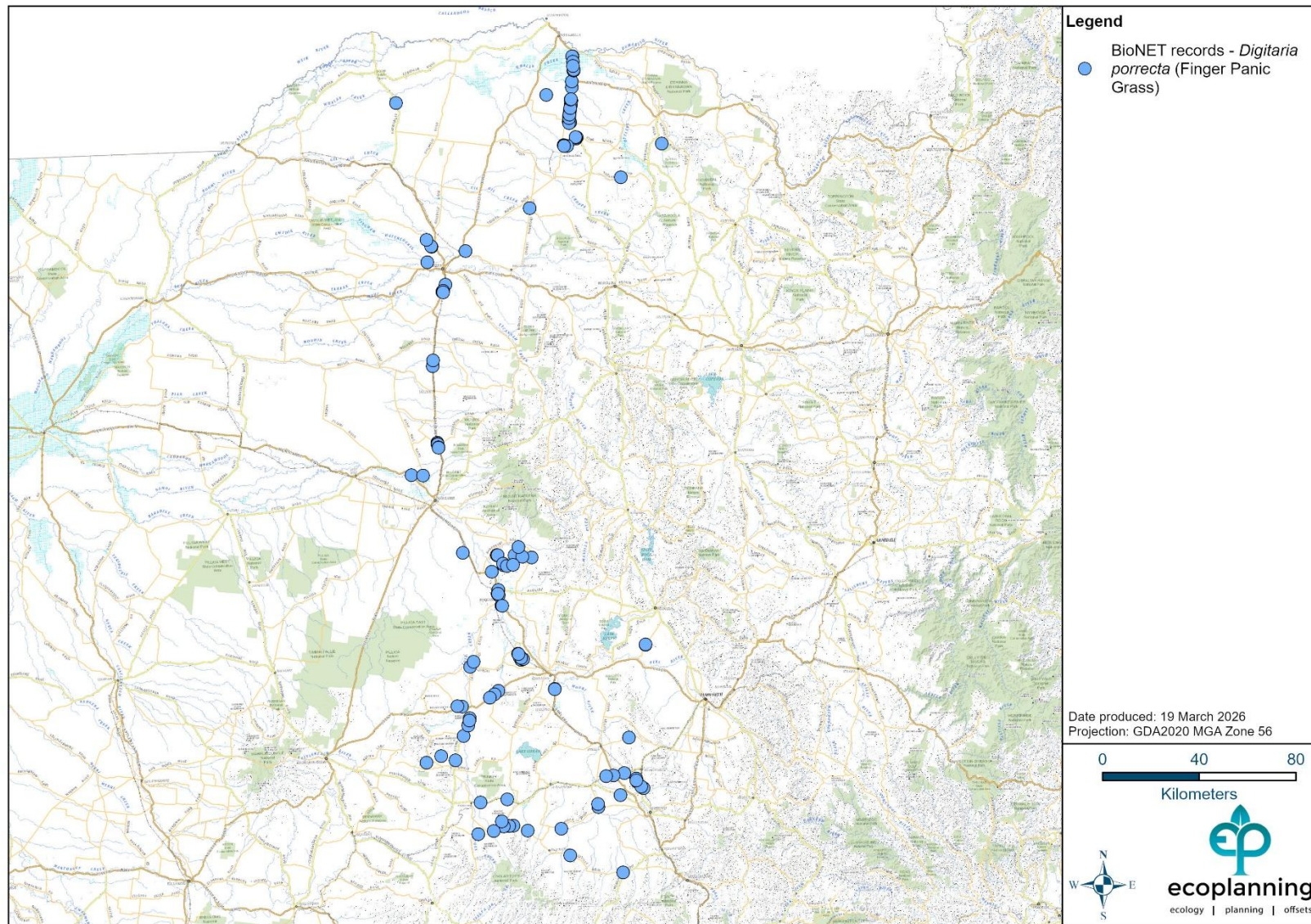


Figure 1.3: Distribution of NSW BioNET *Digitaria porrecta* records from the Liverpool Plains



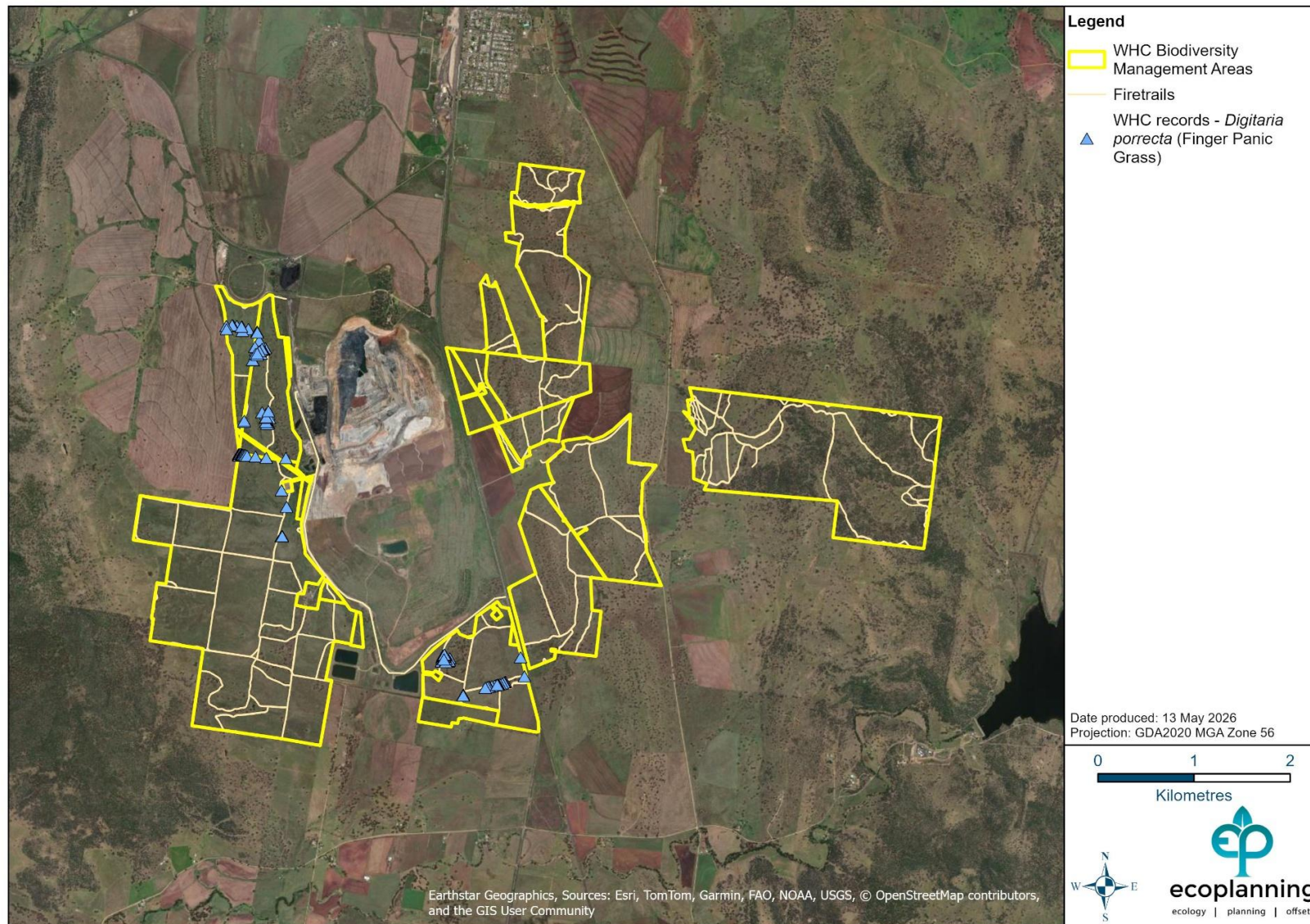


Figure 1.4: Records of *Digitaria porrecta* within Werris Creek Offset Properties

## 2 Previous management actions

Management actions for populations of *Digitaria porrecta* differ depending on their provenance, either wild or translocated populations.

### 2.1 Wild populations

Management actions for known wild populations of *Digitaria porrecta* have largely followed the TFPF and include identifying the location of populations and weed management.

Currently, known *Digitaria porrecta* populations on the BMAs are identified by demarcation fencing and/or habitat signage depending on the size of the population. For populations that occur over a small habitat area (<2-3 ha) demarcation fencing comprising star pickets and a top strand of wire is installed surrounding the population. Whitehaven signage is attached to an appropriate number of the surrounding star pickets to identify that the population is present to deter unauthorised access and disturbance (**Figure 2.1.A**). For larger habitat areas (>3-4 ha) no fencing is erected. Instead, signage is attached to star pickets which are placed at the point where access tracks adjoin these larger habitat areas (**Figure 2.1.B**). The aim of this signage is like that used for demarcation fencing; that is, to identifying the population and deter unauthorised access and disturbance.



**Figure 2.1:** Examples of signage used to identify *Digitaria porrecta* for demarcation fencing (left) and habitat areas (right)

Management of wild populations of *Digitaria porrecta* follow the TFPF, and include:

- regular inspections to identify potential threats and opportunities for seed collection,
- targeted control of weeds,
- control of pest animals.

The regular inspections of wild *Digitaria porrecta* populations is currently being undertaken by Ecoplanning, where each known population of *Digitaria porrecta* is monitored at least once per year, with monitoring occurring during periods of active growth of the species.

Control of weeds within areas occupied by *Digitaria porrecta* must be completed using targeted weed control techniques. This can include the use of targeted spraying of herbicides which minimise the drift and impact to non-target species.

## 2.2 Translocation methods completed to date

Three general translocation methods are completed by WHC for threatened flora species within WHC BMA. These translocation methods are known as topsoil translocations, salvage translocations, and seed collection and propagation. A brief description of each translocation method is presented in **Table 2.1** but is described in further detail in the TFPP and **Section 3**.

**Table 2.1: Brief descriptions of each WHC translocation method**

| Translocation method            | Description                                                                                                                                                                                                                      |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Salvage translocation           | Whole plants are removed from an impact site and are translocated to the recipient site. What is translocated is typically known as a 'turve' which is a block of soil which contains most of the root ball of the target plant. |
| Seed collection and propagation | Seed is collected from either a wild population or a population of the species within the impact area. This seed is then propagated under controlled conditions (i.e. a nursery) and transplanted at the recipient site.         |
| Topsoil translocation           | Topsoil from an impact area which is likely to have a soil seed bank of the target species (i.e. soil in which the target species is known to be growing in) is scalped from an impact area and spread at the recipient site.    |

### 2.2.1 Salvage translocations

No salvage translocation of *Digitaria porrecta* have been completed by WHC to date.

### 2.2.2 Seed collection and propagation

To date, one translocation trial (propagation and planting) for *Digitaria porrecta* has been completed by WHC. This trial was completed by propagating provenance seed collected from wild populations of *Digitaria porrecta* at the Eurunderee BMA in February 2024. A total of 320 plants germinated all of which were then planted at Narrawolga South BMA in November 2024 (**Figure 2.2**). This cohort of *Digitaria porrecta* was subsequently monitored monthly (when possible), and as of February 2026 a 76.3% survival rate was recorded for this cohort. **Figure 2.3** illustrates graphically the survival rate of this germination and planting trial from the start of monitoring in January 2025.

An additional translocation of *Digitaria porrecta* is proposed for mid 2026 in the Narrawolga South BMA (**Figure 2.2**), the placement of this 2026 translocation site is based on the recipient site selection process outlined in **Section 3.1**.



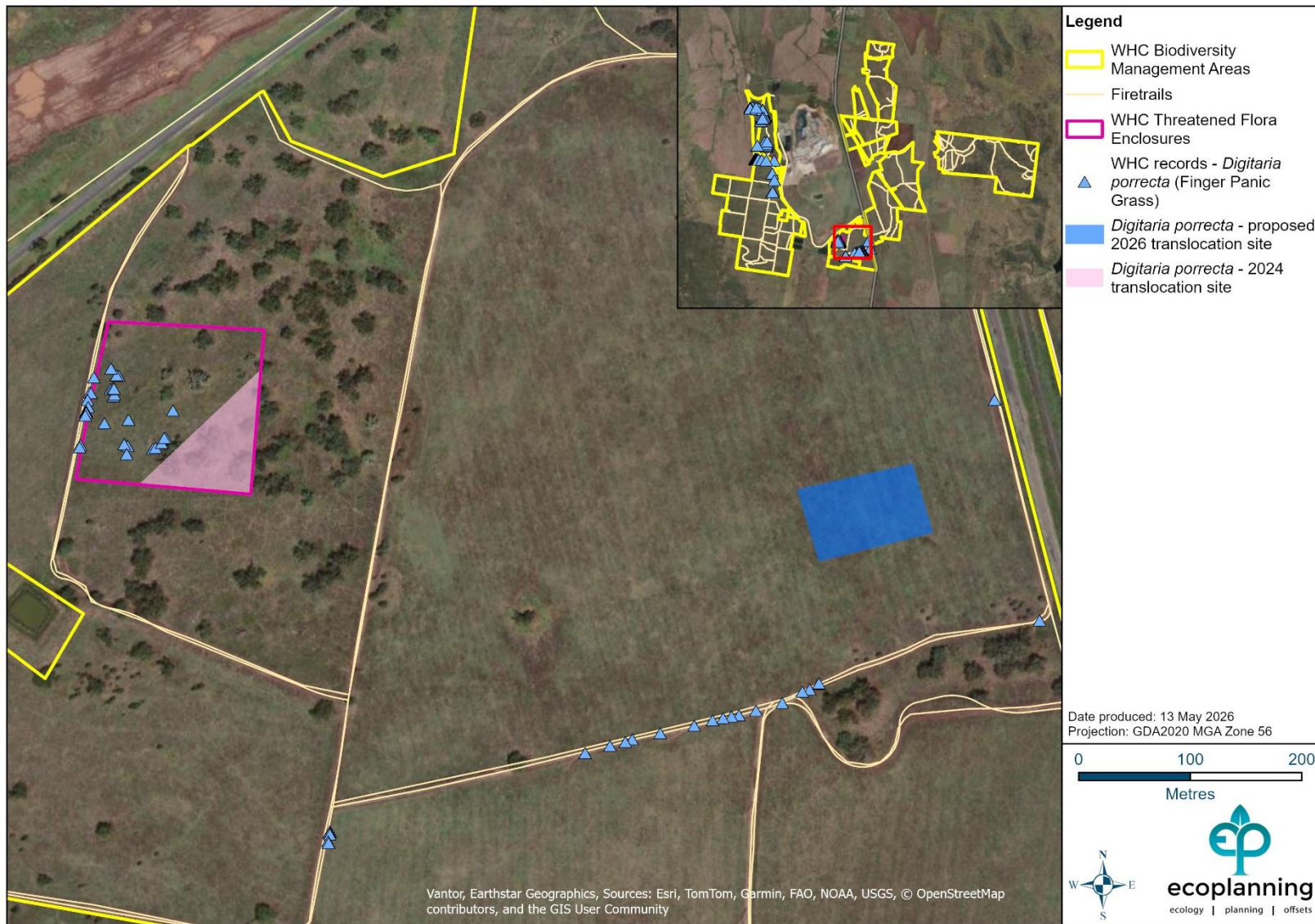


Figure 2.2: Location of the 2024 *Digitaria porrecta* translocation trial and proposed translocation site for the 2026 trial

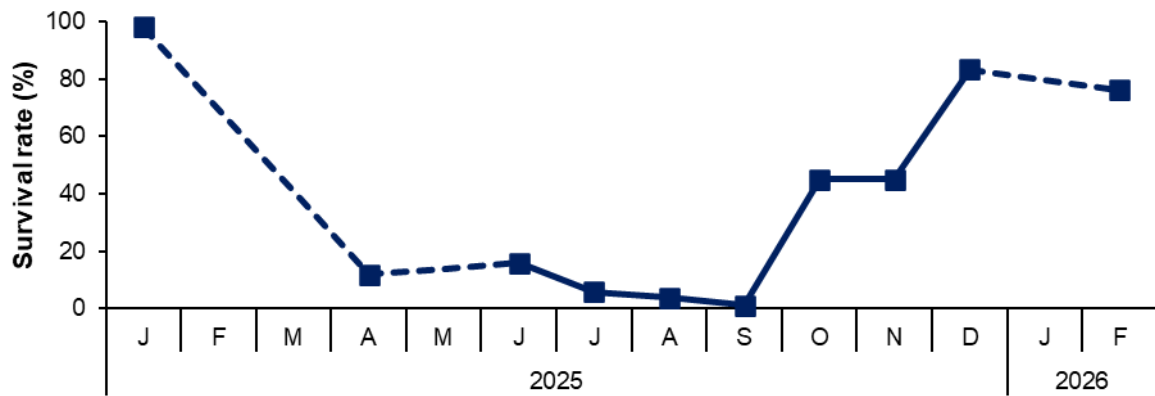


Figure 2.3: Survival rate of *Digitaria porrecta* translocated to the Narrawolga BMA in 2023

### 2.2.3 Topsoil translocations

The only topsoil translocation trial for *Digitaria porrecta* that has been completed by WHC was undertaken as part of clearance works at Vickery Coal Mine (VCM). During pre-clearance surveys at VOC, a population of *Digitaria porrecta* was detected. The approximate area of habitat for *Digitaria porrecta* that was identified as part of this preclearance survey was <2 ha.

Following the VCM *Digitaria porrecta* translocation plan (Ecoplanning 2021), it was determined that the topsoil from this area would be stockpiled and then used as part of the VOC rehabilitation program. To date, this topsoil remains stockpiled and no recipient site has been selected.

### 3 Translocation and propagation plan

This translocation and propagation plan has been prepared based on a review of the known ecology of *Digitaria porrecta* (including inferences from related species where knowledge gaps occur), scientific reviews, results from previous management actions for threatened flora, best practice guidelines, and the project approvals to maximise the chance of successfully achieving the aims as outlined within **Section 1.1**.

The proposed translocation and propagation methods are presented broadly in order of preference below, based on the success to date of previous attempts to translocate and propagate *Digitaria porrecta*.

For a translocated population to persist in the short-term, there needs to be:

- A sufficient number of propagules to establish a viable population and protect against genetic, demographic and environmental stochasticity,
- Good survival and establishment of the translocated individuals,
- Management and control of threats; and
- Flowering, fruiting, and natural recruitment at rates similar to natural populations.

For a population to persist in the long term it also needs to possess sufficient genetic diversity to retain its evolutionary potential to adapt to long-term environmental change or infrequent extreme events (Commander et al. 2018). These requirements form the basis of this plan. Specifically, this strategy includes actions to source propagules that maximise diversity; mitigate threats with the aim of enhancing the chances of survival and establishment of translocated individuals. The proposed *Digitaria porrecta* translocation incorporates multiple translocation methods to increase the likelihood of success should one method prove unsuccessful. These translocation methods include:

- Salvage translocations, including the following techniques:
  - seed collection
  - cuttings
  - soil translocation
- Seed collection (from non-salvage plants) and propagation.

Any future transplanted subpopulations will be over 200-250 to reduce genetic and demographic outcomes associated with small populations that research suggests to ensure long-term survival (Young and Brown 1999)

#### 3.1 Recipient site selection

Selection of all future *Digitaria porrecta* translocation recipient sites – for translocation trials under this translocation plan – should follow the site selection process outlined in this section. If additional information on habitat suitability is gleaned from future monitoring of this species, then this information should also be considered when determining the location of future translocation recipient sites.

No habitat mapping for *Digitaria porrecta* has been completed to date, however, the soil constraints of *Digitaria porrecta* habitat are known to be narrow (**Table 1.1**). As such, regional soil mapping can provide an indication of potential habitat within WHC BMAs.

Soil landscape mapping prepared by Banks (2001) was considered the most appropriate soil landscape mapping available, given its detailed descriptions of soil landscapes, coverage of soils present within Werris Creek BMAs, and relative accuracy in mapping soil landscapes (JB-C pers. obs.). A review of each soil landscape description against the known characteristics of *Digitaria porrecta* soil requirements was undertaken to determine which soil landscapes were most appropriate to be recipient sites. In addition, soil landscape mapping by Banks (2001) was compared to the distribution of *Digitaria porrecta* records from the WHC Threatened Flora Database (**Figure 3.1**). All soil landscapes mapped by Banks (2001) within Werris Creek BMAs is presented in **Appendix B**, along with their descriptions from Banks (2001), the number of *Digitaria porrecta* records from the WHC Threatened Flora Database within each soil landscape. Those soil landscapes which are considered to be most consistent with the habitat description of *Digitaria porrecta* or had records of *Digitaria porrecta* from the WHC Threatened Flora Database are summarised in **Table 3.1**.

Based on the review of Soil Landscapes across the Werris Creek BMA, it appears that the most suitable soil type for *Digitaria porrecta* is Vertisol soils, as opposed to other soil types in the locality (these four soil types, Chromosols, Dermosols, Sodosols, and Vertosols, are summarised in **Appendix C**). The most common feature of those Soil Landscapes which included records of *Digitaria porrecta* was the presence of the Vertisol soil type (**Table 3.1**).

**Table 3.1: Soil landscape, mapped by Banks (2001), considered to be most consistent with the habitat for *Digitaria porrecta***

| Soil landscape (code) | Soil characteristics suitable for <i>D. porrecta</i> (following Banks [2001])                                                                                                                                                                                                                                                                                                                | No <i>D. porrecta</i> records* |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|
| Duffs Gully (DG)      | Lower slopes of this Soil Landscape are characterised by giant, imperfectly drained Black Vertosols (Black Earths).                                                                                                                                                                                                                                                                          | 51                             |
| Dunover (DO)          | Areas of this Soil Landscape that are in or near drainage lines have deep, imperfectly drained Black Vertosols (Black Earths).                                                                                                                                                                                                                                                               | 0                              |
| Dunover var. A (DOA)  | Deep, imperfectly drained Black and Brown Vertosols (Black Earths and Brown Clays).                                                                                                                                                                                                                                                                                                          | 79                             |
| Eurunderee (EU)       | Very deep to giant, imperfectly drained Brown Sodosols (Solodic soils, Solodized Solonetz), with very deep, imperfectly drained Brown Chromosols, Dermosols and Sodosols (Red-brown Earths and Solodic soils) on upper footslopes and very deep to giant, moderately well-drained Red Chromosols (Non-Calcic Brown soils and Red-brown Earths) on some lower footslopes and drainage plains. | 3                              |
| The Siphon (SI)       | Very deep to giant, imperfectly drained Black Vertosols (Black Earths) on mid to lower footslopes.                                                                                                                                                                                                                                                                                           | 3                              |

\*Records from the WHC Threatened Flora Database



The Eurunderee Soil Landscape was not included as a Soil Landscape suitable for *Digitaria porrecta*, even though it had three *Digitaria porrecta* records within its mapping (**Figure 3.1**). This decision was due to the absence of Vertosol soil types in the Eurunderee soil landscape (**Table 3.1**). The presence of a *Digitaria porrecta* record within the Eurunderee soil landscape may be due to either errors in the mapping completed by Banks (2001) or the localised presence of suitable soil types.

Conversely, the Dunover soil landscape was not found to include any *Digitaria porrecta* records, however, as Vertosols are dominant in this soil landscape its inclusion in the list of soil landscapes which align with the preferred soil type for *Digitaria porrecta* was considered. As such, the four soil landscapes mapped by Banks (2001) within the Werris Creek Offset Properties which have suitable soil types to support *Digitaria porrecta* are:

- Duff's Gully
- Dunover
- Dunover variant A and
- The Siphon.

The area of each of these Soil Landscapes within the Werris Creek Offset Properties is presented in **Table 3.2**.

**Table 3.2: Area of soil landscapes suitable for *Digitaria porrecta* in each Werris Creek BMA**

| Werris Creek Offset Property | Area of each Soil landscape (ha)* |              |               |               |               |
|------------------------------|-----------------------------------|--------------|---------------|---------------|---------------|
|                              | DG                                | DO           | DOA           | SI            | Total         |
| Escott                       | 0.00                              | 0.00         | 30.27         | 0.00          | <b>30.27</b>  |
| Eurunderee                   | 0.00                              | 0.00         | 15.10         | 25.95         | <b>41.05</b>  |
| Greenslopes                  | 0.00                              | 9.51         | 0.00          | 60.78         | <b>70.29</b>  |
| Hillview                     | 0.00                              | 0.00         | 0.00          | 7.04          | <b>7.04</b>   |
| Hillview West                | 0.00                              | 0.00         | 0.00          | 26.18         | <b>26.18</b>  |
| Marengo                      | 0.00                              | 23.81        | 0.00          | 27.73         | <b>51.54</b>  |
| Narrawolga North             | 0.00                              | 0.00         | 63.25         | 0.00          | <b>63.25</b>  |
| Narrawolga South             | 61.00                             | 0.00         | 0.00          | 30.21         | <b>91.21</b>  |
| Plainview North              | 15.82                             | 0.00         | 0.00          | 0.00          | <b>15.82</b>  |
| Railway View                 | 0.00                              | 26.63        | 0.00          | 193.16        | <b>219.79</b> |
| <b>Total area</b>            | <b>76.82</b>                      | <b>59.95</b> | <b>108.62</b> | <b>371.05</b> | <b>616.44</b> |

\*DG – Duff's Gully, DO – Dunover, DOA, Dunover variant A, SI – The Siphon.

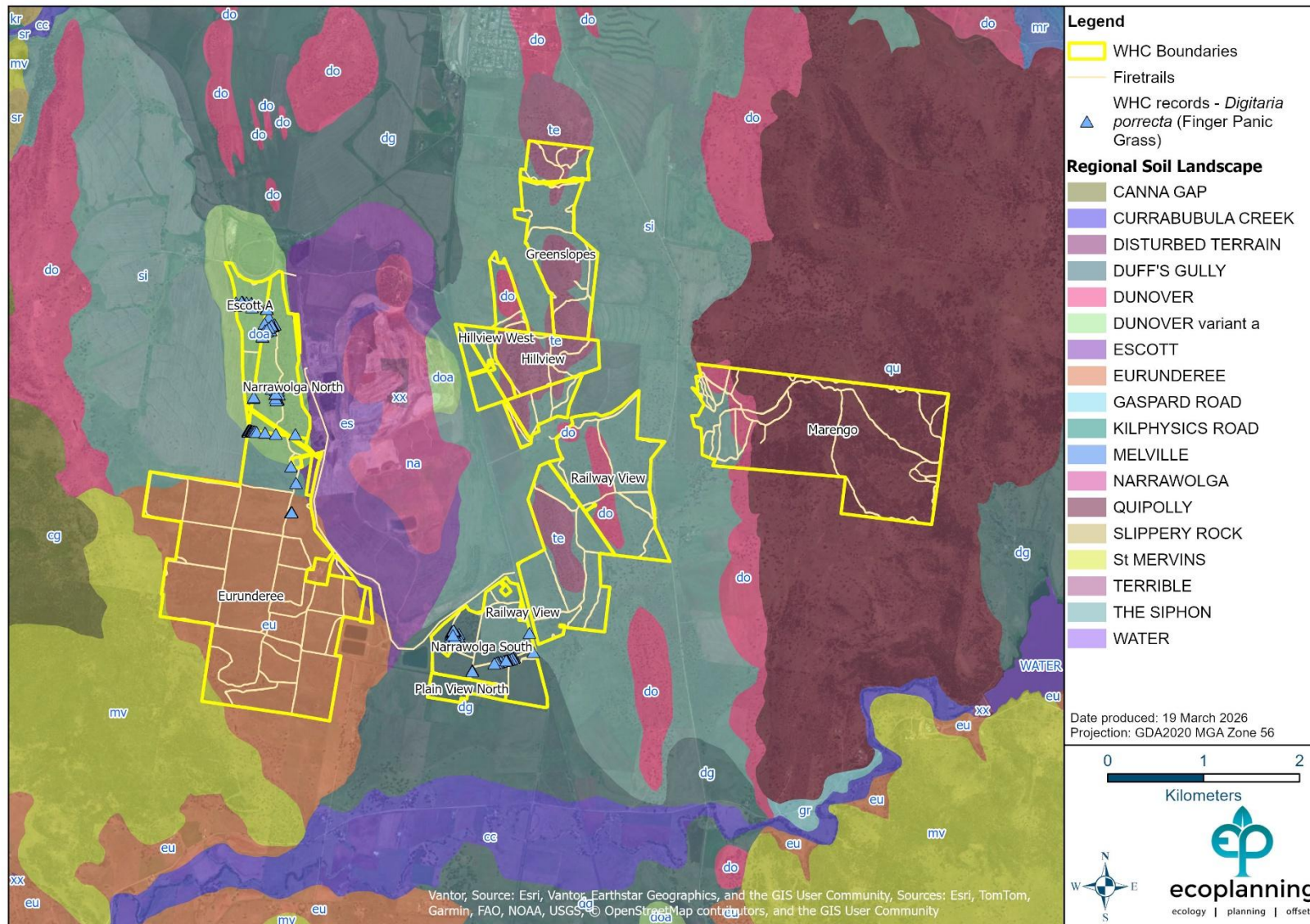


Figure 3.1: Distribution of *Digitaria porrecta* records and soil landscapes (Banks 2001) within the Werris Creek Offset Properties

## 3.2 Translocation and propagation methodologies

As noted previously, there are three main translocation methodologies which have previously been completed by WHC, these methods are:

- Seed collection and propagation translocation.
- Salvage translocation.

For the purposes of this translocation and propagation strategy, seed collection and propagation, and the salvage translocation methods are proposed for *Digitaria porrecta* within the Werris Creek BMAs. The following sections aim to outline the methods to be used for seed collection and propagation and the translocation of plants, including translocation site preparation and a post translocation watering schedule.

### 3.2.1 Seed collection and propagation

Seed collection from natural populations across the WHC BMA in conjunction with the regular inspection regime detailed within the TFPP is to be undertaken as part of this plan. Translocation via seed collection and subsequent seed propagation and planting is considered one of the most effective sources of regenerative material due to the capacity to encompass a large proportion of the species diversity within a population (Commander et al. 2018). This method also represents one of the most common methods for translocations (Silcock et al. 2019). The collection of *Digitaria porrecta* seed and the planting of seedlings germinated in a nursery, represents the most effective way to achieve the aims of the translocation, as shown by the positive progress of the 2024 translocation trial (**Section 2.2.2**). It is noted that seed collection will also occur as part of salvage translocations, where seed is present.

Harvesting seed from small, remnant populations of rare grass species can have an impact on the survival of source populations and seed collection from such populations often results in poor quality seed with few florets containing viable seeds (Whalley et al. 2013). Whalley et al. (2013) advocate increasing seed supply in nursery conditions from a small quantity of seed or transplanted intact plants as a better strategy than depleting seed from small source populations. Consequently, ex-situ population establishment to increase seed supply should be considered if the quality or quantity of seed is limited after one or more years.

Seed collection from wild populations across WHC BMA should be conducted when seed is available (as determined during routine inspections in accordance with the TFPP). In correspondence dated 3rd May 2013 from the former OEH Scientific Licensing, WHC does not require a Scientific Licence for activities approved by PA 10\_0059. Therefore, WHC restoration management with threatened flora such as seed collection and translocation do not require separate licensing from NSW DCCEEW. PA 10\_0059 was approved under the former Part 3A section of Environmental Planning and Assessment Act 1979 that exempt the requirements of certain legislation including Biodiversity Conservation Act 2016 if the activity is described in an OMP. WHC and its contractors will require additional Threatened Species Licence and property permission for any threatened flora works on land outside of a WHC OMP. Seed collection, management and storage should also consider Florabank guidelines which can be accessed at <http://www.florabank.org.au/> or Threatened Species Licensing for non-salvage plants:

- be limited to a maximum of 20% of the seed from each plant annually.

- include no more than 100 individuals per year.
- collect seed from spatially separated individuals to reduce chance of collecting seeds from related plants.
- be fully documented so that data on the plants and locations where seed collection occurred can be tracked over time.

Collected seeds should be germinated under standard propagating nursery conditions. Sufficient seed is to be collected, with the retention of some seed recommended to enable planting over multiple years. This allows for future plantings if the initial plantings/translocations are unsuccessful. Generally, staggered translocations provide better protection against the potential consequences of adverse stochastic events (Commander et al. 2018). Ultimately, the success of seed collection and propagation will depend upon the quantity and quality of seed collected.

### 3.2.2 Salvage translocation

Transplanting entire plants from naturally occurring populations has a low success rate as many plants die without successfully reproducing at their new location (Commander et al. 2018). However, results from translocations of grass species suggest that this family (Poaceae) may be more suited to whole plant translocations than other growth forms including woody shrub species (SKM 2009; Bennell 2012; New Hope Group 2014; Benwell 2018). Additionally, despite the potentially low success rate of this technique, transplantation is considered a worthwhile mitigation measure considering the fate of plants within approved disturbance footprints.

Individual plants, including as much soil held within the root system as possible (soil plug), can be dug up using shovels, trowels, bulb planters or larger earth moving equipment. Excavation, transport and replanting should be carried out as quickly as possible. Once planted, the soil plug associated with a whole plant transplant can often have gaps between it and the natural ground. Such gaps can result in a rapid loss of soil moisture and should be in-filled by ensuring soil is used to fill all possible gaps (Commander et al. 2018). Transplanted plants should be watered prior, during and post transplanting to minimise water stress and planted at pre-marked points. Salvaged whole plants can often die from the shock associated with initial removal to transplanting without regular, ongoing care (Commander et al. 2018).

It is important to note that seed collection, recipient site selection, and preparation must be undertaken prior to the removal of any 'salvage' plants. All salvaged plants should be labelled at the recipient site in a manner that allows them to be relocated for future management and monitoring.

## 3.3 Translocation site preparation, maintenance, and translocation schedule

### 3.3.1 Transplanting

#### *Fencing and planting arrangement*

Several potential threats have been previously observed in the offset areas, including herbivory (e.g. feral animals or macropods) and ground disturbance by pigs. Fencing each recipient site



or installing individual tree guards are proposed options. Fences or individual guards should be of a type which excludes browsing herbivores.

For future translocations under this translocation plan, plantings are to be arranged into groups of 25, where plants are arranged into a 2.5 x 2.5 m grid, with each plant separated by 50 cm. Each planting group should be separated by 2-3 m. Arranging plantings in this pattern should minimise the risk of plants not being watered or monitored (which can occur when plant arrangement is irregular). Each individual plant will be fitted with a planting guard, which will be removed 2 years after each plants translocation date. Each plant will also be marked with a wooden stake fitted with an identification number to assist in monitoring. Fencing, ≥1 m in height, will be erected around the perimeter of each translocation area, enclosing all planting groups within that area.

### *Site preparation and Planting*

Following successful seed germination, *Digitaria porrecta* seedlings should be planted into the WHC BMA like for Werris Creek offset areas between autumn and spring, when lower levels of heat stress typically occur.

Planting should be conducted in the following manner:

1. Prepare a hole for each plant with an auger (or similar) to a depth and width twice the pot size used for *Digitaria porrecta* growth. Rough the sides of the hole to ensure that the soil is friable.
2. Return the soil to the hole and add water to increase the soil moisture.
3. Make sure prepared holes have good soil moisture and root-balls of potted plants are saturated at time of planting.
4. Remove plant from pot and trim roots, as required.
5. When planted, the soil level at the base of the plant should be equivalent to the ground level formed into a 'dish' to better retain water from rainfall or maintenance watering over initial 12 months.
6. Place a tree guard around the plant, if required.
7. Apply sufficient water to saturate the soil surrounding the plant.
8. Monitor plant and soil moisture weekly.
9. Only water if required as overwatering may prevent healthy root growth.
10. Do not apply fertiliser.

### 3.3.2 Watering schedule

All translocated plants should be clearly marked/identified for ease of relocation for watering and monitoring purposes. Watering during hot and/or dry periods may be beneficial during the plant establishment phase (Dillon et al. 2018; Corli et al. 2023). If a site is exposed to seasonally dry conditions, Commander et al. (2018) recommend providing weekly or fortnightly water to translocated individuals during the first two dry seasons to mitigate losses during this time.

Initial watering should replicate frequent, small rainfall events (equivalent to 10 mm; approximately four litres per plant), and later watering should replicate infrequent, large rainfall events (>10 mm or until soils are saturated). Follow-up watering should also occur during any extended dry periods (absence of weekly rainfall greater than seasonal evapotranspiration

rates) or if any signs of dieback are observed which may be linked to dry conditions. Decisions regarding the watering schedule after planting will need to be made based upon the rainfall at the time and the response of planted seedlings during monitoring. As such, monitoring of local rainfall must be undertaken to determine when conditions have become too extreme for recently translocated plants. Responses to prolonged dry conditions should be proactive rather than reactive and be determined on a case-by-case basis, i.e. a long dry period in winter would be more tolerable than a shorter dry period in summer. Lack of post-translocation care and ongoing monitoring are factors that commonly lead to failure of translocation projects (Commander et al. 2018; Corli et al. 2023). Post-translocation actions including timing, frequency, and amount of watering should be documented to inform decision-making for any future planting events.

### 3.3.3 Translocation schedule

Translocation should be aimed to occur during periods of desirable seasonal conditions (times of opportunistic high soil moisture and moderate diurnal temperature variation) and/or will be undertaken between autumn and spring seasons when conditions are closest to optimal for revegetation. It is recommended that not all propagated individuals are planted in year 1. Planting should be conducted over multiple seasons to allow for any lessons learned to be incorporated into the future translocations as it gives better protection against the potential consequences of adverse stochastic events (Commander et al. 2018). This will also compliment the seed collection program which is to take place over multiple years.

Although Commander et al. (2018) suggest that seed propagation usually takes about 12 to 18 months to germinate and grow to a suitable sized seedling for planting, the seed which was used in the translocation described in **Section 2.2.2** was completed in February 2024, with seed being processed and germinated in a nursery soon after. Translocation of these plants was completed in November 2024, just nine months after the seed was collected. Therefore, planning of translocations timeframes can be reactionary to opportunities to seed collection. As the time between seed collection and translocation is relatively short (approximately one third that of other translocation plans, Commander et al. [2018]), all parties involved in the translocation of the species should be well informed on the translocation methods to be used, including site selection, site preparation, and post-translocation aftercare (e.g. regular watering, weed management)

## 4 Monitoring and reporting

### 4.1 On-going monitoring

Monitoring of translocated *Digitaria porrecta* individuals and habitat is to continue under this program, including future translocations, in order to:

- increase the understanding of the biology of the species.
- provide an early warning of potential threats with the actions undertaken as part of the translocation.
- generate quantitative evidence of translocation success or failure against stated objectives.
- document information on population dynamics within areas of habitat.
- highlight ways to make future translocations more effective.

Consistent with monitoring of translocations to date, all translocated seedlings are to be permanently tagged, and data collected prior to planting to enable comparisons between individuals and between recipient sites over time. All translocated seedlings should undergo monitoring to avoid missing any issues or failures that may arise. Monitoring of translocated seedlings is to take place monthly for the first year after a seedling is planted, and quarterly for the next 2 years.

Consistent with monitoring to date, wild populations (reference sites) must also be monitored to provide benchmark data and assist in determining attrition rates or impacts that may be attributed to a natural event (drought, fire, rainfall) that may impact the wild populations and not just the translocated individuals.

Collection of the quarterly monitoring data aims to inform and guide future management actions, including an understanding of the following:

- Time to maturity (e.g. first flowering)
- Flowering / fruiting (comparisons between sites and populations).
- The health of wild populations compared to translocated populations.
- The identification of threats to wild populations compared to translocated populations and the resilience of both.
- The proportion of plants that produce viable seed.
- Whether plants in certain locations / situations have better outcomes/survivorship than others.
- Evidence of second generation individuals and their abundance.
- Any experimental micro-siting and treatment variables implemented as part of the program (e.g. fenced / unfenced, shaded / unshaded).

All aspects such a watering frequency, unusual climatic conditions and rainfall should also be considered and documented to highlight ways in which future translocations may be more effective.

Natural populations of *Digitaria porrecta* should be monitored quarterly as reference sites. Given the abundance of *Digitaria porrecta* within portions where *Digitaria porrecta* is known to occur on Werris Creek BMA, monitoring data may be collected in fixed plots (e.g. 10 x 10 m),

or a fixed number of marked individuals. Monitoring of translocated and reference plants should include quantitative variables described above.

## 4.2 Reporting

Findings from each translocation event and results from quarterly monitoring of both wild and translocated populations are to be provided in a quarterly TPP report in conjunction with the requirements of the TFPP. Additionally, results are to be summarised for provision within the relevant WHC Mine Annual Reviews. Overall, the findings presented in quarterly report should also provide recommendations for updating current translocation and monitoring methods where necessary and inform future translocation projects.



## 5 References

- Ayers, D., Nash, S. and Baggett, K. (1996) *Threatened species of Western New South Wales*. Hurstville, NSW: NSW National Parks and Wildlife Service.
- Banks, R.G. (2001) 'Soil Landscapes of the Tamworth 1:100,000 Sheet'. Sydney, NSW: NSW Department of Land and Water Conservation.
- Bennell, A. (2012) *Ballina Bypass Arthraxon hispidus (Hairy Joint Grass) Translocation and Management Project: Final Report*. Report prepared for the Ballina Bypass Alliance, Mullumbimby.
- Benwell, A. (2018) 'Threatened plant translocation case study: Translocation of threatened flora for the Warrell Creek to Urunga upgrade of the Pacific Highway, Mid North Coast NSW', *Australasian Plant Conservation*, 27(1), pp. 15–19.
- Commander, L., Coates, D., Broadhurst, L., Offord, C.A., Makinson, R. and Matthes, M. (2018) *Guidelines for the translocation of threatened plants in Australia*. 3rd edn. Canberra: Australian Network for Plant Conservation.
- Commonwealth Department of Agriculture, Water, and the Environment (DAWE) (2026) *SPRAT profile, Syzygium paniculatum SPRAT profile*. Available at: [https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon\\_id=20307](https://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=20307).
- Commonwealth Threatened Species Scientific Committee (Clth. TSSC) (2008) *Approved Conservation Advice for Digitaria porrecta (Finger Panic Grass)*. Available at: [chrome-extension://efaidnbmnnnibpcajpcgclefindmkaj/https://www.environment.gov.au/biodiversity/threatened/species/pubs/12768-conservation-advice.pdf](https://www.environment.gov.au/biodiversity/threatened/species/pubs/12768-conservation-advice.pdf).
- Corli, A., Rocchetti, G.A., Orsenigo, S., Possley, J. and Abeli, T. (2023) 'The role of aftercare in plant translocation', *Biodiversity and Conservation*, 32(13), pp. 4181–4197. Available at: <https://doi.org/10.1007/s10531-023-02703-x>.
- Dillon, R., Monks, L. and Coates, D. (2018) 'Establishment success and persistence of threatened plant translocations in south west Western Australia: an experimental approach', *Australian Journal of Botany*, 66(4), pp. 338–346. Available at: <https://doi.org/10.1071/BT17187>.
- Ecoplanning (2021) *Restoration and Translocation Strategy - Digitaria porrecta*. Unpublished report, prepared for Whitehaven Coal.
- Ecoplanning (2026) *Threatened Flora Project Plan*. Unpublished report, prepared for Whitehaven Coal.
- Isbell, R.F. and National Committee on Soil and Terrain (2021) *The Australian Soil Classification* [ePub (Last updated: 25 February 2026)]. Third. CSIRO Publishing (Australian Soil and Land Survey Handbooks Series). Available at: <https://www.soilscienceaustralia.org.au/asc/soilhome.htm> (Accessed: 30 March 2026).
- New Hope Group (2014) *Threatened Species Translocation Plan - New Acland Coal Mine Stage 3 Project*.
- NSW Department of Climate Change, Energy, the Environment and Water (NSW DCCEEW) (2026) *BioNet Atlas of NSW Wildlife, BioNet Atlas of NSW Wildlife*. Available at: <https://www.environment.nsw.gov.au/topics/animals-and-plants/biodiversity/nsw-bionet>.
- NSW National Parks and Wildlife Service (NPWS) (2003) *Threatened Plants of Western NSW: information review*. Hurstville, NSW.

PlantNET (The NSW Plant Information Network System) (2026) *Royal Botanic Gardens and Domain Trust, Sydney*. Available at: <https://plantnet.rbgsyd.nsw.gov.au/>.

QLD Department of Environment Tourism, Science, and Innovation (DETSI) (2026) *WildNET - Digitaria porrecta profile*. Available at: [https://wildnet.science-data.qld.gov.au/taxon-detail?taxon\\_id=14599](https://wildnet.science-data.qld.gov.au/taxon-detail?taxon_id=14599).

Silcock, J.L., Simmons, C.L., Monks, L., Dillon, R., Reiter, N., Jusaitis, M., Vesk, P.A., Byrne, M. and Coates, D.J. (2019) 'Threatened plant translocation in Australia: A review', *Biological Conservation*, 236, pp. 211–222. Available at: <https://doi.org/10.1016/j.biocon.2019.05.002>.

SKM (2009) *Translocation Plan for Homopholis belsonii*. Unpublished report compiled for the Wetalla Water Pipeline Project - New Hope Coal Australia.

Whalley, R.D.B., Chivers, I.H. and Waters, C.M. (2013) 'Revegetation with Australian native grasses – a reassessment of the importance of using local provenances', *The Rangeland Journal*, 35(2), pp. 155–166. Available at: <https://doi.org/10.1071/RJ12078>.

## Appendix A Comparison of *Digitaria porrecta* diagnostic features with *D. coenicola* and *D. divaricatissima*

**Table A.1: Comparison of *Digitaria porrecta* diagnostic features with *D. coenicola* and *D. divaricatissima* (adapted from Jacobs et al 2008)**

| Feature  | <i>Digitaria porrecta</i>                                                                                                                                                                                                                                                                                                   | <i>Digitaria coenicola</i>                                                                                                                                                                                                                                                                                                                                                                 | <i>Digitaria divaricatissima</i>                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Habit    | <ul style="list-style-type: none"> <li>Loosely caespitose, erect, or geniculate-ascending greyish pubescent to 0.6 m high.</li> <li>Swollen at the base.</li> <li>Culms and sheaths hairy, especially near the nodes, becoming glabrous upwards.</li> </ul>                                                                 | <ul style="list-style-type: none"> <li>Loosely caespitose, erect, or geniculate-ascending greyish pubescent perennial to 0.8 m high.</li> <li>Swollen and densely silky pubescent or callous at the base.</li> <li>Culms pubescent especially near the nodes, branching from the nodes.</li> </ul>                                                                                         | <ul style="list-style-type: none"> <li>Loosely tufted erect or geniculate perennial to 0.8 high</li> <li>Swollen and densely silky pubescent or villous at the base.</li> <li>Foliage otherwise loosely pubescent or hirsute or glabrescent.</li> <li>Nodes glabrous.</li> </ul>                                                                                                                                                                     |
| Leaves   | <ul style="list-style-type: none"> <li>Sheaths hairy.</li> <li>Blade 2-3 mm wide, well developed spicules on margins.</li> </ul>                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Sheaths densely woolly pubescent.</li> <li>Blade 2-6 mm wide, densely pubescent on both sides, the margins somewhat undulate.</li> </ul>                                                                                                                                                                                                            | <ul style="list-style-type: none"> <li>Lower sheaths ± pubescent or villous.</li> <li>Upper sheaths glabrescent and occasionally sprinkled with tuberculate based hairs.</li> <li>Blade 3-6 mm wide.</li> <li>Margins somewhat undulate, thickened.</li> <li>Variably glabrescent or loosely pubescent.</li> </ul>                                                                                                                                   |
| Ligule   | <ul style="list-style-type: none"> <li>2-3 mm long, margins jagged.</li> </ul>                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Obtuse or jagged.</li> </ul>                                                                                                                                                                                                                                                                                                                        | <ul style="list-style-type: none"> <li>2-3 mm long, obtuse or sub-truncate, often jagged.</li> </ul>                                                                                                                                                                                                                                                                                                                                                 |
| Peduncle | <ul style="list-style-type: none"> <li>Much exerted at length, compressible.</li> <li>Fracturing.</li> </ul>                                                                                                                                                                                                                | <ul style="list-style-type: none"> <li></li> </ul>                                                                                                                                                                                                                                                                                                                                         | <ul style="list-style-type: none"> <li></li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |
| Racemes  | <ul style="list-style-type: none"> <li>Stiffly spreading at maturity -</li> <li>the lower in a whorl of 4-6 and to 30 cm long bare at the bases for 4-11 cm mostly unilaterally branched, 3-12 cm long bearing 3-13 paired or solitary spikelets secondarily branched</li> <li>hairs in branch axils 1-3 mm long</li> </ul> | <ul style="list-style-type: none"> <li>Stiffly spreading at maturity -</li> <li>the lower in a whorl of 4-10 and to 25 cm long bare at the bases for 3-11 cm</li> <li>the upper mostly arising singly on an elongated common axis to 20 cm long</li> <li>mostly unilaterally branched, 3-12 cm long bearing 3-13 paired or solitary spikelets hairs in branch axils 1-3 mm long</li> </ul> | <ul style="list-style-type: none"> <li>Spreading at maturity -</li> <li>the lower in a whorl of 4-6 and 8-35 cm long, the upper arising singly and distant on a common axis to 10 cm long</li> <li>bare at the bases for 1-9 cm</li> <li>rarely also with a cluster of spikelets at the base</li> <li>spikelets mostly in pairs or the lower sometimes solitary, the pairs mostly remote</li> <li>short hairs 0.5 mm long in raceme axils</li> </ul> |
| Pedicel  | <ul style="list-style-type: none"> <li>1-2 mm long.</li> </ul>                                                                                                                                                                                                                                                              | <ul style="list-style-type: none"> <li>Shorter pedicels c. 0.5-4 mm long</li> <li>Others 4-15 mm long</li> </ul>                                                                                                                                                                                                                                                                           | <ul style="list-style-type: none"> <li>Shorter pedicel 1-4 mm long.</li> <li>Other pedicel 4-10 (20) mm long.</li> </ul>                                                                                                                                                                                                                                                                                                                             |

| Feature     | <i>Digitaria porrecta</i>                                                                                                                                                                                                  | <i>Digitaria coenicola</i>                                                                                                                                                                                                                                                              | <i>Digitaria divaricatissima</i>                                                                                                                                                                                                         |
|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Spikelets   | <ul style="list-style-type: none"> <li>• 5-7 mm long</li> <li>• Solitary or in pairs</li> </ul>                                                                                                                            | <ul style="list-style-type: none"> <li>• Mostly 4.5-5 mm long</li> <li>• Remote on the upper parts of the racemes</li> <li>• Spikelets usually in pairs, similar, more rarely singly or in triplets hairs towards upper part spreading at maturity - spikelet looking obtuse</li> </ul> | <ul style="list-style-type: none"> <li>• 3.75-5 mm long, + hairy</li> <li>• The hairs at first appressed, at length spreading but not or scarcely concealing the outline of the spikelet</li> </ul>                                      |
| Lower glume | <ul style="list-style-type: none"> <li>• 1-1.7 mm long, glabrous,</li> <li>• 20% the length of the spikelet</li> <li>• 0-nerved, membranous</li> <li>• -might be faint</li> <li>• apex truncate or obtuse</li> </ul>       | <ul style="list-style-type: none"> <li>• 15-30% as long as spikelet</li> <li>• obscurely 3-nerved</li> <li>• a little remote from the upper glume</li> <li>• obtuse or subacute, firm</li> </ul>                                                                                        | <ul style="list-style-type: none"> <li>• 0.4-0.75 mm long, ovate</li> <li>• 10-25% as long as the spikelet</li> <li>• 1-nerved</li> <li>• not or very rarely remote from the upper</li> <li>• apex truncate or obtuse</li> </ul>         |
| Upper glume | <ul style="list-style-type: none"> <li>• 4.5-6.5 mm long, pubescent, 80-90% the length of the spikelet</li> <li>• 5-nerved, membranous</li> <li>• upper glume margins eciliate or ciliate</li> <li>• apex acute</li> </ul> | <ul style="list-style-type: none"> <li>• 5-7-nerved</li> <li>• Similar to lower lemma</li> <li>• pubescent between all the prominent equidistant nerves especially in upper part</li> </ul>                                                                                             | <ul style="list-style-type: none"> <li>• 3 nerved, slightly shorter than the spikelet</li> <li>• lateral nerves ribbed,</li> <li>• villous and hairy between + between the nerves and along the margins</li> <li>• apex acute</li> </ul> |
| Lower lemma | <ul style="list-style-type: none"> <li>• 4.5-6.1 mm long, pubescent, sterile, as long as the spikelet</li> <li>• 7-nerved</li> </ul>                                                                                       | <ul style="list-style-type: none"> <li>• 5-7-nerved</li> <li>• pubescent between</li> </ul>                                                                                                                                                                                             | <ul style="list-style-type: none"> <li>• 3.1-4.5 mm long, sterile, equalling the spikelet, 5-7 nerved, ribbed with unevenly spaced nerves</li> <li>• apex villous, acute</li> </ul>                                                      |
| Upper glume | <ul style="list-style-type: none"> <li>• 4.5-5.5 mm long</li> <li>• apex acute or acuminate, fertile, cartilaginous, thinner on the margins</li> <li>• surface reticulate, muricate with pronounced papillae</li> </ul>    | <ul style="list-style-type: none"> <li>• 3-5 mm long, elliptical</li> <li>• apex shortly apiculate, fertile</li> <li>• surface minutely punctate-striolate in longitudinal lines, brown</li> </ul>                                                                                      | <ul style="list-style-type: none"> <li>• 2.9-4.5 mm long</li> <li>• apex acute, mucronate, fertile, a little shorter than the spikelet,</li> <li>• elliptic, shortly pointed, pallid</li> <li>• minutely punctulate-striolate</li> </ul> |



## Appendix B Descriptions of Soil Landscape following Banks (2001)

**Table B.1: Descriptions of Soil Landscape following Banks (2001) and number of *Digitaria porrecta* records from the WHC Threatened Flora Database within each Soil Landscape.**  
 'Blue' rows indicate soil landscapes that are suitable for *Digitaria porrecta*.

| Soil Landscape    | Description*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | No <i>D. porrecta</i> records** |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------|
| Duffs Gully       | <i>Upper footslopes are dominated by very deep, moderately well-drained Red Chromosols (Red-brown Earths), with giant, imperfectly drained Brown Vertosols (Brown Clays) on mid-footslopes. Lower slopes are dominated by giant, imperfectly drained Black Vertosols (Black Earths), with extreme lower slopes and some small drainage plains dominated by giant, poorly drained Grey Vertosols (Grey Clays).</i>                                                                                                                                      | 51                              |
| Dunover           | <i>Crests dominated by very shallow, well-drained Paralithic Leptic Rudosols (Lithosols), with moderately deep to very deep, well-drained Black and Brown Chromosols (Non-calcic Brown Soils and Red Brown Earths) on steeper upper and mid-slopes. Lower slopes dominated by moderately deep to very deep, imperfectly drained to moderately well-drained Red and Brown Vertosols (Red and Brown Clays) with some deep, imperfectly drained Black Vertosols (Black Earths) in drainage depressions.</i>                                               | 0                               |
| Dunover variant A | <i>Generally, crests are dominated by very shallow, well-drained Paralithic Leptic Rudosols (Lithosols). Moderately deep to very deep, well-drained Black and Brown Chromosols (Non-calcic Brown Soils; Red Brown Earths) on steeper upper and mid-slopes. Lower slopes are dominated by moderately deep to very deep, imperfectly drained to moderately well-drained Red and Brown Vertosols (Red and Brown Clays). Some deep, imperfectly drained Black Vertosols (Black Earths) occur in drainage depressions and in the landscape variant doa.</i> | 79                              |
| Escott            | <i>Very deep, moderately well-drained Brown Sodosols (Solodic Soils) with some very deep, moderately well drained Brown Dermosols (Chernozems) on lower footslopes and drainage plains.</i>                                                                                                                                                                                                                                                                                                                                                            | 0                               |

|            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |   |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---|
| Eurunderee | <i>Very deep to giant, imperfectly drained Brown Sodosols (Solodic soils, Solodized Solonetz), with very deep, imperfectly drained Brown Chromosols, Dermosols and Sodosols (Red-brown Earths and Solodic soils) on upper footslopes and very deep to giant, moderately well-drained Red Chromosols (Non-Calcic Brown soils and Red-brown Earths) on some lower footslopes and drainage plains.</i>                                                                                                                                                                                                                                                                                                                                                  | 3 |
| Quipolly   | <i>On sedimentary substrates, shallow, well to imperfectly drained Clastic, Leptic and Chernic-Leptic Rudosols (Lithosols) on crests and close to rock outcrop, with Brown Kurosols (minimal Brown Podzolic Soils) where soils are deeper. Shallow to deep, moderately well to well-drained Brown Chromosols (Non-calcic Brown Soils and Brown Podzolic Soils) on slopes, tending to Brown Sodosols (Solodic Soils) on lower slopes. On volcanogenic sediment and mudstones, moderately deep, well-drained Black Dermosols (Chocolate Soils) on crests and moderately deep to deep, poorly to imperfectly drained Black Dermosols and Brown and Black Vertosols (Chocolate Soils and Black Earths) on mid to lower slopes and in drainage lines.</i> | 0 |
| St Mervins | <i>Shallow, well-drained Lithic Leptic Tenosols (loamy Lithosols) or occasionally shallow, well-drained sandy Tenosols (Earthy Sands) on crests and some upper slopes. Deep moderately well-drained Brown Chromosols (Noncalcic Brown Soils) on mid-slopes and very deep imperfectly drained Brown Sodosols (Solodic soils) on lower slopes.</i>                                                                                                                                                                                                                                                                                                                                                                                                     | 0 |
| Terrible   | <i>Very shallow, well-drained Shallow Lithic Leptic Tenosols (Lithosols) on crests and benches. Deep to very deep, well-drained Eutrophic Brown Chromosols (Non-calcic Brown Soils) on upper slopes. Very deep, rapidly drained Eutrophic Brown Chromosols (Non-calcic Brown Soils) on mid-slopes. Some deep, moderately well-drained Brown and Grey Vertosols (Brown and Grey Clays) on lower slopes and in drainage depressions.</i>                                                                                                                                                                                                                                                                                                               | 0 |
| The Siphon | <i>Upper footslopes are generally dominated by deep to very deep, moderately well-drained to imperfectly drained Red Chromosols (Red-brown Earths) with some occasional Black Vertosols (Black Earths) in this position. Some mid to upper footslopes have very deep, well-drained Red Ferrosols (Euchrozems). Mid to lower footslopes are generally dominated by very deep to giant, imperfectly drained Black Vertosols (Black Earths). Terminal end of footslope is generally dominated by deep to giant, imperfectly drained Grey Vertosols (Grey Clays).</i>                                                                                                                                                                                    | 3 |

\*Soil landscape descriptions from Banks (2001)

\*\*Records from the WHC Threatened Flora Database (shown in **Figure 3.1**)

## Appendix C Summary of the four main soil types found in the Werris Creek Offset Properties

**Table C.1: Summary of the four main soil types found in the description of Soil Landscapes mapped by Banks (2001)**

| Soil type  | Description*                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Chromosols | <i>Soils other than Hydrosols with a clear or abrupt textural B horizon and in which the major part of the upper 0.2 m of the B2t horizon (or the major part of the entire B2t horizon if it is less than 0.2 m thick) is not sodic and not strongly acid. Soils with strongly sub-plastic upper B2t horizons are also included even if they are sodic.</i>                                                                                                                                                                                                                                                |
| Dermosols  | <i>Soils other than Vertosols, Hydrosols, Calcarosols and Ferrosols which ... have B2 horizons that have grade of pedality greater than weak throughout the major part of the horizon, and do not have clear or abrupt textural B horizon.</i>                                                                                                                                                                                                                                                                                                                                                             |
| Sodosols   | <i>Soils with a clear or abrupt textural B horizon and in which the major part of the upper 0.2 m of the B2t horizon (or the major part of the entire B2t horizon if it is less than 0.2 m thick) is sodic and not strongly acid.</i>                                                                                                                                                                                                                                                                                                                                                                      |
| Vertosols  | <i>Clay soils with shrink-swell properties that exhibit strong cracking when dry and at depth have slickensides and/or lenticular peds.<br/>[Vertosols have] a clay field texture or 35% or more clay throughout the solum except for thin, surface crusty horizons 30 mm or less thick and when dry, open cracks occur at some time in most years. These are at least 5 mm wide and extend upward to the surface or to the base of any plough layer, peaty horizon, self-mulching horizon, or thin, surface crusty horizon; and slickensides and/or lenticular peds occur at some depth in the solum.</i> |

\*descriptions from 'The Australian Soil Classification' (Isbell and National Committee on Soil and Terrain 2021)