

A decorative background element on the left side of the page, consisting of several concentric, irregular contour lines in a light green color, resembling a topographic map or a stylized wood grain pattern.

Lynwood Box Gum Woodland Management Plan Update

Holcim (Australia) Pty Ltd

Document Tracking

Project Name:	Lynwood Box Gum Woodland Management Plan Update
Project Number:	25GWS10241
Project Manager:	Michael Gregor
Prepared by:	Chelsea Philip and Micheal Gregor
Reviewed by:	Andrew Whitford
Approved by:	Andrew Whitford
Status:	Final
Version Number:	V3
Last saved on:	29/08/2025

Version	Prepared by	Reviewed by	Approved by	Status	Date
V3	Chelsea Phillips, Michael Gregor	Andrew Whitford	Andrew Whitford	Final	12/09/2025

This report should be cited as ‘Eco Logical Australia 2025, Lynwood Box Gum Woodland Management Plan Update, Prepared for Holcim (Australia) Pty Ltd.’

Acknowledgements

This document has been prepared by Eco Logical Australia Pty Ltd with support from Dozie Egeonu and Wayne Beattie from Holcim (Australia).

Disclaimer

This document may only be used for the purpose for which it was commissioned and in accordance with the contract between Eco Logical Australia Pty Ltd and Holcim (Australia) Pty Ltd. The scope of services was defined in consultation with Holcim (Australia) Pty Ltd, by time and budgetary constraints imposed by the client, and the availability of reports and other data on the subject area. Changes to available information, legislation and schedules are made on an ongoing basis and readers should obtain up-to-date information. Eco Logical Australia Pty Ltd accepts no liability or responsibility whatsoever for or in respect of any use of or reliance upon this report and its supporting material by any third party. Information provided is not intended to be a substitute for site specific assessment or legal advice in relation to any matter. Unauthorised use of this report in any form is prohibited.

Declaration of accuracy

In making this declaration, I am aware that section 491 of the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (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 (Cth). The offence is punishable on conviction by imprisonment or a fine, or both. I am authorised to bind the approval holder to this declaration and that I have no knowledge of that authorisation being revoked at the time of making this declaration.

Signed



Ful Name (print) Andrew Whitford
Organisation Eco Logical Australia
Date 12 September 2025

Project details	
EPBC Number	2012/6560
Project Name	Lynwood Quarry, Marulan NSW
Proponent ACN/ABN	Holcim (Australia) Pty Ltd
The proposed action	To establish and operate a quarry pit, construct internal haul roads, and a rail spur and loading facility at Marulan, NSW
Location of the action	Marulan S Rd, Marulan NSW
Date of the preparation of the Management Plan	12 September 2024
Person accepting responsibility for the Management Plan	Andrew Whitford, Principal Consultant, Eco Logical Australia

Abbreviations and key terms

Abbreviation	Description
BOA	The total extent of the Biodiversity Offset Area
AABR	Australian Association of Bush Regenerators
BGWMP	Box Gum Woodland Management Plan
CEEC	Critically Endangered Ecological Community
DCCEEW	Department of Climate Change, Energy, The Environment and Water (Commonwealth)
ELA	Ecological Australia
EPBC Act	Environment Protection and Biodiversity Conservation Act 1999
GMC	Goulburn Mulwaree Council
LGA	Local Government Area
MNES	Matters of National Environmental Significance
PCT	Plant Community Type
TEC	Threatened Ecological Community

Contents

1. Introduction	1
1.1. Background and context	1
1.2. Scope and objectives	4
1.3. Preparation and implementation of this plan	5
2. Description of the environment	8
2.1. Soils.....	8
2.1.1. Desktop assessment	8
2.1.2. Soil assessment summary.....	9
2.1.3. Results.....	9
2.2. Vegetation communities.....	12
2.2.1. Southern Tableland Western Hills Scribbly Gum Forest (PCT 3747).....	12
2.2.2. Southern Tableland Grassy Box Woodland (PCT 3376)	12
2.3. <i>Leucochrysum albicans</i> subsp. <i>tricolor</i> (Hoary Sunray)	16
2.4. Fauna	19
2.4.1. Fauna survey	19
2.4.2. Fauna results summary.....	19
2.5. Weeds.....	22
2.6. Fire history.....	22
3. Management zones	23
3.1. Management Zone 1: Box Gum Woodland Revegetation (Intensive).....	23
3.2. Management Zone 2: Box Gum Woodland Revegetation (Passive).....	23
3.3. Management Zone 3: Box Gum Woodland Conservation.....	24
3.4. Management Zone 4: Hoary Sunray Conservation	24
3.5. Management Zone 5: Vegetation conservation.....	25
3.6. Management Zone 6: Cultural heritage management.....	25
4. Management works	26
4.1. Fencing and interpretation signage	26
4.1.1. Permanent fencing.....	26
4.1.2. Signage and gates	26
4.2. Erosion Management.....	26
4.3. Feral animal control.....	26
4.4. Training.....	27
4.5. Weed Control.....	27
4.5.1. Primary and secondary weed control	27
4.5.2. Maintenance	27
4.6. Revegetation.....	27
5. Implementation schedule	30
5.1. Implementation schedule	30
5.2. Adaptive management.....	30
5.3. In-perpetuity management.....	30
6. Monitoring and reporting	33
6.1. BAM plots	33
6.2. Photo monitoring.....	33
6.3. Revegetation assessment	34

6.4.	Hoary Sunray census.....	34
6.5.	Annual progress reports	34
6.6.	Performance criteria.....	35
6.7.	Auditing and review	36
6.7.1.	Record keeping.....	36
6.7.2.	Independent audit	36
6.7.3.	Management plan review.....	37
6.8.	Box Gum Woodland condition class.....	42
7.	Risk assessment and corrective actions	44
8.	Costs	48
8.1.	Infrastructure and site preparation works	48
8.2.	Vegetation management works.....	48
8.2.1.	Weed control.....	48
8.2.2.	Revegetation treatments.....	48
8.2.3.	Monitoring and reporting.....	48
9.	References	50

List of Figures

Figure 1:	Biodiversity Offset Area Location.....	7
Figure 2:	Plant Community Types within the BOA	14
Figure 3:	BGW that meets the EPBC listing criteria.....	15
Figure 4:	<i>Leucochrysum albicans</i> var. <i>tricolour</i> (Hoary Sunray) records	17
Figure 5:	<i>Leucochrysum albicans</i> var. <i>tricolour</i> (Hoary Sunray) 2022 extent and BGW listing criteria...	18
Figure 6:	BGWMP Management Zones.....	29

List of Tables

Table 1:	Variation of conditions for Lynwood Quarry, Marulan NSW EPBC approval 2012/6560	2
Table 2:	Roles and responsibilities of implementation within the BOA	5
Table 3:	Analysis of topsoil characteristics.....	11
Table 4:	Analysis of topsoil nutrients	11
Table 5:	PCT extent within the BOA	12
Table 6:	All fauna species recorded within the BOA	19
Table 7:	Priority weeds and Weeds of National Significance (WoNS) identified within the BGWMP	22
Table 8:	Revegetation assumptions	27
Table 9:	Revegetation densities	28
Table 10:	Implementation schedule years 1 – 6	31
Table 11:	Implementation schedule years 7 – 12	32
Table 12:	BGWMP Performance criteria from Years 1-6	38
Table 13:	BGWMP performance criteria from year 7-12	40
Table 14:	Key diagnostic characteristics summary compared to the current conditions in MZ1.....	42
Table 15:	Specifications to achieve Condition Class C.....	43
Table 16:	Risk assessment.....	45

Table 17: Indicative BGWMP costings..... 49
Table 18: Indicative potential groundcover costs if required 49

List of Appendices

Appendix A SESL Soil Survey within the BOA

Appendix B Soil results summary

Appendix C Flora survey results

Appendix D Fauna survey results

Appendix E Weeds recorded within the BOA

Appendix F Recommended BGW Revegetation list

Appendix G Techniques and specifications

Appendix H EPBC Condition classes and thresholds (Commonwealth DCCEE 2023)

1. Introduction

This Box Gum Woodland Management Plan (BGWMP) has been prepared by Eco Logical Australia (ELA) on behalf of Holcim (Australia) Pty Ltd (Holcim) for the hard rock quarry at South Marulan Road, Marulan. The project area is located west of the township of Marulan along the Hume Highway and sits within Goulburn Mulwaree (GM) Local Government Area (LGA) (Figure 1).

1.1. Background and context

The project area is located west of Marulan, a suburb in the Southern Tablelands region. The project area contains hard rock quarry operations including the pit, emplacement areas, infrastructure, access roads, energy substation, remnant bushland and cleared grasslands.

During construction in 2012, a referral to the Australian Federal Government under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) was undertaken. The referral was submitted due to the impacts to matters of national environmental significance (MNES) including the critically endangered ecological community (CEEC) *White box – yellow box – Blakely’s red gum grassy woodlands and derived native grasslands* and the endangered plant species *Leucochrysum albicans* var. *tricolor* (Hoary Sunray). The project was given EPBC approval in 2013. The conditions relating to the BGWMP from EPBC 2013/6560 included:

Approval Condition 2.

To assist in mitigating the impacts of the proposal on White Box – Yellow Box – Blakely’s Red Gum Woodland and Derived Native Grassland (box gum woodland), the person taking the action must prepare and submit a Box Gum Woodland Management Plan (BGWMP) for the Minister’s written approval prior to commencement of the Action. This BGWMP must include:

- (a) Management actions designed to improve the ecological quality of box gum woodland on the project area (refer to Map at Schedule 1) and proposed biodiversity offset area and protect it from degradation for the duration of the action’s impact on box gum woodland.*
- (b) Regeneration and revegetation strategies for box gum woodland on the project area and the proposed biodiversity offset area (refer to Map at Schedule 1) to improve the ecological quality of these areas of box gum woodland.*
- (c) An ecological monitoring program to monitor the success of the management actions in the BGWMP and define measurable targets of management actions, performance criteria indicators and an adaptive management framework for the duration of the action’s impact on box gum woodland.*
- (d) Management of the offset site as above from commencement of the action.*

The action must not commence until the BGWMP is approved by the Minister. The approved BGWMP must be implemented.

Approval Condition 3.

To compensate for the loss of 7.9 hectares of box gum woodland, Holcim must secure the lands identified as the ‘Proposed Biodiversity Offset Area’ in the Map at Schedule 1 of this notice as a biodiversity offset and protect the lands for the duration of the action’s impact through a conservation agreement under section 69 of the NSW National Parks and Wildlife Act 1979. The conservation agreement must state: ‘This agreement must not be terminated without the

written consent of 'The Minister Adminstrating the Commonwealth Environment Protection and Biodiversity Conservation Act 1999.'

Following the issuing of these approval requirements a Box Gum Woodland Management Plan (BGWMP) was prepared by Umwelt (Australia) Pty Limited in September 2013 for Holcim. This BGWMP provided a framework for restoration actions to be undertaken within the BOA for protection and enhancement of the Box gum woodland and other vegetation.

In a letter on 9 November 2021, the Commonwealth Department of Climate Change, Energy, the Environment and Water (DCCEEW) identified numerous breaches of this approval including:

Condition 2 of the approval requires that the approved Box Gum Woodland Management Plan (BGWMP) must be implemented. Management actions and monitoring prescribed in the BGWMP were not completed according to the schedule outlined in the BGWMP and this has potentially resulted in increased impacts of the approved project on MNES.

ELA undertook works to begin addressing this condition, including submitting the following surveys to DCCEEW on 8 February 2024.

- the baseline ecological surveys to determine the current condition of Box Gum Woodland within the offset site, and
- the extent of *Leucochrysum albicans* subsp. *tricolor* (Hoary Sunray) population within the offset site.

In an email dated 26 August 2024, DCCEEW identified that the following works are still outstanding to meet Condition 2:

- A comprehensive baseline soil survey
- Revising the BGWMP to include
 - pest plant and animal surveys;
 - flora and fauna surveys
 - Mapping of the extent of erosion and sedimentation and determine the impact it currently has on the protected matters.
 - Condition of fencing
 - Fire history of the site

Finally, a decision to vary conditions of approval for EPBC 2012/6560 under section 143(1)(a) of the EPBC Act was made DCCEEW on 20 March 2025.

The variation of condition to EPBC approval 2012/6560 are displayed in Table 1.

Table 1: Variation of conditions for Lynwood Quarry, Marulan NSW EPBC approval 2012/6560

Ref	Condition	Condition requirement	Plan reference Update
1	2	The approval holder must implement the Lynwood Quarry Box Gum Woodland Management Plan (LQBGWMP) at least until the expiry of this approval.	Table 2
2	2A	By 1 May 2025 the approval holder must submit a revised LQBGWMP to the department for the Minister's written approval.	-

Ref	Condition	Condition requirement	Plan reference Update
3	2B	The revised LQBGWMP submitted in accordance with condition 2A of this approval, must be prepared by a suitably qualified ecologist and include;	
4	a.	maps and a general description of the offset property, including its size and location;	Section 2.2
5	b.	maps that show the following within the offset property: <ul style="list-style-type: none"> i. the extent of existing Box Gum Woodland; and ii. areas of native pasture that will be regenerated (regeneration areas) to Box Gum Woodland; 	Figure 3 Figure 6
6	c.	a table that clearly documents the total area in hectares of: <ul style="list-style-type: none"> i. the offset property; ii. existing Box Gum Woodland within the offset property; and iii. regeneration areas; 	Table 5
7	d.	ecological survey results that document the baseline ecological quality of the existing Box Gum Woodland and regeneration areas, and the extent of Box Gum Woodland within the offset property;	Appendix C
8	e.	ecological outcomes for Box Gum Woodland within the offset property that: <ul style="list-style-type: none"> i. include increasing the extent of Box Gum Woodland within the offset property; ii. include achieving a ratio of grassland form Box Gum Woodland to woodland form Box Gum Woodland of 1:14 or greater; and iii. are derived from improving the baseline ecological quality of Box Gum Woodland within the offset property from baseline; 	Section 6.6
9	f.	a commitment to maintain the ecological outcomes for Box Gum Woodland once achieved and for the duration of this approval;	Section 5.3
10	g.	details of management measures, including the timeframes and circumstances for implementing those measures, that will be implemented to achieve the ecological outcomes for Box Gum Woodland;	Section 5
11	h.	details of monitoring measures, including the timeframes and circumstances for implementing those measures, that will: <ul style="list-style-type: none"> i. detect changes in the extent and ecological quality of Box Gum Woodland within the offset property; and ii. demonstrate progress to achieving the ecological outcomes for Box Gum Woodland; 	Section 6
12	i.	details of corrective measures, including timeframes and circumstances for implementing those measures, that will be implemented in the event the ecological outcomes for Box Gum Woodland are not being achieved or maintained;	Section 6
13	j.	a risk management strategy that includes: <ul style="list-style-type: none"> i. an assessment of the events or circumstances (risk events) that may prejudice attainment of the offset outcomes; ii. a risk rating for each identified risk event based on the likelihood and consequence of occurrence; iii. measures that will mitigate identified risk events (mitigation measures) by reducing the likelihood and/or consequence of each risk event; 	Section 6.8

Ref	Condition	Condition requirement	Plan reference Update
		<ul style="list-style-type: none"> iv. the timeframes and circumstances for implementing mitigation measures; and v. a rating of the residual risk for each risk event, based on the likelihood and consequence of occurrence, assuming mitigation measures are implemented; 	
14	k.	a table comprised of the time-bound management measures, monitoring activities and corrective measures specified in the BGWMP and a reference to where those measures and activities are detailed in the BGWMP; and	Section 6 Section 6.8
15	i.	an assurance statement that includes: <ul style="list-style-type: none"> i. evidence of feasible and effective management actions that, if implemented as a program of actions, are highly likely to achieve the ecological outcomes for Box Gum Woodland, within the specified timeframes; ii. evidence of feasible and scientifically robust monitoring activities that, if implemented as a program of activities, is capable of demonstrating attainment and maintenance of the ecological outcomes for Box Gum Woodland; iii. evidence of adaptive management systems capable of responding to reasonably foreseeable events and circumstance that may prejudice attainment and maintenance of the ecological outcomes for Box Gum Woodland; and iv. a signed statement by an independent suitably qualified ecologist verifying the above actions and activities as being feasible, effective and reliable to achieve the ecological outcomes for Box Gum Woodland. 	Section 1.3
16	2D	The approval holder must achieve the ecological outcomes for Box Gum Woodland within the offset property specified in the LQBGWMP by 1 January 2036. Once achieved, the ecological outcomes must be maintained for the duration of this approval.	Section 6 Section 6.8

1.2. Scope and objectives

The overarching objectives of the BGWMP is to improve ecological health and integrity and maintain and enhance habitat values within the BOA. This BGWMP will also commit to addressing the variation of condition for EPBC approval 2012/6560 and to meet the performance criteria included in this BGWMP.

This document will address all issues related to the protection of existing vegetation from impacts associated with the undertaking of the proposed action, as well as undertaking bush regeneration and management actions to improve the extent, condition and resilience of the BOA. The overall aim of the BGWMP is to provide a management framework for the conservation of native vegetation and fauna habitat with the BOA.

This BGWMP will outline the areas to be revegetated and the management actions to be undertaken throughout the BOA. The strategy is to maintain native species cover and integrity within the BWMP area by assisting natural regeneration through active restoration actions such as treating weed species and reintroducing native species (as plant or seed).

This BGWMP covers an initial twelve-year implementation period and an additional maintenance period for the life of the approval. The BGWMP is aimed at achieving key performance indicators within a twelve-year period however it is understood that the EPBC Act approval requires implementation of the BGWMP for the life of the EPBC approval.

1.3. Preparation and implementation of this plan

This BGWMP has been prepared by a Restoration Ecologist/s with over 5 years' experience in environmental consultancy and a relevant Bachelor of Science degree and has been prepared in line with the Environmental Management Plan guidelines from DCCEEW (2024).

A suitably qualified and experienced bush regeneration contractor is required to guide and monitor the implementation of this BGWMP. They should be a member of the Australian Association of Bush Regenerators (AABR) or should possess the required qualifications and experience for membership. The implementation team will need to conduct best practice bush regeneration techniques as described by Buchanan (2009).

The roles and responsibilities of those in charge of environmental management correlated with the implementation of the BGWMP are summarised in Table 2.

Table 2: Roles and responsibilities of implementation within the BOA

Title	Role	Responsibilities
Operations manager	To ensure sufficient resources are allocated to the implementation of the BGWMP.	<ul style="list-style-type: none"> To authorise internal and external reporting requirements and subsequent revisions of the BGWMP. To ensure implementation of the BGWMP and ensure compliance with the variation of condition to EPBC approval 2012/6560.
Environmental officer	To coordinate the day-to-day implementation of the BGWMP.	<ul style="list-style-type: none"> To ensure sufficient time and resources are allocated to the implementation of the ecological management and rehabilitation strategies for the BOA. To ensure sufficient resources and time are allocated to the implementation of the BGWMP monitoring requirements. To ensure the results of the BGWMP monitoring are utilised properly to refine implementation and ensure performance criteria are met, as well as to evaluate the effectiveness of regeneration and rehabilitation practices. To periodically review progress of implementation against performance criteria. To ensure all internal and external reporting requirements are met. Facilitate in all relevant records being effectively maintained on site. To ensure the personnel involved in carrying out BGWMP and the monitoring of the BGWMP are appropriately qualified, licensed and experiences to undertake the required tasks. To manage and control access to the BOA. To ensure staff and contractors are informed, trained and inducted where relevant regarding controls on activities within the BOA.
Bush regeneration contractor	To implement the BGWMP.	<ul style="list-style-type: none"> To implement the recommendations of this BGWMP, or a BGWMP that has been approved for this project, with best practice and general principles of bush regeneration in accordance with the Bradley Method and other methods described in Buchanan (2000).

Title	Role	Responsibilities
Holcim staff and contractors	To carry out every day works while working within and outside of the BOA in adherence to the proper practice, controls and training.	<ul style="list-style-type: none"> • Receive training regarding controls on activities within the BOA. • To observe and adhere to boundaries of the BOA when undertaking work on site. • To undertake activities in the BOA in line with directions from the Operations Manager and Environmental Officer.
Local Land Services	Involvement in consultation.	<ul style="list-style-type: none"> • Where required be in consultation with the landholder for matters such as pest control.
ELA/Restoration Ecologist	Preparation of this BGWMP.	<ul style="list-style-type: none"> • To ensure this VMP meets the EPBC conditions outlined in the EPBC Act approval (EPBC 2012/6560), the Environmental management plan guidelines (DCCEEW 2024) and ELA has not knowingly provided false or misleading information in reference to this BGWMP.
Goulburn Mulwaree Council	Involvement in consultation.	<ul style="list-style-type: none"> • Where required be in consultation with the landholder for matters such as pest control or alterations to the BGWMP approved by the relevant consent authority in accordance with the approval conditions (specifically Condition 2C and 11).

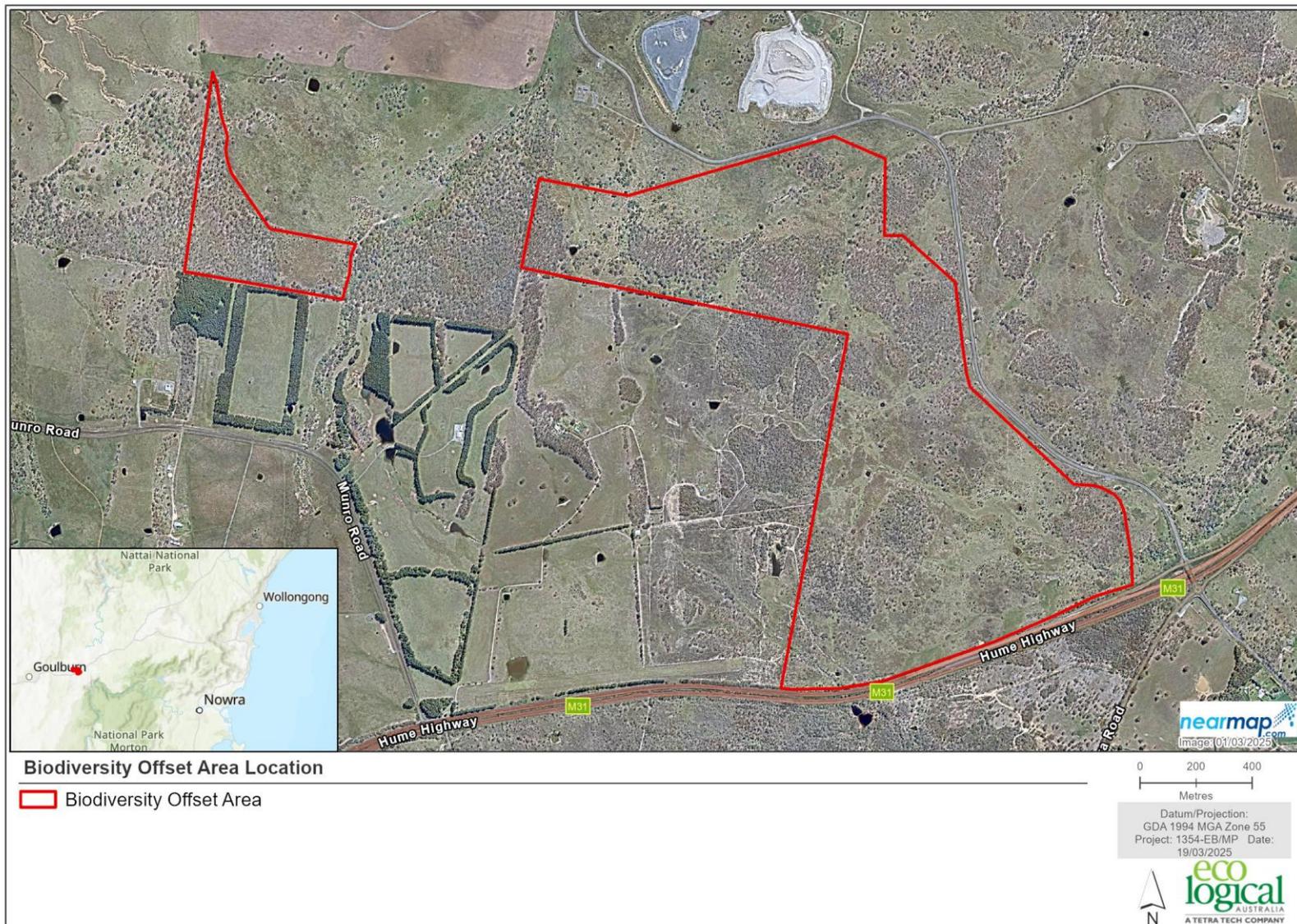


Figure 1: Biodiversity Offset Area Location

2. Description of the environment

2.1. Soils

2.1.1. Desktop assessment

On 24 February 2025, ELA engaged with SESL Australia to conduct soil investigation within the BOA. The soil assessment focused on the investigation of the soil characteristics in the areas where revegetation of BGW may be suitable.

The results will assist in determining the suitability of locations within the BOA to undergo rehabilitation and revegetation treatments, in order to over time meet the EPBC listing conditions required for the threatened ecological community (TEC), *White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland in the NSW North Coast, New England, Tableland, Nandewar, Brigalow Belt South, Sydney Basin, South Eastern Highlands, NSW South Western Slopes, South East Corner and Riverina Bioregions* (BGW) under BC Act and the EPBC Act.

The soil landscape within the BOA is primarily Bindook Road soils (SI5512br). The north-west corner of the separate western portion of the BOA shown in Figure 1, is a part of the Garland soil landscape (SI5512ga). These soil landscapes are mapped in the *Lynwood Quarry Soil Investigation* (SESL Australia 2025), attached as Appendix A.

Bindook Road soils are characterised by the following characteristics:

- acid yellow and red duplex soils, with whole coloured B horizons and sporadically bleached A2 horizons on crests and slopes
- the geology is porphyritic with quartz and feldspar
- formed in-situ as well as from alluvial-colluvial material derived from parent rock
- a landform is characterised by undulating rises of low relief and gentle slopes
- an elevation range from 600-800m
- hardsetting surface conditions including moderate drainage, soil permeability, water holding capacity, fertility and erosion hazards
- generally deficient in Nitrogen (N), Phosphorous (P), Potassium (K), Sulfur (S), and most micronutrients
- slightly acidic pH
- low salinity
- located along the eastern boundary between Prairie Oak and Wombeyan caves

Garland soils are characterised by the following characteristics:

- commonly light red sandy duplex soils on upper slopes and mottled sandy yellow duplex soils with bleached A2 horizons on mid to slower slopes
- rocks may vary from coarse to fine grained
- formed in-situ and from alluvial-colluvial deposits
- hardsetting surface conditions including soil permeability and water holding capacity
- low to moderate drainage range

- moderate fertility and known nutrient deficiencies in Nitrogen (N), Phosphorous (P) and Sulfur (S)
- moderate erodibility but with a low erosion hazard
- a commonly acidic pH
- occasional soil salinity issues
- located between Tarago lagoon and Isabella River

The selection of sampling locations focused on areas that do not meet the EPBC condition for BGW with some additional points in existing BGW and other vegetation communities as control points and benchmark conditions. ELA divided sample locations into the following categories.

- **CEEC:** Areas assessed to be PCT 3376 in a condition consistent to be listed as the BGW TEC under the EPBC Act
- **DNG:** Areas assessed to be PCT 3376 but not in a condition consistent to be listed as the BGW TEC under the EPBC Act. This is mostly present as Derived Native Grassland.
- **Other:** Areas assessed to not be PCT 3376.

Mapping of the locations of these sample

2.1.2. Soil assessment summary

On 6 March 2025 nine locations were sampled within the BOA using hand-augered boreholes. All nine soil sample locations included analysis of topsoil and three of these locations also included a subsoil sample.

Each borehole was dug to a depth of at least 400mm or until subsoil was noted. Field observations were recorded and can be found in Appendix A. All soil samples were analysed at SESL's National Association of Testing Authorities (NATA) accredited laboratory and were analysed for the following:

- | | |
|---------------------------|------------------------|
| • Texture | • Exchangeable cations |
| • Structure | • Sulfur (S) |
| • Organic matter | • Iron (Fe) |
| • Estimated permeability | • Manganese (Mn) |
| • pH | • Zinc (Zn) |
| • Electrical conductivity | • Copper (Cu) |
| • Nitrogen (N) | • Boron (B) |
| • Phosphorous (P) | • Sodium (Na) |
| • Potassium (K) | • Chloride |

The comprehensive topsoil and subsoil analysis and report are shown within Appendix A. A summary of the topsoil and subsoil analysis results, including mapping of where the sample locations are in relation to the site vegetation, are provided in Appendix B.

2.1.3. Results

Most topsoil sample locations showed similar topsoil characteristics such as texture, structure, estimated permeability, colour, and with most sample locations showing a similar range in organic

matter. Additionally, the electrical conductivity, pH in H₂O and CaCl₂, cation exchange capacity and available nutrient levels are also similar across most locations. Finally, the subsoil sample locations all showed similarities within texture, permeability, soil pH, magnesium levels, potassium levels, and calcium levels.

More specifically to this management plan, the results show very little variability within the CEEC sample locations but more variability within the DNG sample locations. This is not surprising given the CEEC samples were all taken in stable, established vegetation whereas the DNG sample locations are all locations which are at various stages of regeneration, the timeline or success of which may be dictated to some degree by the soil composition.

However, it is important to note that the difference between the average of the CEEC sample locations and the DNG sample locations was not significantly different. The DNG sample locations, on average, had a higher pH and nutrient profile but were largely the same as the CEEC structurally and functionally. This is consistent with areas that are currently more disturbed, potentially explaining why they have only achieved a DNG condition of the BGW but have vegetation consistent with BGW and do not have any major impediment to achieving the EPBC condition of BGW.

Comparison of the average results for each subzone is provided in Table 3 for topsoil characteristics and Table 4 for topsoil nutrients. A summary of the topsoil and subsoil analysis results are shown in Appendix B. The comprehensive topsoil and subsoil analysis and report are shown within Appendix A.

Table 3: Analysis of topsoil characteristics

Type	Depth (mm)	pH (CaCl ₂)	Salinity (Electrical Conductivity 1:5 dS/m)	Effective Cation Exchange Capacity (cmol(+)/kg)	Soil Texture	Clay content (%)	Structure Size	Structure Organisation	Potential infiltration rate	Organic Carbon (%)	Organic Matter (%)	Est. Plant Available Water (%)
CEEC	300	4.39	0.02 Very Low	4.07 Very Low	Mostly Fine Sandy Clay Loam	All 20-30	All Fine (1-10 mm)	All Pedal – weak	All Moderate	1.17 (Moderate)	2	12.33
DNG	233	4.56	0.03 Very Low	6.20 Low	Mostly Fine Sandy Clay Loam	Mostly 20 - 30	Mostly Medium (11-25mm)	Mostly pedal – weak	Mostly Moderate	1.56 (Moderate)	2.6	12
Other	250	4.2	0.02 Very Low	4.4 Very Low	All Sandy Clay Loam	All 20-30	All Fine (1-10 mm)	All Pedal - weak	All Moderate	0.9 (Low)	1.5	11

Table 4: Analysis of topsoil nutrients

Type	Nitrate-N (NO ₃) (mg N/kg)	Phosphorus (P) mg P/kg	Potassium (K) mg/kg	Sulfur (S) mg S/kg	Calcium (Ca) mg/kg	Magnesium (Mg) mg/kg	Iron (Fe) mg/kg	Manganese (Mn) mg/kg	Zinc (Zn) mg/kg	Copper (Cu) mg/kg	Boron (B) mg/kg
CEEC	0.31 (Very Low)	<5 (Very Low)	62 (Very Low)	5.8 (Very Low)	99 (Very Low)	75 (Very Low)	230 (Marginal)	1.77 (Very Low)	0.76 (Very Low)	<0.64 (Very Low)	<0.1 (Very Low)
DNG	0.27 (Very Low)	7.96 (Very Low)	52 (Very Low)	8.2 (Very Low)	250 (Very Low)	143 (Marginal)	250 (Marginal)	2.64 (Low)	0.95 (Low)	<0.64 (Very Low)	<0.1 (Very Low)
Other	0.19 (Very Low)	<5 (Very Low)	59 (Very Low)	5.4 (Very Low)	14 (Very Low)	51 (Very Low)	240 (Marginal)	0.59 (Very Low)	<0.65 (Very Low)	<0.64 (Very Low)	<0.1 (Very Low)

2.2. Vegetation communities

Two Plant Community Types (PCTs) of varying conditions were identified to be present within the BOA (Figure 2). These PCTs were identified by ecologists Alex Gorey and Melaina Chapman during flora surveys from the 17-21 October 2022. These PCTs, sizes and condition classes are shown in Table 5.

Table 5: PCT extent within the BOA

PCT name	Condition state	Size (ha)
PCT 3747: Southern Tableland Western Hills Scribbly Gum Forest	Moderate – Good	64.53
PCT 3747: Southern Tableland Western Hills Scribbly Gum Forest	DNG	44.66
PCT 3376: Southern Tableland Grassy Box Woodland	Moderate – Good	45.29
PCT 3376: Southern Tableland Grassy Box Woodland	DNG	30.87
Dam	-	0.62
	Total	185.87

2.2.1. Southern Tableland Western Hills Scribbly Gum Forest (PCT 3747)

This PCT is considered to be a mid-high to tall dry shrubby sclerophyll open forest, found at moderate altitudes across the Central Tablelands and northern parts of the Southern Tablelands on slopes and crests of dry, rocky tableland hills and ranges. The canopy is sparse to mid-dense and frequently includes *Eucalyptus macrorhyncha* and or *Eucalyptus rossii*, commonly *Eucalyptus mannifera* and occasionally *Eucalyptus goniocalyx*. The shrub layer is sparse and very frequently includes *Hibbertia obtusifolia*, commonly *Daviesia leptophylla* and *Brachyloma daphnoides* and occasionally *Acacia gunnii*, *Monotoca scoparia* or *Melichrus urceolatus*. The ground layer is sparse to mid-dense and frequently includes large tussocks of *Rytidosperma pallidum*, as well as *Lomandra filiformis*, *Poa sieberiana*, *Dianella revoluta*, *Gonocarpus tetragynus* and *Goodenia hederacea*. *Hovea linearis* and occasionally *Lomandra multiflora* subsp. *multiflora* are also common. This PCT is commonly found on quartz-rich sedimentary, acid volcanic and granitoid substrates, with scattered occurrences in areas mapped to have shale or mudstone substrates.

2.2.2. Southern Tableland Grassy Box Woodland (PCT 3376)

This PCT is considered a tall sclerophyll woodland and is widespread in the low hills of the drier parts of the Southern Tablelands between Bredbo and Rylstone. The canopy commonly includes *Eucalyptus melliodora* or *Eucalyptus bridgesiana* and occasionally associated with *Eucalyptus blakelyi*, which may be locally prominent in lower parts of the landscape. The shrub layer is sparse to absent and occasionally includes *Melichrus urceolatus*, *Lissanthe strigosa* or various *Acacia* species. The ground layer is mid-dense and frequently includes *Hydrocotyle laxiflora*, *Austrostipa scabra*, *Lomandra filiformis*, *Microlaena stipoides* and *Elymus scaber*. This PCT occurs on granite, volcanic and sedimentary substrates and in cold, dry environments.

This PCT is associated with the critically endangered EPBC Act listed threatened ecological community (TEC) White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland. In order for it to meet the EPBC listing criteria it must meet both the key diagnostic characteristics and at least the minimum condition thresholds (Commonwealth DCCEEW 2023).

The original BGWMP identified 27.2 ha of EPBC listed BGW (Umwelt 2013), however when the site was reassessed by ELA in 2023, a total of 45.28 ha of EPBC listed BGW was identified. Further detail on vegetation surveys is provided in Appendix C.

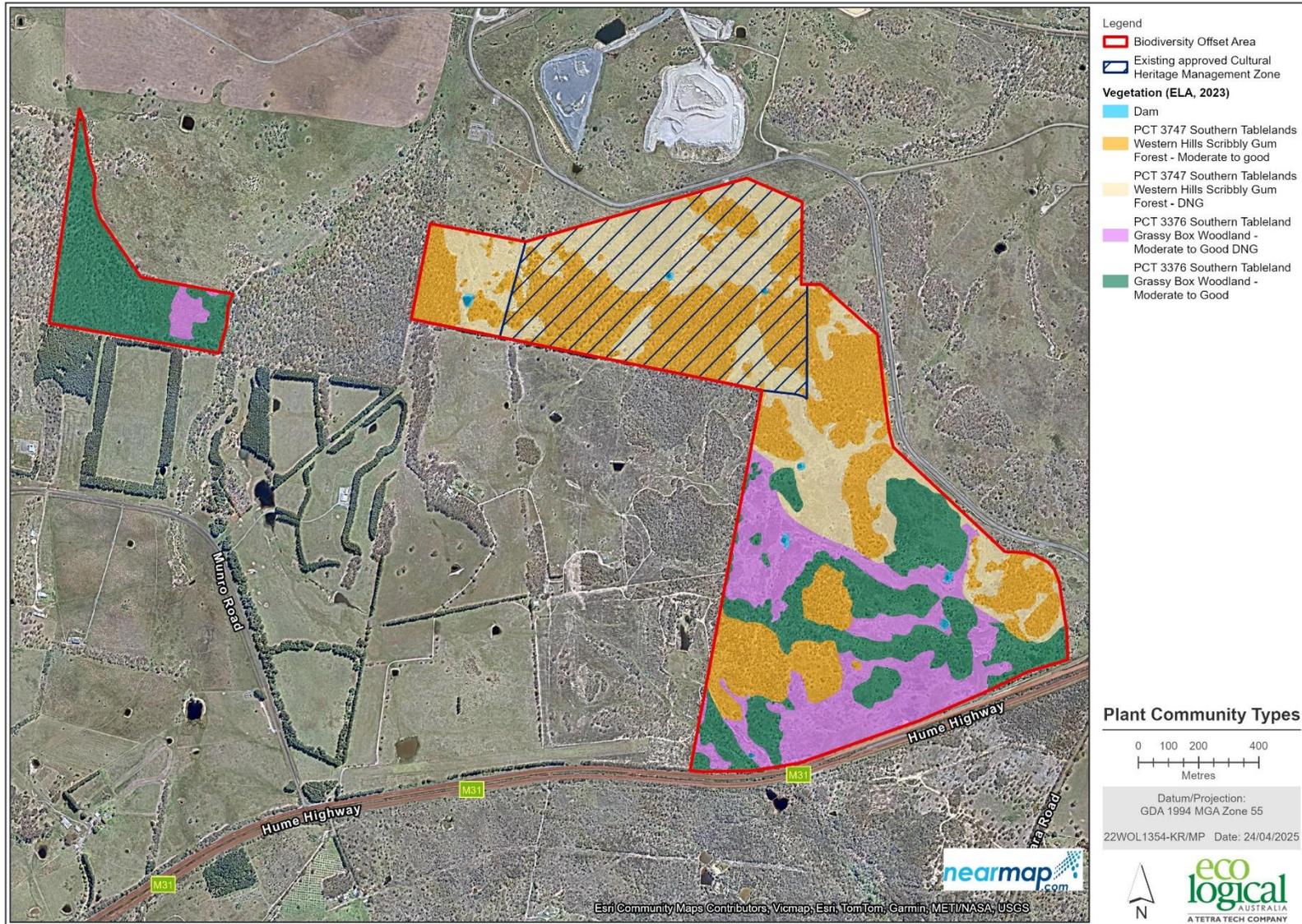


Figure 2: Plant Community Types within the BOA

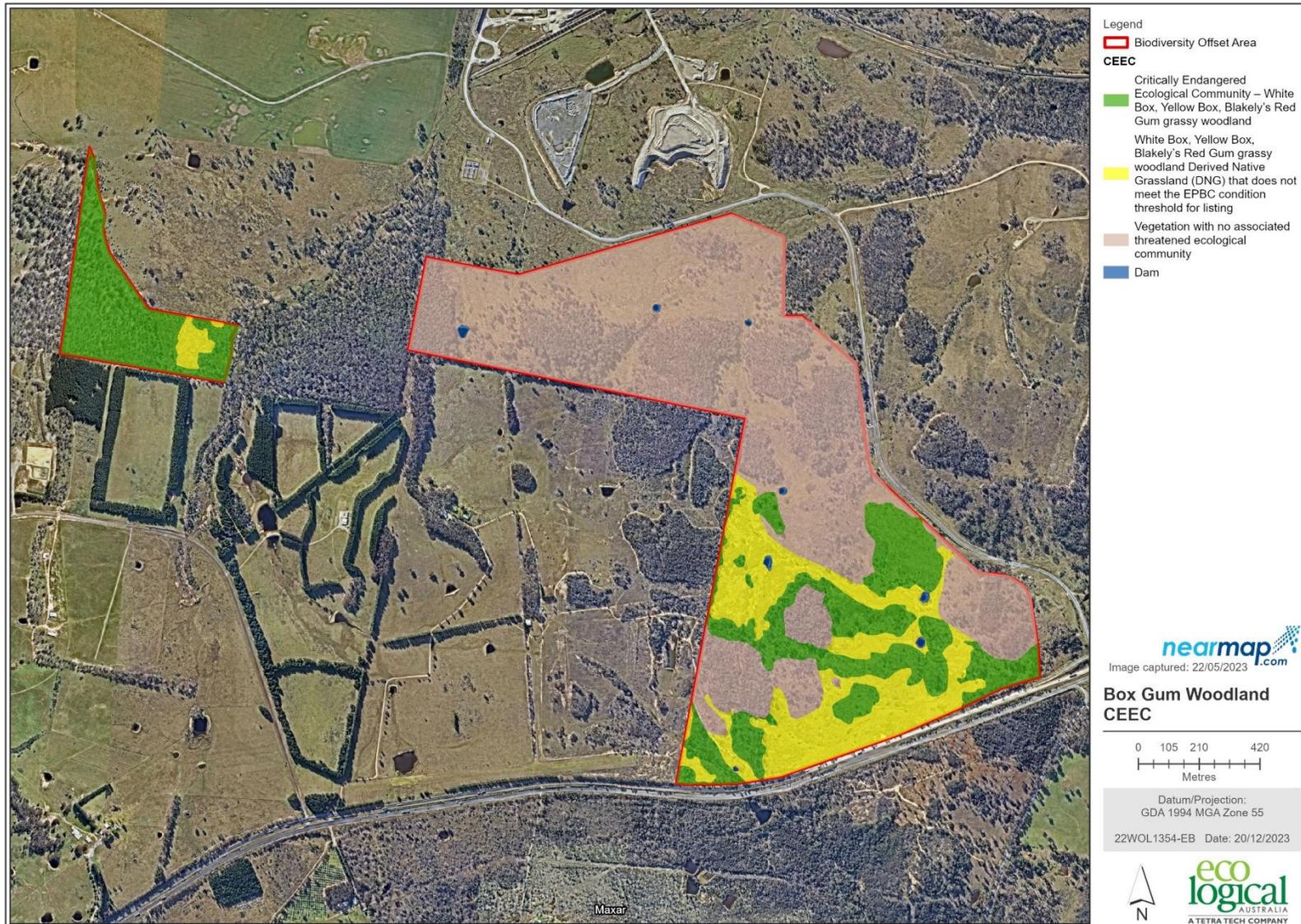


Figure 3: BGW that meets the EPBC listing criteria

2.3. *Leucochrysum albicans* subsp. *tricolor* (Hoary Sunray)

The endangered EPBC listed species *Leucochrysum albicans* subsp. *tricolor* (Hoary Sunray) was surveyed in 2022 with 14,697 individuals recorded (Figure 4). It was noted during the survey the species appeared to prefer open areas with minimal canopy cover and minimal competition in the ground cover layer. The BGWMP prepared by Umwelt in 2013 provides an estimation of Hoary Sunray individuals of 200,000 with 27.3 ha of habitat. The survey in 2022 identified individuals outside of the original extent estimation and a new extent of habitat has been produced (Figure 4).

The overlap with Hoary sunray 2022 extent and BGW that meets EPBC listing criteria are shown in Figure 5.

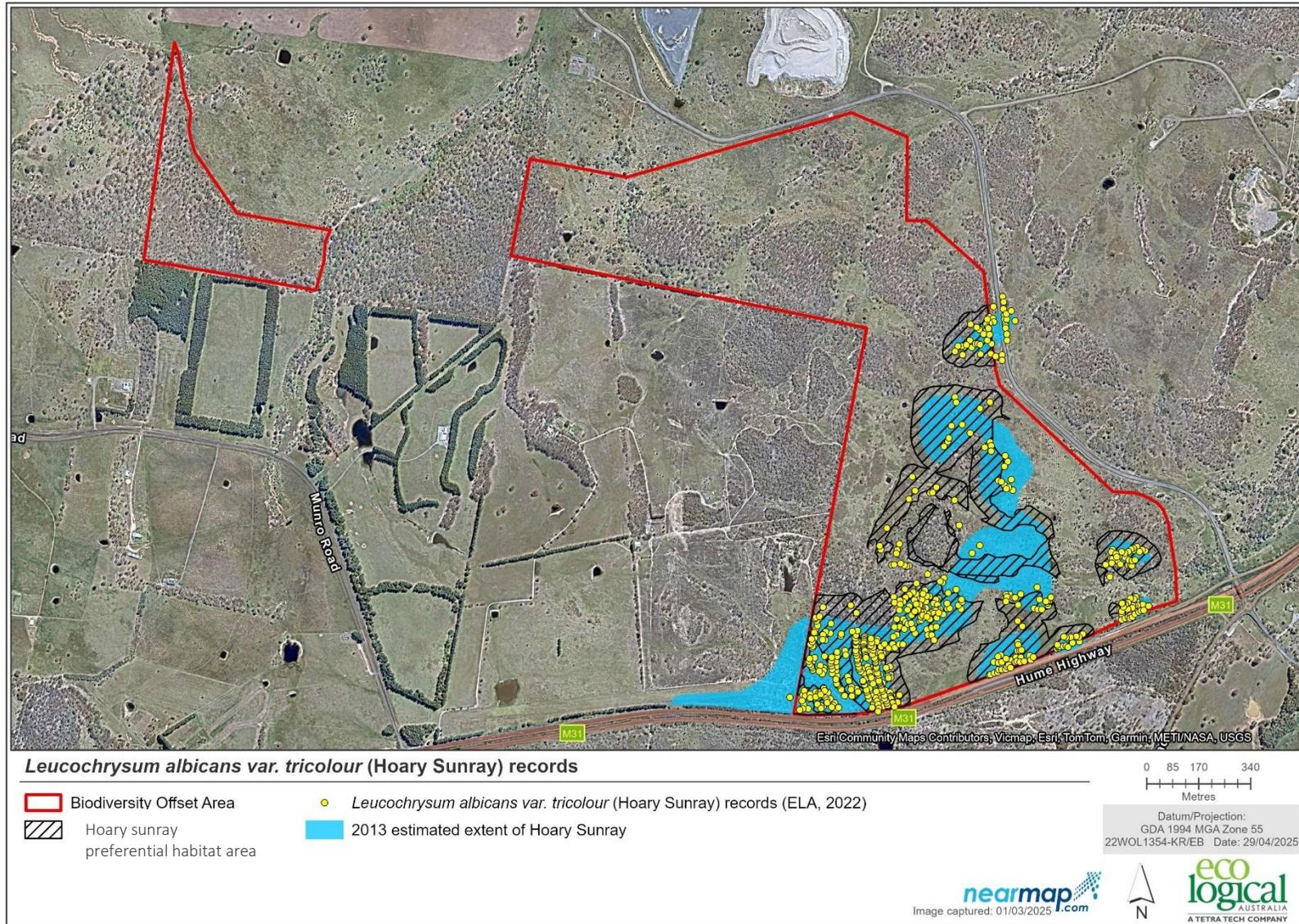


Figure 4: *Leucochrysum albicans var. tricolour* (Hoary Sunray) records

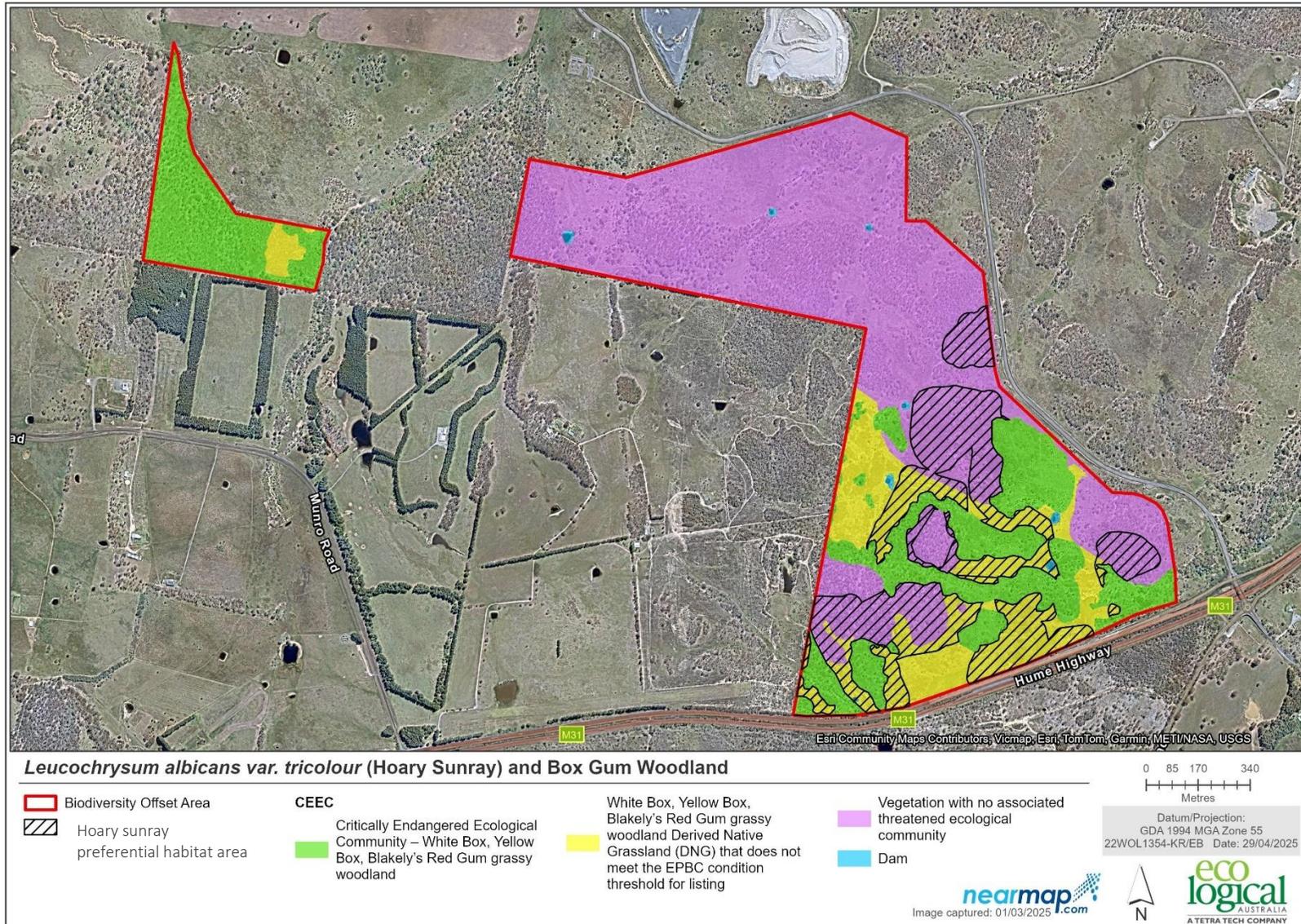


Figure 5: *Leucochrysum albicans var. tricolour* (Hoary Sunray) 2022 extent and BGW listing criteria

2.4. Fauna

2.4.1. Fauna survey

The fauna assessment included multifaceted baseline surveys undertaken on two different field trips, by two teams of ELA Ecologists between 11 February and the 5 March 2025, across the BOA. This approach included the deployment of monitoring devices for 22 nights (remote cameras and ultrasonic detectors), as well as a series of field surveys (bird surveys, spotlight surveys and opportunistic finds).

2.4.2. Fauna results summary

A total of 73 fauna species were identified across all field survey efforts. Of which, five were threatened native species, five exotic fauna species and 62 non-threatened native species. The full list of species recorded within the BOA are provided in Table 6. The full fauna survey information is provided in Appendix D.

Table 6: All fauna species recorded within the BOA

Fauna Type and Class	Species name	Common name
Exotics		
Mammalia	<i>Lepus europaeus occidentalis</i>	European Brown Hare
	<i>Ovis aries</i>	Domestic Sheep
	<i>Rusa unicolor</i>	Sambar Deer
	<i>Sturnus vulgaris</i>	Common Starling
Aves	<i>Vulpes vulpes</i>	European Red Fox
Threatened Natives		
Mammalia	<i>Miniopterus orianae oceanensis</i>	Large Bent-winged Bat
Aves	<i>Calyptorhynchus lathami</i>	
	<i>Daphoenositta chrysoptera</i>	
	<i>Petroica boodang</i>	Scarlet Robin
	<i>Pyrrholaemus sagittatus</i>	Speckled Warbler
Non-Threatened Natives		
Mammalia		
	<i>Macropus giganteus</i>	Eastern Grey Kangaroo
	<i>Petaurus breviceps</i>	Sugar Glider
	<i>Pseudocheirus peregrinus</i>	Eastern Ringtail Possum
	<i>Trichosurus vulpecula</i>	Common Brushtail Possum
	<i>Wallabia bicolor</i>	Swamp Wallaby
	<i>Austronomus australis</i>	White-striped Free-tailed Bat
	<i>Chalinolobus morio</i>	Chocolate Wattled Bat
Aves		
	<i>Acanthiza lineata</i>	Striated Thornbill
	<i>Acanthiza nana</i>	Yellow Thornbill
	<i>Acanthiza pusilla</i>	Brown Thornbill
	<i>Acanthiza reguloides</i>	Buff-rumped Thornbill
	<i>Aegotheles cristatus</i>	Australian Owlet-nightjar
	<i>Anas superciliosa</i>	Pacific Black Duck

Fauna Type and Class	Species name	Common name
	<i>Anthochaera carunculata</i>	Red Wattlebird
	<i>Aquila audax</i>	Wedge-tailed Eagle
	<i>Ardea pacifica</i>	White-necked Heron
	<i>Cacomantis flabelliformis</i>	Fan-tailed Cuckoo
	<i>Caligavis chrysops</i>	Yellow-faced Honeyeater
	<i>Colluricincla harmonica</i>	Grey Shrikethrush
	<i>Coracina novaehollandiae</i>	Black-faced Cuckooshrike
	<i>Corcorax melanorhamphos</i>	White-winged Chough
	<i>Cormobates leucophaea</i>	White-throated Treecreeper
	<i>Corvus coronoides</i>	Australian Raven
	<i>Corvus mellori</i>	Little Raven
	<i>Cracticus torquatus</i>	Grey Butcherbird
	<i>Cygnus atratus</i>	Black Swan
	<i>Dacelo novaeguineae</i>	Laughing Kookaburra
	<i>Daphoenositta chrysoptera</i>	Varied Sittella
	<i>Eolophus roseicapilla</i>	Galah
	<i>Gerygone mouki</i>	Brown Gerygone
	<i>Gerygone olivacea</i>	White-throated Gerygone
	<i>Grallina cyanoleuca</i>	Magpie-lark
	<i>Gymnorhina tibicen</i>	Australian Magpie
	<i>Hirundo neoxena</i>	Welcome Swallow
	<i>Malurus cyaneus</i>	Superb Fairywren
	<i>Manorina melanocephala</i>	Noisy Miner
	<i>Neochmia temporalis</i>	Red-browed Finch
	<i>Nesoptilotis leucotis</i>	White-eared Honeyeater
	<i>Pachycephala rufiventris</i>	Rufous Whistler
	<i>Pardalotus punctatus</i>	Spotted Pardalote
	<i>Pardalotus striatus</i>	Striated Pardalote
	<i>Phaps chalcoptera</i>	Common Bronzewing
	<i>Philemon corniculatus</i>	Noisy Friarbird
	<i>Platycercus elegans</i>	Crimson Rosella
	<i>Platycercus eximius</i>	Eastern Rosella
	<i>Psephotus haematonotus</i>	Red-rumped Parrot
	<i>Rhipidura albiscapa</i>	Grey Fantail
	<i>Rhipidura leucophrys</i>	Willie Wagtail
	<i>Sericornis frontalis</i>	White-browed Scrubwren
	<i>Strepera graculina</i>	Pied Currawong
	<i>Synoicus ypsilophorus</i>	Brown Quail
	<i>Zosterops lateralis</i>	Silvereye
Reptilia		
	<i>Chelodina longicollis</i>	Eastern Snake-necked Turtle
	<i>Hemiergis talbingoensis</i>	Eastern three-toed Earless Sunskink
	<i>Lampropholis delicata</i>	Dark-flecked Garden Sunskink
	<i>Pseudechis porphyriacus</i>	Red-bellied Black Snake

Fauna Type and Class	Species name	Common name
Amphibia		
	<i>Crinia parinsignifera</i>	Eastern Sign-bearing Froglet
	<i>Crinia signifera</i>	Common Eastern Froglet
	<i>Limnodynastes tasmaniensis</i>	Spotted Marsh Frog
	<i>Litoria peronii</i>	Peron's Tree Frog
	<i>Litoria verreauxii</i>	Whistling Tree Frog
	<i>Uperoleia laevigata</i>	Smooth Toadlet

2.5. Weeds

The Biosecurity Act 2015 (BA Act) and regulations provide specific legal requirements for the state level priority weeds (Table 2). Under the BA Act 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 reasonably practicable.

Specific legal requirements apply to State determine priorities under the South East Regional Strategic Weed Management Plan 2023-2027, while regional priorities include outcomes to demonstrate compliance with the general biosecurity duty and strategic responses in the region to achieve relevant management objectives (South East LLS 2023). Weeds listed as ‘other weeds of regional concern’ under the plan warrant resources for local control or management programs and are a priority to keep out of the region. Inclusion in this list may assist Local Control Authorities and/or land managers to prioritise action in certain circumstances where it can be demonstrated the weed poses a threat to the environment, human health, agriculture etc.

In 2021, a site assessment was undertaken by two ELA staff; Max Massa and Michael Gregor and in 2022, BAM floristic plots were completed across the site in the BOA by two ELA ecologists; Alex Gorey and Melaina Chapman. Weed species identified at these times for this BGWMP include four listed as State level priority weeds. The weeds present, their priority listing under the BA Act, the associated asset / value at risk and whether they are Weeds of National Significance (WoNS), are presented in Table 7. A full list of weeds recorded during these most recent field surveys is provided in Appendix E.

Table 7: Priority weeds and Weeds of National Significance (WoNS) identified within the BGWMP

Scientific Name	Common Name	WoNS	Regional level priority weeds	Biosecurity Act 2015
<i>Lantana camara</i>	Lantana	Yes	Yes	Containment/Asset protection
<i>Nassella trichotoma</i>	Serrated Tussock	Yes	No	Containment/Asset protection
<i>Rubus anglocandicans</i>	Blackberry	Yes	No	Containment/Asset protection
<i>Senecio madagascariensis</i>	Fireweed	Yes	No	Containment/Asset protection

2.6. Fire history

Mapping data shows that the last major bushfire which included the site was between 1961 and 1970 (NPWS 2025). No evidence of recent fire was observed by ELA during the flora (ELA 2024), fauna or soils site inspections. In addition, during the ecological monitoring undertaken annually by SLR across the Holcim lands, including the BOA, no evidence was found of recent fire in any monitoring plots (SLR 2024, 2025).

3. Management zones

3.1. Management Zone 1: Box Gum Woodland Revegetation (Intensive)

Management Zone 1: Box Gum Woodland Revegetation (Intensive)	
Management Zone description	<p>MZ1 is made up of 3376 DNG that does not meet the EPBC condition threshold due to high cover of exotic species. This zone is dominated by <i>Anthoxanthum odoratum</i> (Sweet Vernal Grass) with cover recorded at 40% in this zone. The other exotic species which were present in high cover includes <i>Hypochaeris radicata</i> (Flatweed) and <i>Setaria parviflora</i> (Pidgeon Grass).</p> <p>Despite the high cover of exotic species there is still a diverse range of native grasses and forbs such as <i>Aristida vagans</i>, <i>Brunoniella australis</i>, <i>Carex inversa</i>, <i>Centella asiatica</i>, <i>Centrolepis fascicularis</i>, <i>Craspedia variabilis</i>, <i>Cyperus gracilis</i>, <i>Drosera peltata</i>, <i>Eragrostis leptostachya</i>, <i>Euchiton japonicus</i>, <i>Gonocarpus tetragynus</i>, <i>Lepidosperma gunnii</i>, <i>Lomandra filiformis</i> subsp. <i>coriacea</i>, <i>Panicum effusum</i>, <i>Schoenus apogon</i> and <i>Stypandra glauca</i>. These species made up a cover of 15% within this management zone.</p>
Size	11 ha
Location:	MZ1 is found in 3 locations across the BOA shown on Figure 6.
Management works	<p>Primary weed management works in this zone will be done prior to and in preparation to extensive revegetation works and should include slashing and spot spraying exotic grasses and broadleaf weeds using a non-selective herbicide (e.g. Roundup Biactive®).</p> <p>This zone requires, at a minimum, 11 ha of Box Gum Woodland to be reinstated. High density revegetation of trees and shrubs using tubestock of suitable Box Gum Woodland species will be required to be undertaken. The recommended tree and shrub species to use is provided in Appendix F.</p> <p>Secondary and maintenance weed management will be required to ensure the success of revegetation works. It is expected as weed control works reduce weed cover that native regeneration would increase. If native regeneration is not sufficient to meet EPBC criteria for this zone then revegetation of groundcovers and grasses will be required.</p>

3.2. Management Zone 2: Box Gum Woodland Revegetation (Passive)

Management Zone 2: Box Gum Woodland Revegetation (Passive)	
Management Zone description	<p>MZ2 is made up of 3376 DNG that does not meet the EPBC condition threshold due to high cover of exotic species. This zone is the remaining area of DNG that is not required to meet the EPBC condition threshold. Management in this zone will be less intensive with less effort in weed control undertaken within this zone.</p> <p>This zone is dominated by <i>Anthoxanthum odoratum</i> (Sweet Vernal Grass) with cover recorded at 40% in this zone. The other exotic species which were present in high cover includes <i>Hypochaeris radicata</i> (Flatweed) and <i>Setaria parviflora</i> (Pidgeon Grass).</p> <p>Despite the high cover of exotic species there is still a diverse range of native grasses and forbs such as <i>Aristida vagans</i>, <i>Brunoniella australis</i>, <i>Carex inversa</i>, <i>Centella asiatica</i>, <i>Centrolepis fascicularis</i>, <i>Craspedia variabilis</i>, <i>Cyperus gracilis</i>, <i>Drosera peltata</i>, <i>Eragrostis leptostachya</i>, <i>Euchiton japonicus</i>, <i>Gonocarpus tetragynus</i>, <i>Lepidosperma gunnii</i>, <i>Lomandra filiformis</i> subsp. <i>coriacea</i>, <i>Panicum effusum</i>, <i>Schoenus apogon</i> and <i>Stypandra glauca</i>. These species made up a cover of 15% within this management zone.</p>
Size	2.22 ha
Location:	MZ2 is found in one location on the southern edge of the BOA, shown on Figure 6.
Management works	This zone requires moderate density revegetation of trees and shrubs using tubestock of suitable Box Gum Woodland species. The recommended tree and shrub species to use is provided in Appendix F.

3.3. Management Zone 3: Box Gum Woodland Conservation

Management Zone 3: Box Gum Woodland Conservation

Management Zone description	<p>MZ3 is made up PCT 3376 which meets the key diagnostic features and condition criteria to meet the EPBC listing for Box Gum Woodland.</p> <p>The weeds present in this zone includes <i>Anthoxanthum odoratum</i> (Sweet Vernal Grass), <i>Briza minor</i> (Shivery Grass), <i>Holcus lanatus</i> (Yorkshire Fog), <i>Lysimachia arvensis</i>, <i>Senecio madagascariensis</i> (Fireweed) and <i>Setaria parviflora</i> (Pidgeon Grass). The overall weed cover was low with the highest weed cover recorded within a plot at 25%.</p> <p>The native species present includes <i>Allocasuarina littoralis</i>, <i>Aristida vagans</i>, <i>Austrostipa scabra</i> subsp. <i>scabra</i>, <i>Carex inversa</i>, <i>Cassinia sifton</i>, <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>, <i>Eucalyptus blakelyi</i>, <i>Eucalyptus goniocalyx</i>, <i>Eucalyptus melliodora</i>, <i>Euchiton japonicus</i>, <i>Gonocarpus tetragynus</i>, <i>Goodenia hederacea</i> subsp. <i>hederacea</i>, <i>Kunzea parvifolia</i>, <i>Leucochrysum albicans</i> var. <i>tricolor</i>, <i>Lomandra filiformis</i> subsp. <i>coriacea</i>, <i>Microlaena stipoides</i> var. <i>stipoides</i>, <i>Ozothamnus diosmifolius</i>, <i>Schoenus apogon</i> and <i>Veronica plebeia</i>.</p>
Size	45.12 ha
Location:	MZ3 is found in multiple locations in the southeastern section of the BOA shown on Figure 6.
Management works	Maintenance weed management will be required to ensure weed densities do not increase.

3.4. Management Zone 4: Hoary Sunray Conservation

Management Zone 4: Hoary Sunray Conservation

Management Zone description	<p>MZ4 is made up of different vegetation zones with <i>Leucochrysum albicans</i> subsp. <i>tricolor</i> (Hoary Sunray) present. The management zone was created from the location of individuals identified during the 2022 survey with a 20m buffer added. The management in this zone will focus on protecting and maintaining the habitat for with <i>Leucochrysum albicans</i> subsp. <i>tricolor</i> (Hoary Sunray).</p> <p>The weeds present in this zone includes <i>Acetosella vulgaris</i> () <i>Anthoxanthum odoratum</i> (Sweet Vernal Grass), <i>Briza minor</i> (Shivery Grass), <i>Holcus lanatus</i> (Yorkshire Fog), <i>Hypochaeris radicata</i> (Flatweed) and <i>Senecio madagascariensis</i> (Fireweed). The overall weed cover ranged from low to moderate with the highest weed cover recorded within a plot at 50%.</p> <p>The native species present includes <i>Aristida vagans</i>, <i>Austrostipa scabra</i> subsp. <i>scabra</i>, <i>Carex inversa</i>, <i>Cassinia sifton</i>, <i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>, <i>Euchiton japonicus</i>, <i>Gonocarpus tetragynus</i>, <i>Goodenia hederacea</i> subsp. <i>hederacea</i>, <i>Kunzea parvifolia</i>, <i>Leucochrysum albicans</i> var. <i>tricolor</i>, <i>Lomandra filiformis</i> subsp. <i>coriacea</i>, <i>Microlaena stipoides</i> var. <i>stipoides</i>, <i>Ozothamnus diosmifolius</i>, <i>Schoenus apogon</i> and <i>Veronica plebeia</i>.</p>
Size	37.91 ha
Location:	MZ3 is found in multiple locations in the southeastern section of the BOA shown on Figure 6.
Management works	<p>Maintenance weed management will be required to ensure weed densities do not increase and impact the Hoary Sunray habitat.</p> <p>Control of native shrubs such as <i>Cassinia sifton</i> in areas of DNG should be undertaken to stop them outcompeting groundcover species, including Hoary Sunray.</p>

3.5. Management Zone 5: Vegetation conservation

MZ5 is 37.91 ha and is comprised of the PCT Southern Tableland Western Hills Scribbly Gum Forest (PCT 3747) ranging from 'Moderate to Good condition' and 'Derived Native Grassland (DNG) condition. Maintenance weed management will be required to ensure the conservation of the current condition of the PCT within this management zone.

3.6. Management Zone 6: Cultural heritage management

MZ6 is approximately 44.21 ha and is comprised of PCT Southern Tableland Western Hills Scribbly Gum Forest (PCT 3747) ranging from 'Moderate to Good condition' and 'Derived Native Grassland (DNG) condition. This zone contains a high density of Aboriginal sites and Potential Archaeological Deposits which are to be conserved in-perpetuity within this Cultural Heritage Management Zone (CHMZ). These locations are individually fenced and locked with a sign labelling the site type (Umwelt 2022). Any management actions within the BOA should avoid these areas.

4. Management works

4.1. Fencing and interpretation signage

4.1.1. Permanent fencing

Where the BOA interacts with the other land uses (i.e. non-bushland areas), the perimeter of the area should be protected from further disturbances using permanent fencing or barriers. A standard rural fence using 1.2 m high star posts with a minimum three strands of plain wire is recommended. If barbed wire is required for livestock exclusion then it should be top wire only or equivalent to allow for native fauna movement but restrict livestock, motorised vehicle and unauthorised human access into the BOA. Where the BOA is continuous with bushland and those considerations are not relevant then boundary marking can be used instead to delineate the boundary.

Based on recent inspections (ELA 2024) and ecological monitoring (SLR 2024, 2025), the perimeter of the BOA is fully fenced. This fencing must be inspected annually and maintained in perpetuity. If fencing is not currently as per the requirements listed in the preceding paragraph, this should be rectified as fencing is damaged or fails and requires replacement.

4.1.2. Signage and gates

Interpretative signage is required to be placed at gates and other strategic locations on the perimeter fencing to advise of the importance of the bushland area and indicate that the area is undergoing revegetation and management. Suggested text for the interpretative signage is as follows:

***Biodiversity Offset Area:** The native vegetation within this precinct is of high habitat and biodiversity value and should be protected from damage. No unauthorised access. Unauthorised vegetation removal, including firewood collection and picking of native flowers is prohibited. Dumping or stockpiling of materials, including green waste, or other rubbish is prohibited.*

4.2. Erosion Management

1st and 2nd order streams are present within the BOA which flow east connecting to Marulan Creek. During the survey these streams were observed as dry creek beds with minimal erosion present. These creek lines have vegetation present stabilising the creek banks which limit erosional impacts.

No significant erosion in the BOA was identified during ELA site inspections (2024) or ecological monitoring (SLR 2024, 2025) however this should continue to be monitored.

4.3. Feral animal control

It is the responsibility of the land holder to remove and protect the BOA from all pest species and livestock. The deployed cameras identified a high presence of *Vulpes vulpes* (Fox) which was identified at every camera location. Feral deer (*Rusa unicolor*) was also identified which has the potential to impact on revegetation works within the BOA.

Pest control is to be undertaken by relevant contractors in consultation with Local Land Services (LLS) and GMC throughout the lifetime of the approval. This should be undertaken to align with the wider pest control actions being undertaken in the region.

4.4. Training

Due to the sensitive nature of the BOA this BGWMP will require all staff to complete training/inductions before commencing works. Training and inductions that have been implemented should be recorded and should include environmental emergency contacts such as contacts for the Environmental Protection Agency (EPA), within the area as well as environmental emergency procedures for the BOA.

4.5. Weed Control

4.5.1. Primary and secondary weed control

Prior to revegetation, all weeds will require treatment in MZ1 where revegetation works will be undertaken. Secondary and maintenance weed control will be required following revegetation. During these works, care must be taken to avoid any off-target damage to natural regeneration of native species and plant species.

Juvenile weeds can be hand-pulled, provided the whole root is removed. Large specimens' plants and those that are woody can be treated using cut and paint method. Chemical and mechanical control techniques will be required in follow up treatments. Follow up treatments of exotic seedling growth will be required.

For more information on specific weed control techniques, see Appendix G.

4.5.2. Maintenance

All management zones will require ongoing maintenance for the life of the approval to control weed regrowth from the soil seed bank. Maintenance work is to be undertaken by a qualified bush regeneration contractor(s) as per specifications provided in Appendix G.

Maintenance will be undertaken on a regular basis in the peak growing seasons (i.e. spring and summer), with less frequent visits necessary during cooler periods (i.e. autumn and winter).

Maintenance work will include actions to encourage native regeneration in areas of lower resilience where it is not occurring naturally.

4.6. Revegetation

Revegetation works will be required over the entirety of MZ1 and MZ2. Revegetation assumptions are shown in Table 8.

Planting densities for each Management Zone are provided in Table 9. A recommended planting list is provided in Appendix F.

Table 8: Revegetation assumptions

MZ	Description	Total area (ha)	Reveg Area (%)	Reveg area (ha)	Mulch (%)	Mulch area (ha)
1	Box Gum Woodland Revegetation (Intensive)	11.0	100%	11.0	0	0
2	Box Gum Woodland Revegetation (Passive)	2.2	100%	2.2	0	0
Total		13.2	13.2	13.2	-	-

Table 9: Revegetation densities

MZ	Description	Reveg area (ha)	Total plant number requirements (per m ²)				Total (T/S)	Total* (G/F)
			Trees	Shrubs	Grasses	Forbs		
1	Box Gum Woodland Revegetation (Intensive)	11.0	1/20	1/20	1*	1*	11,000	220,000*
2	Box Gum Woodland Revegetation (Passive)	2.2	1/20	1/20	-	-	2,220	
Total		13.2	6,610	6,610	110,000*	110,000*	13,220	

*Minimum plant density to be triggered if native ground cover does not meet the 2032 performance criteria.

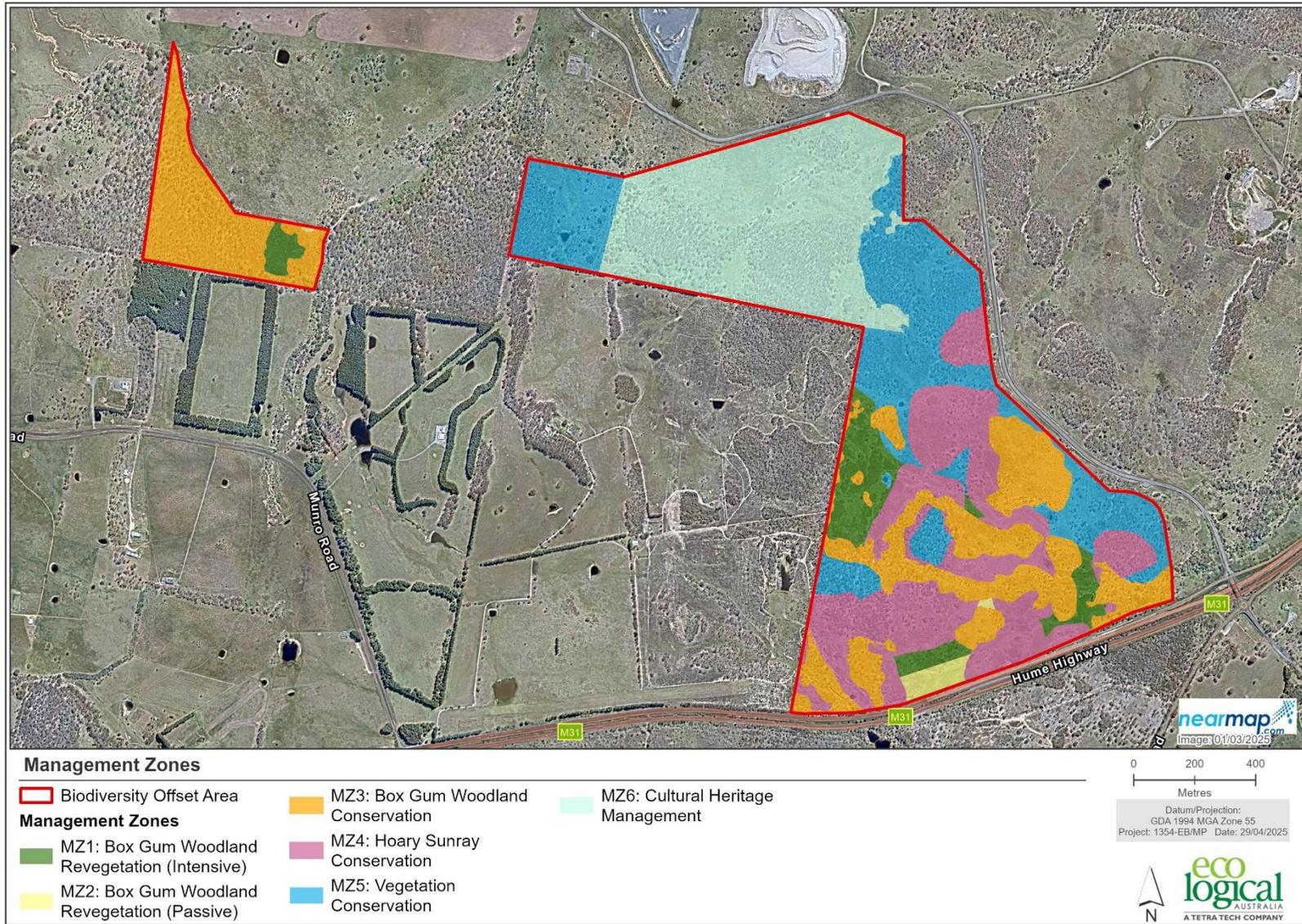


Figure 6: BGWMP Management Zones

5. Implementation schedule

5.1. Implementation schedule

The BGWMP area will be managed by Holcim for the life of the approval. An indicative implementation schedule has been provided in Table 12 and Table 13.

5.2. Adaptive management

As this is a long-term project implemented over several years, an adaptive management approach should be adopted to enable vegetation contractors to learn from and respond to successful and unsuccessful techniques used on site. The success of the works will be determined by meeting performance criteria identified in Table 12 and Table 13. Contractors have the flexibility to implement different techniques to those specified providing that performance criteria are met. Any major departures from the BGWMP or proposed changes to performance criteria must be approved in writing by the GMC and the Minister.

5.3. In-perpetuity management

The prime goal of this BGWMP is to establish 11 ha Box Gum Woodland (MZ1) to an EPBC condition threshold within the BOA and improve or maintain the condition of the other BGW areas (MZ2 and MZ3). After the completion of the works in year 2037, as per of the Conservation Agreement it is the responsibility of the landholder to ensure the BOA undergoes regular on-going inspections of vegetation, to be conducted as follows to ensure the BOA continues to meet performance criteria standards.

Starting in 2038, the following monitoring must be undertaken every three years in perpetuity:

- Established BAM plots (Section 6.1)
- Photo monitoring (Section 6.2)
- Revegetation census (Section 6.3)
- Hoary Sunray census (Section 6.4)
- Monitoring report (Section Annual progress reports6.5)

If the BOA is found to not be meeting the in-perpetuity performance criteria (Section 6.6) during these reporting, monitoring may be required to be undertaken more frequently and additional works undertaken to meet the criteria.

Table 10: Implementation schedule years 1 – 6

Task	Year 1 (2026)				Year 2 (2027)				Year 3 (2028)				Year 4 (2029)				Year 5 (2030)				Year 6 (2031)							
	Q1	Q2	Q3	Q4																								
Infrastructure works																												
Fence inspection and maintenance	■				■				■				■				■				■							
Install information signage	■																											
Revegetation																												
Seed collection	■																				■							
Site preparation	■																				■							
MZ1 and MZ2 tree and shrub revegetation			■	■																								
Replacement revegetation							■	■			■	■																
Weed control																												
Primary	■	■	■	■																								
Secondary					■	■	■	■																				
Maintenance									■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Other works																												
Monitoring plots (BAM)				■																	■							
Photo point monitoring				■				■				■				■					■							■
Revegetation assessment				■				■				■																
Hoary Sunray census				■				■				■									■							
Monitoring report				■				■				■				■					■							■
Pest control	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■

Table 11: Implementation schedule years 7 – 12

Task	Year 7 (2032)				Year 8 (2033)				Year 9 (2034)				Year 10 (2035)				Year 11 (2036)				Year 12 (2037)							
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4				
Infrastructure works																												
Fence maintenance	■				■				■				■				■				■							
Install information signage																												
Revegetation																												
Seed collection																												
Site preparation																												
MZ1 grass and forb planting*							■	■																				
Replacement revegetation*											■	■							■	■								
Weed control																												
Primary																												
Secondary																												
Maintenance	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				
Other works																												
Monitoring plots (BAM)				■																								
Photo point monitoring				■				■				■				■				■				■				
Revegetation assessment				■				■				■				■				■				■				
Hoary Sunray census				■				■				■				■				■				■				
Monitoring report				■				■				■				■				■				■				
Pest control	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■				

*if deemed necessary by the Year 7 Revegetation Assessment due to lack of natural regeneration in groundcover layer to achieve the performance criteria in Table 13

6. Monitoring and reporting

Bush regeneration contractors and/or the land manager should monitor BGWMP vegetation for changes over time. Monitoring should assist in highlighting the effectiveness of vegetation management in achieving desired outcomes and help to identify works that have or have not been successful, and reasons for those outcomes. It should also identify any non-conformance and provide the land manager with the knowledge to implement corrective actions. Information gained from monitoring can be used to form adaptive management decisions, inform future priorities, and work plans. Monitoring and reporting will also assist in determining and quantify weed management related costs and their cost effectiveness.

Monitoring assessments should combine photo monitoring and vegetation surveys as well as BAM plot locations. These must be implemented prior to works commencing to establish benchmarks for performance and then occur on an annual basis until project completion.

6.1. BAM plots

Biodiversity Assessment Method (BAM) plots will be established to be monitored every three years following the first year of the initial revegetation in Management Zone 1 and Management Zone 2. A total of nine plots will be established as follows:

- Management Zone 1: Box Gum Woodland Revegetation (Intensive) – **3 plots**
- Management Zone 2: Box Gum Woodland Revegetation (Passive) – **1 plot**
- Management Zone 3: Box Gum Woodland Conservation – **3 plots**
- Management Zone 4: Hoary Sunray Conservation – **2 plots**
- Management Zone 5: Vegetation Conservation – **0 plot**
- Management Zone 6: Cultural Management Area – **0 plots**

BAM plot locations will be established using permanent reference points to provide a summary of change in vegetation over time. BAM plots should be conducted as per section 4.3.4 of the Biodiversity Assessment Method 2020 (DPIE 2020a).

6.2. Photo monitoring

Photo points should be established using permanent reference points, including at the BAM plots established as per Section 6.1, to provide visual references of vegetation change over time.

Photo monitoring should include:

- Set up the following number of photo points in each Management Zone for a total of **15** photo monitoring points:
 - Management Zone 1: Box Gum Woodland Revegetation (Intensive) – **4 points**
 - Management Zone 2: Box Gum Woodland Revegetation (Passive) – **2 points**
 - Management Zone 3: Box Gum Woodland Conservation – **4 points**
 - Management Zone 4: Hoary Sunray Conservation – **3 points**
 - Management Zone 5: Vegetation Conservation – **1 point**
 - Management Zone 6: Cultural Management Area – **1 point**
- Mark the photo point with a six-foot star picket and map the location and bearing of each photo point.

- Take a digital photo of each photo point with the whole length of the star picket visible in the photo to act as a reference point; and
- Organise the digital photos logically with each image labelled with a unique reference number indicating the location of the photo point, the direction of the photo and the date the photo is taken.

6.3. Revegetation assessment

Revegetation assessment surveys should be undertaken in MZ1 and MZ2 for three years following the revegetation works to ensure survivability. The assessment will require a walkaround of the management zones and undertaking a census to estimate the following:

- the survival rate of the plants installed
- the extent of natural regeneration of canopy species
- variation within the zone around survivability
- average height and DBH of the revegetation and natural regeneration of canopy species

In addition, an assessment will occur at the completion of Year 7 to determine if groundcover revegetation is required in MZ1 to achieve the ecological outcomes required by 1 January 2036, as per the variation of condition to EPBC approval 2012/6560. This assessment will also be undertaken via walkaround of the management zones but will include a suitable number of 1m x 1m rapid assessment quadrats for native groundcover species diversity, density and cover. If the site is not meeting the groundcover targets identified in Table 13 or the density targets in Table 9 then revegetation will be required.

6.4. Hoary Sunray census

The Hoary Sunray census will occur every three years from Year 2 (2027). This will involve parallel transects 10m apart across all MZ4. When an individual is identified during the survey a central location should be marked and a stem count conducted with a 5m radius of the central location. Any potential threats to the population should be noted during the survey.

6.5. Annual progress reports

Monitoring reports must be provided to the Commonwealth DCCEEW and are required to be published on the Holcim website. Reports are to include a baseline report at the start of works and then on an annual basis for the lifetime of the approval.

Reporting should include information on the implementation of specified monitoring actions and a description of the management works undertaken. Reports will include (at a minimum):

- Reporting period
- Contractor details (e.g., qualifications/experience)
- Seed and plant sourcing details (e.g., sourcing range, species identity, seed/plant quantities)
- Works implemented summary, including
 - Date of site visits
 - Works conducted
 - Details of total person hours per task carried out (e.g., weed control, planting, seeding)

- Details of weed control approaches (e.g., method, herbicide type, rate)
- Details of restoration actions (e.g., brush matting, tubestock planting, seeding, planting number, planting area)
- Details of assisted regeneration methods (e.g., installation of logs/woody debris/litter, biomass removal, habitat features)
- Photo point images and comments
- BAM plots, revegetation census and Hoary Sunray census results when required in that reporting year. During the years BAM plots are undertaken an assessment should be undertaken to determine if the site is tracking to meet the EPBC condition criteria.
- Issues/problems encountered and if/how these have been resolved
- Environmental incidents, non-compliance and corrective actions to be taken
- General observations (e.g., new plant species recorded (native and weed species), comments on rates of regeneration, details regarding rare or threatened entities found on site, faunal observations and interactions, social implications including community interactions (interest or complaints), rubbish dumping, trail bike activity, dog walking or other movement within site, breaches/damage to fences or vegetation
- Summary comments on site attributes and progress to-date.

6.6. Performance criteria

BGWMP performance criteria are detailed in Table 12 and Table 13. In addition, as per Condition 2D of the variation of condition to EPBC approval 2012/6560:

Condition 2D: The approval holder must achieve the ecological outcomes for Box Gum Woodland within the offset property specified in the LQBGWMP by 1 January 2036. Once achieved, the ecological outcomes must be maintained for the duration of this approval.

'Ecological outcomes' is defined in Condition 2B(e) as follows:

Condition 2B(e): Ecological outcomes for Box Gum Woodland within the offset property that:

- i. include increasing the extent of Box Gum Woodland within the offset property;*
- ii. include achieving a ratio of grassland form Box Gum Woodland to woodland form Box Gum Woodland of 1:14 or greater; and*
- iii. are derived from improving the baseline ecological quality of Box Gum Woodland within the offset property from baseline;*

ELA considers that these ecological outcomes will be achieved in the following manner, assuming achievement of the performance criteria in Table 12 and Table 13

- **Condition 2B(e)i:** Revegetation of MZ1 to EPBC condition BGW will add 11ha to the existing 45.28ha (MZ3) of EPBC condition BGW.
- **Condition 2B(e)ii:** At the end of the management period, the combination of MZ1 (11ha) and MZ3 (45.28) will create 56.28ha of EPBC condition BGW. With only 2.2ha of 'grassland form BGW', assumed to be DNG, this is a ratio of 1:25. Note that the remaining 17.58ha of DNG identified on-site (ELA 2024) has not been included in this calculation as this area is part of the Hoary Sunray habitat and managed to prioritise that under MZ4.

- **Condition 2B(e)iii:** Revegetation of MZ1 to EPBC condition BGW, revegetation of MZ2 to improve canopy cover and weed control in MZ1, MZ2 and MZ3 will improve the baseline ecology quality of BGW.

The author of this BGWMP, or an equally qualified and experienced person must prepare a statement certifying the compliance of the performance criteria, including the points above, at the end of the approval period.

The approval holder, in consultation with the project manager and/or the bush regeneration contractor, and Holcim, can adapt criteria in response to the success of rehabilitation works with the Minister's approval.

After the achievement of the performance criteria detailed in Table 13, the following performance criteria must be met in perpetuity:

- MZ1 must be improved to and maintained at EPBC condition BGW
- The Hoary Sunray population within the BOA must be continuously maintained without any decrease outside of natural variation.
- The condition and extent of the BGW in the BOA (MZ1, MZ2, MZ3) must be improved or maintained
- No bare areas >5m² or erosion from exposed surface and if erosion is found, it is appropriately managed to prevent impact on the values identified above.
- The fence surrounding the BGWMP area is continuously maintained
- Feral animal control is undertaken to an extent suitable to prevent impact on the values identified above.

6.7. Auditing and review

6.7.1. Record keeping

As per Condition 7 and 7A of the variation of condition to EPBC approval 2012/6560, Holcim are required to maintain accurate records regarding with the conditions of approval for the lifetime of the project.

The conditions are as follows:

Condition 7: The approval holder must maintain accurate and complete compliance records and document the procedure for recording and storing compliance records.

Condition 7A: If the department makes a request in writing, the approval holder must provide electronic copies of compliance records to the department within the timeframe specified in the request.

These reports must also be published to the Holcim website.

6.7.2. Independent audit

As per Condition 9 of the variation of condition to EPBC approval 2012/6560, Holcim are required to ensure an independent audit is conducted every audit period or when directed by the Minister and the report submitted to the Minister as well as published to the Holcim website. As per Condition 9C, the auditor must be approved by the Minister.

The conditions are as follows:

Condition 9: The approval holder must ensure that an independent audit of compliance with the conditions is conducted for every audit period and as otherwise directed by the Minister.

Condition 9C: The approval holder must submit details of the proposed independent auditor and their qualifications to the department within 10 business days following the end of each audit period, for the department's written agreement.

6.7.3. Management plan review

Using adaptive management, performance criteria will be reviewed annually and revised, when necessary, throughout the lifetime of the approval.

Progress against the targets will be discussed in annual reports as per Section 6.5, which will address identified failures of performance criteria, environmental incidents, non-compliance, and corrective measures taken to address any such issues.

As per Condition 11 of the variation of condition to EPBC approval 2012/6560, the Minister can request the LQBGWMP be revised if it is believed to be necessary or convenient for the better protection of listed threatened species and ecological communities and Holcim must comply with this request.

As per Condition 10 of the variation of condition to EPBC approval 2012/6560, Holcim can apply for a variation to the LQBGWMP and must submit an application in accordance with Section 143A of the EPBC Act.

The conditions are as follows:

Condition 10: The approval holder may, at any time, apply to the Minister for a variation to the LQBGWMP, by submitting an application in accordance with the requirements of section 143A of the EPBC Act. If the Minister approves a revised LQBGWMP then, from the date specified, the approval holder must implement that revision of the LQBGWMP in place of any previous version.

Condition 11: If the Minister believes that it is necessary or convenient for the better protection of listed threatened species and ecological communities to do so, the Minister may request that the approval holder make specified revisions to the LQBGWMP and submit a revised LQBGWMP for the Minister's written approval. The approval holder must comply with any such request. If the Minister approves a revised LQBGWMP then, from the date specified, the approval holder must implement that revision of the LQBGWMP in place of any previous version.

All reports, audits and plans must be published to the Holcim website until the expiry date of approval (currently 1 January 2038).

Table 12: BGWMP Performance criteria from Years 1-6

Management Zone	Year 1 (2026)	Year 2 (2027)	Year 3 (2028)	Year 4 (2029)	Year 5 (2030)	Year 6 (2031)
All Zones	<p>Commencement of all tasks outlined in the BGWMP or evidence of planning for their implementation</p> <p>Undertaking of tasks as per the timing identified in Table 10</p> <p>Infrastructure works:</p> <p>All required permanent fencing maintained as well as informative signage is installed and maintained</p> <p>Vegetation management works:</p> <p>Treatment of any new weed infestations and no woody weeds present which are producing seeds</p> <p>No erosion or sedimentation within the BOA likely to impact on BGW, Hoary Sunray or other threatened flora/fauna and no bare areas >5m²</p> <p>The Hoary Sunray population within the BOA must be continuously maintained without any decrease outside of natural variation.</p> <p>The condition and extent of the BGW in the BOA (MZ1, MZ2, MZ3) must be improved or maintained by the end of the management period (Year 12)</p> <p>Monitoring and reporting undertaken in accordance with Section 6 and as per the timing shown in Table 10</p> <p>Other works:</p> <p>Pest control activities undertaken within the BOA as needed to prevent impacts on BGW, Hoary Sunray or other threatened flora/fauna</p>					
Management Zone 1 (Box Gum Woodland Revegetation (Intensive):	<p>Treat 100% of priority weeds</p> <p>Treat 60% of other weeds</p> <p>Revegetation of BGW tree and shrub species completed across the entire zone as per Table 9</p> <p>80% survival rate of all plantings</p> <p>Native ground cover >10% (assessed by BAM plots)</p>	<p><15% cover by priority weeds</p> <p><40% cover by all weeds</p> <p>Native ground cover >15%</p> <p>80% survival rate of all plantings</p> <p>Replacement plantings of trees and shrubs undertaken if <80% survival recorded.</p>	<p><10% cover by priority weeds</p> <p><40% cover by all weeds</p> <p>Native ground cover >20%</p> <p>80% survival rate of all plantings</p> <p>Replacement plantings of trees and shrubs undertaken if <80% survival recorded.</p>	<p><10% cover by priority weeds</p> <p><35% cover by all weeds</p> <p>Native ground cover >25% (assessed by BAM plots)</p>	<p><10% cover by priority weeds</p> <p><35% cover by all weeds</p> <p>Native ground cover >30%</p>	<p><10% cover by priority weeds</p> <p><30% cover by all weeds</p> <p>Native ground cover >35%</p>

Management Zone	Year 1 (2026)	Year 2 (2027)	Year 3 (2028)	Year 4 (2029)	Year 5 (2030)	Year 6 (2031)
Management Zone 2 (Box Gum Woodland Revegetation (Passive):	Treat 100% of priority weeds Treat 60% of other weeds Revegetation of BGW tree and shrub species completed across the entire zone as per Table 9 80% survival rate of all plantings at end of Year 1.	<15% cover by priority weeds <40% cover by all weeds 80% survival rate of all plantings at end of Year 2. Replacement plantings of trees and shrubs undertaken if <80% survival recorded.	<10% cover by priority weeds <40% cover by all weeds 80% survival rate of all plantings at end of Year 3. Replacement plantings of trees and shrubs undertaken if <80% survival recorded.	<10% cover by priority weeds <40% cover by all weeds	<10% cover by priority weeds <40% cover by all weeds	<10% cover by priority weeds <40% cover by all weeds
Management Zone 3 (Box Gum Woodland Conservation):	Treat 100% of priority weeds Treat 85% of other weeds	<15% cover priority weeds <30% cover by all weeds	<10% cover by priority weeds <25% cover by all weeds	<10% cover by priority weeds <25% cover by all weeds	<10% cover by priority weeds <25% cover by all weeds	<10% cover by priority weeds <20% cover by all weeds
Management Zone 4 (Hoary Sunray Conservation):	Treat 100% of priority weeds Treat 85% of other weeds Native shrubs and trees <40% cover in DNG areas	<15% cover priority weeds <30% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <25% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <25% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <25% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <20% cover by all weeds Native shrubs and trees <40% cover in DNG areas
Management Zone 5 (Vegetation Conservation) and Management Zone 6 (Cultural Heritage Management)	Treat 100% of priority weeds	<15% cover priority weeds	<10% cover by priority weeds	<10% cover by priority weeds	<10% cover by priority weeds	<10% cover by priority weeds

Table 13: BGWMP performance criteria from year 7-12

Management Zone	Year 7 (2032)	Year 8 (2033)	Year 9 (2034)	Year 10 (2035)	Year 11 (2036)	Year 12 (2037)
All Zones	<p>Commencement of all tasks outlined in the BGWMP or evidence of planning for their implementation</p> <p>Undertaking of tasks as per the timing identified in Table 11</p> <p>Infrastructure works:</p> <p>All required permanent fencing maintained as well as informative signage is installed and maintained</p> <p>Vegetation management works:</p> <p>Treatment of any new weed infestations and no woody weeds present which are producing seeds</p> <p>No erosion or sedimentation within the BOA likely to impact on BGW, Hoary Sunray or other threatened flora/fauna and no bare areas >5m²</p> <p>The Hoary Sunray population within the BOA must be continuously maintained without any decrease outside of natural variation.</p> <p>The condition and extent of the BGW in the BOA (MZ1, MZ2, MZ3) must be improved or maintained by the end of the management period (Year 12)</p> <p>Monitoring and reporting undertaken in accordance with Section 6 and as per the timing shown in Table 11</p> <p>Other works:</p> <p>Pest control activities undertaken within the BOA as needed to prevent impacts on BGW, Hoary Sunray or other threatened flora/fauna</p>					
Management Zone 1 (Box Gum Woodland Revegetation (Intensive):	<p><10% cover by priority weeds</p> <p><25% cover by all weeds</p> <p>Native ground cover >40% (assessed by BAM plots)</p> <p>Revegetation assessment undertaken to determine if revegetation of groundcover is needed in Year 8</p>	<p><10% cover by priority weeds</p> <p><25% cover by all weeds</p> <p>Native ground cover >45%</p> <p><i>If required:</i></p> <p>Revegetation of BGW grasses and forb species completed across the entire zone as per Table 9</p> <p>80% survival rate of all plantings at end of Year 7*</p> <p>Replacement plantings of grasses and forbs undertaken if <80% survival recorded*</p>	<p><10% cover by priority weeds</p> <p><25% cover by all weeds</p> <p>Native ground cover >50%</p> <p><i>If required:</i></p> <p>Revegetation of BGW grasses and forb species completed across the entire zone as per Table 9</p> <p>80% survival rate of all plantings at end of Year 7*</p> <p>Replacement plantings of grasses and frobs undertaken if <80% survival recorded*</p>	<p><10% cover by priority weeds</p> <p><20% cover by all weeds</p> <p>Native ground cover >50% (assessed by BAM plots)</p> <p>Achievement of EPBC condition BGW</p>	<p><10% cover by priority weeds</p> <p><20% cover by all weeds</p>	<p><10% cover by priority weeds</p> <p><20% cover by all weeds</p>

Management Zone	Year 7 (2032)	Year 8 (2033)	Year 9 (2034)	Year 10 (2035)	Year 11 (2036)	Year 12 (2037)
Management Zone 2 (Box Gum Woodland Revegetation (Passive):	<10% cover by priority weeds <40% cover by all weeds	<10% cover by priority weeds <40% cover by all weeds	<10% cover by priority weeds <40% cover by all weeds	<10% cover by priority weeds <40% cover by all weeds	<10% cover by priority weeds <40% cover by all weeds	<10% cover by priority weeds <40% cover by all weeds
Management Zone 3 (Box Gum Woodland Conservation):	<10% cover by priority weeds <20% cover by all weeds	<10% cover by priority weeds <20% cover by all weeds	<10% cover by priority weeds <20% cover by all weeds	<10% cover by priority weeds <20% cover by all weeds	<10% cover by priority weeds <20% cover by all weeds	<10% cover by priority weeds <20% cover by all weeds weeds
Management Zone 4 (Hoary Sunray Conservation):	<10% cover by priority weeds <20% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <20% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <20% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <20% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <20% cover by all weeds Native shrubs and trees <40% cover in DNG areas	<10% cover by priority weeds <20% cover by all weeds Native shrubs and trees <40% cover in DNG areas
Management Zone 5 (Vegetation Conservation) and Management Zone 6 (Cultural Management Area)	Treat 100% of priority weeds	<15% cover priority weeds	<10% cover by priority weeds	<10% cover by priority weeds	<10% cover by priority weeds	<10% cover by priority weeds

*if deemed necessary due to lack of natural regeneration in groundcover layer

6.8. Box Gum Woodland condition class

In order for MZ1 to meet the EPBC condition threshold in 2036 it will need to meet the key diagnostic characteristics and the minimum condition threshold (DCCEEW 2023). The key diagnostic characteristics compared to current conditions of MZ1 are detailed in Table 14.

Table 14: Key diagnostic characteristics summary compared to the current conditions in MZ1

Key diagnostic characteristics summary (DCCEEW 2023)	Current condition
The ecological community occurs within one of the following bioregions: Brigalow Belt South, Murray Darling Depression, Nandewar, New England Tableland, NSW North Coast, NSW South Western Slopes, Riverina, South Eastern Queensland, South East Corner, South East Coastal Plain, South Eastern Highlands, Southern Volcanic Plain, Sydney Basin and Victorian Midlands.	The BOA occurs within the South Eastern Highlands IBRA region.
It has, or has previously had a canopy layer dominated or co-dominated by: <i>Eucalyptus albens</i> (White box) <i>E. melliodora</i> (Yellow box) <i>E. blakelyi</i> (Blakely's red gum)	MZ1 is currently cleared of canopy species, Section 4.6 details the vegetation densities for canopy species and Appendix F contains the canopy species to be installed in 2026.
It has a predominately native ground layer (>50% perennial native vegetation cover in the ground layer)	The native ground layer is estimated to be 15% as described in section 3.1. The weed control in section 4.5 and the performance criteria aims to reduce weed cover to allow natural regeneration. If natural regeneration does not occur, revegetation of ground layer species will occur in 2033 as described in Section 4.6.
Tussock grasses conspicuous in the ground layer, usually with native species from the following genera: <i>Austrostipa</i> , <i>Bothriochloa</i> , <i>Chloris</i> , <i>Cymbopogon</i> , <i>Dichanthium</i> , <i>Microlaena</i> , <i>Poa</i> , <i>Themeda</i> , <i>Rytidosperma</i> or <i>Sorghum</i> .	These tussock grasses are currently absent, if required they will be installed in 2033 as described in Section 4.6.
Amongst the grass tussocks a range of broad-leaved forbs and petaloid monocots may be a major component of the plant diversity.	MZ1 currently contains <i>Brunoniella australis</i> , <i>Carex inversa</i> , <i>Centella asiatica</i> , <i>Centrolepis fascicularis</i> , <i>Craspedia variabilis</i> , <i>Cyperus gracilis</i> , <i>Drosera peltata</i> , <i>Euchiton japonicus</i> , <i>Gonocarpus tetragynus</i> and <i>Schoenus apogon</i> as described in section 3.1.
The Shrub layer across the patch is <30% (the effects of disturbance need to be considered, for example where heavy grazing may result in high densities of shrubs during a recovery phase).	<i>Cassinia sifton</i> has been identified in high cover and abundance in the DNG and regeneration zones. Management will include thinning of <i>Cassinia sifton</i> to allow other native species to regenerate.

The condition classes and thresholds are displayed in Appendix H. The target of MZ1 is condition class C, the details for this condition class and the management actions being undertaken to achieve this target is described in Table 15.

Table 15: Specifications to achieve Condition Class C

Condition class C description	Patch size requirement	Features present	Management actions to achieve target
Allows for a lower diversity in the understorey in areas where there is regeneration and/or tree density may be relatively dense.	2 ha (20,000 m ²) or larger	The ground layer is predominately native (at least 50% native perennial ground cover species)	The native ground layer is estimated to be 15% as described in section 3.1. The weed control in section 4.5 and the performance criteria aims to reduce weed cover to allow natural regeneration. If natural regeneration does not occur, revegetation of ground layer species will occur in 2033 as described in Section 4.6.
		The patch contains 20 or more mature trees (dbh >40cm) per hectare and/or The patch contains natural regeneration of dominant overstorey eucalyptus* (>5cm dbh)	MZ1 is currently cleared of canopy species, Section 4.6 details the vegetation densities for canopy species and Appendix F contains the canopy species to be installed in 2026. The performance criteria in 2026-2028 requires 80% survival of canopy species, if this is achieved the requirement of regeneration of dominant overstorey <i>Eucalyptus</i> sp. should be achieved in 2036.

7. Risk assessment and corrective actions

The main risks identified for this BGWMP area include:

- Failure to improve PCT 3376 (Southern Tableland Grassy Box Woodland) to EPBC standards to meet the conditions of approval in the BOA
- Failure to maintain the *Leucochrysum albicans* subsp. *tricolor* (Hoary Sunray) population BOA

The BGWMP includes weed control management throughout the life of the BGWMP. This will include a focussed primary and secondary control of woody weeds, exotic grasses, and groundcovers in the first two years. There is a **medium** chance that the weed species within the MZ1 will outcompete plantings and natural regeneration occurring, however with proper implementation of the BGWMP, this risk can be easily managed.

Possible extreme weather condition impacts from drought or flood are hard to predict and would have a **medium** impact on MZ1. The potential for extreme weather events to occur is incredibly difficult to determine. If extreme weather events were to occur, the risk to achieving the objectives in the BGWMP could range from **medium** to **high**, depending on the frequency and severity of the events.

Appropriate management measures have been specified in the risk management table below (Table 161614).

Table 16: Risk assessment

Commitment	Objective	Potential Risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial actions)	Related monitoring
Ensure the implementation of the BGWMP improves and maintains the condition of the vegetation within the BOA.	Improve and maintain the condition of the native vegetation within the 11 ha of the MZ1 via natural regeneration and revegetation.	Weeds outcompete native regeneration and revegetation	Unlikely	Moderate	Low	Weed cover is higher than the weed cover levels for each year and zone described in Table 12 and Table 13 recorded during monitoring visits	Increase weed control measures and management visits until weeds are under the required level	Monitoring outlined in Section 6.
		Low success rate of tubestock and direct seeding efforts due to environmental factors	Possible	Moderate	Medium	Revegetation and regeneration lower than prescribed levels for each year and zone described in Table 12 and Table 13 recorded during monitoring visits.	Reassess the need for additional revegetation/direct seeding efforts Wait until favourable conditions if additional revegetation/direct seeding takes place Use additional strategies such as providing additional protection to revegetation efforts, such as brush matting to aid in success	Monitoring outlined in Section 6.
		Low success rate of rehabilitation due to lack of implementation	Possible	Moderate	Medium	Regeneration lower than prescribed levels for each year and zone described in Table 12 and Table 13 recorded during monitoring visits.	Implement the BGWMP as stated within this document Implement corrective actions as per this table where the lack of implementation has caused damage	Monitoring outlined in Section 6.

Commitment	Objective	Potential Risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial actions)	Related monitoring
Ensure the performance criteria included in this BGWMP are met.	At the end of the initial year 11 BGWMP timeline and until the period for which the approval has effect, ensure priority weeds cover meets the year 12 target in all zones	Weed presence does not decrease to acceptable levels across the life of the BGWMP period	Possible	Moderate	Medium	Weed cover is higher than the weed cover levels for each year and zone described in Table 12 and Table 13 recorded during monitoring visits	Increase weed control measures and management visits until weeds are under the required level Mulch targeted areas for weed suppression	Monitoring outlined in Section 6.
		Native vegetation does not regenerate/revegetate to acceptable levels across the life of the BGWMP period	Unlikely	Moderate	Medium	Revegetation and regeneration lower than prescribed levels for each year and zone described in Table 12 and Table 13 recorded during monitoring visits.	Reassess the need for additional revegetation/direct seeding efforts Wait until favourable conditions if additional revegetation/direct seeding takes place Use additional strategies such as providing additional protection to revegetation efforts, such as brush matting to aid in success Use native species that have a higher likelihood of competing with weed species	Monitoring outlined in Section 6.
		New weed outbreaks	Likely	Minor	Low	New weed species detected during monitoring visits	Increase edge maintenance and weed management works to suppress new weed invasion	Monitoring outlined in Section 6.

Commitment	Objective	Potential Risk	Likelihood	Consequence	Risk level	Trigger	Management strategy (remedial actions)	Related monitoring
To rectify the historical non-compliance regarding the implementation of the BGWMP	To implement this BGWMP plan and ensure all performance criteria are met and maintained until the end of the approval period.	PCT 3376 (Southern Tableland Grassy Box Woodland) fails to meet EPBC criteria, and the conditions of approval are not met	Possible	Moderate	Medium	During monitoring visits, locations of this PCT community are not found to meet the EPBC criteria	Increase weed control measures and management visits until weeds are under the required level Reassess the need for additional revegetation/direct seeding efforts to meet EPBC criteria Wait until favourable conditions if additional revegetation/direct seeding takes place, use additional strategies such as providing additional protection to revegetation efforts, such as brush matting to aid in success Use the appropriate BGW species to revegetate/direct seed the BOA	Monitoring outlined in Section 6.
		<i>Leucochrysum albicans</i> subsp. <i>tricolor</i> (Hoary Sunray) population is not maintained and decreases in the BOA	Possible	High	Medium	During monitoring visits, the extent of <i>Leucochrysum albicans</i> subsp. <i>tricolor</i> (Hoary Sunray) is found to be to a lesser extent than the year prior.	Increase weed control measures and management visits until weeds are under the required level Manage species that may be creating a monoculture/competing within the area of the <i>Leucochrysum albicans</i> subsp. <i>tricolor</i> (Hoary Sunray) extent	Monitoring outlined in Section 6.

8. Costs

The implementation cost of this BGWMP over the first twelve years is approximately **\$1,160,000** (exclusive of GST and CPI). An indicative annual costing timeline is provided in Table 17. Costs are based on typical commercial rates. Assumptions regarding the estimation of costs have been outline below.

8.1. Infrastructure and site preparation works

Infrastructure activities like fencing and erosion management have not been included in Table 171715.

8.2. Vegetation management works

8.2.1. Weed control

Bush regenerators will implement weed controls identified in this BGWMP. These works have been estimated to cost **\$2,850** for a team of four, including a supervisor, per day. The cost of bush regeneration works includes the use of herbicide, vehicles, and equipment required to implement the BGWMP.

8.2.2. Revegetation treatments

Bush regenerators will implement revegetation actions such as tubestock and direct seeding identified in this BGWMP. Tubestock costs have been budgeted at an estimated **\$5.50** per tree and shrub including planting and **\$2.50** per herb, grass, sedge, and groundcover including planting.

A total of approximately 13,000 plants are assumed to be required to achieve the densities identified in the BGWMP in the initial revegetation works expected to take place in 2026. A 10% replacement planting for both Year 2 and Year 3 has also been assumed to meet the performance criteria in Table 12 and Table 13, however more revegetation may be required if attrition is higher.

Depending on the achievement of the groundcover performance criteria and the Revegetation Assessment in Year 7, additional groundcover plants may be required in 2033.

8.2.3. Monitoring and reporting

An allowance for monitoring and reporting actions as identified for this BGWMP including for:

- Initial setup of the photo points and conducting the baseline surveys,
- Different surveys and the annual report outlined in Section 6.

Because of the difference from year to year in monitoring requirements, the annual budget provided for monitoring is an indicative average only. At the start of works a more precise budget will be required to track the projected changes from year to year as the different monitoring obligations apply.

Table 17: Indicative BGWMP costings

Treatment	Year 1 (2026)	Year 2 (2027)	Year 3 (2028)	Year 4 (2029)	Year 5 (2030)	Year 6 (2031)	Year 7 (2032)	Year 8 (2033)	Year 9 (2034)	Year 10 (2035)	Year 11 (2036)	Year 12 (2037)	Total
Revegetation													
Site Preparation	\$26,440	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$26,440
Tubestock	\$74,693	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$72,710
Replacement tubestock	\$-	\$7,271	\$7,271	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$14,542
Irrigation	\$29,745	\$1,653	\$1,653	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$33,050
Weed control													
Est: Year 1	\$170,553	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$170,553
Maint: Year 2 - 3	\$-	\$98,497	\$98,497	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$-	\$196,993
Maint: Year 4 - 6	\$-	\$-	\$-	\$59,619	\$59,619	\$59,619	\$-	\$-	\$-	\$-	\$-	\$-	\$178,856
Maint: Year 7 - 12	\$-	\$-	\$-	\$-	\$-	\$-	\$32,013	\$32,013	\$32,013	\$32,013	\$32,013	\$32,013	\$192,076
Associated costs													
Disbursements	\$17,055	\$9,850	\$9,850	\$5,962	\$5,962	\$5,962	\$3,201	\$3,201	\$3,201	\$3,201	\$3,201	\$3,201	\$73,848
Monitoring & Reporting	\$16,192	\$16,192	\$16,192	\$16,192	\$16,192	\$16,192	\$16,192	\$16,192	\$16,192	\$16,192	\$16,192	\$16,192	\$194,300
Totals	\$334,678	\$133,461	\$ 133,461	\$81,772	\$81,772	\$81,772	\$51,406	\$51,406	\$51,406	\$51,406	\$51,406	\$51,406	\$1,155,351

Table 18: Indicative potential groundcover costs if required

Treatment	Year 8 (2033)	Year 9 (2034)	Year 10 (2035)	Total*
Revegetation				
Seed collection and processing	\$ 33,333			\$ 33,333
Site preparation	\$ 66,100			\$ 66,100
Tube stock supply and install	\$ 562,210			\$ 562,210
Replacement tubestock		\$ 56,221	\$ 56,221	\$ 112,442
Irrigation	\$ 92,540	\$ 19,830	\$ 19,830	\$ 132,200
Total*	\$ 754,183	\$ 76,051	\$ 76,051	\$906,285

*Note that additional weed control and other works may also be required as additional works

9. References

Buchanan R.A (2009) *Bush Regeneration: Recovering Australian Landscape*. 2nd ed., TAFE NSW, Sydney.

Department of Climate Change, Energy, the Environment and Water (DCCEEW) 2023. *Approved Conservation Advice for the White Box – Yellow Box – Blakely’s Red Gum Grassy Woodland and Derived Native Grassland*. Accessed at:

<https://environment.gov.au/biodiversity/threatened/communities/pubs/43-conservation-advice.pdf>

Department of Planning, Industry and Environment (DPIE) 2020a. *Biodiversity Assessment Method*

Department of Planning, Industry and Environment (DPIE) 2020b. Saving Our Species: Hygiene guidelines – Protocols to protect priority biodiversity areas in NSW from *Phytophthora cinnamomi*, myrtle rust, amphibian chytrid fungus and invasive plants, report no. EES 2020/0164, Department of Planning, Industry and Environment, Parramatta. Available at:

<https://www.environment.nsw.gov.au/sos> [Accessed 1 Sep. 2025].

Department of Primary Industries and Regional Development, Agriculture and Biosecurity (DPIRD) 2025. New South Wales Weed Control Handbook: A guide to weed control in non-crop, aquatic and bushland situations, 8th edn, Department of Primary Industries and Regional Development, Agriculture and Biosecurity. Available at: <https://www.dpi.nsw.gov.au/biosecurity/weeds> [Accessed 1 Sep. 2025].

Ecological Australia Pty Ltd (2024). *EPBC 2012/6560 Lynwood Quarry Project, Marulan Response to Request for Information – Baseline BGW surveys letter*. Prepared for Holcim (Australia) Pty Ltd

Local Land Services (LLS) 2022. *South East Regional Strategic Weed Management Plan 2023-2027*.

NSW National Parks and Wildlife (NPWS) 2025. Fire History - Wildfires and Prescribed Burns, Department of Planning, Industry and Environment. Accessed from

<https://datasets.seed.nsw.gov.au/dataset/firehistory-wildfires-and-prescribed-burns-1e8b6>

SESL Australia 2025. Lynwood Quarry Soil Investigation. Prepared for Ecological Australia Pty Ltd and Holcim Australia Pty Ltd

SLR Consulting Australia. 2024. Ecological Monitoring 2023. Prepared for Holcim Australia Pty Ltd. V1 dated 5 March 2024.

SLR Consulting Australia. 2025. Ecological Monitoring 2024. Prepared for Holcim Australia Pty Ltd. DRAFT dated 26 March 2025.

Umwelt (Australia) Pty Limited 2013. *Lynwood Quarry – Box Gum Woodland Management Plan*. Report prepared for Holcim (Australia) Pty Ltd

Appendix A SESL Soil Survey within the BOA

Provided as a separate document.

Appendix B Soil results summary

Table B1: Soil characteristics analysis of the nine topsoil locations within the BOA.

Sample #	Depth (mm)	pH (CaCl ₂)	Salinity (Electrical Conductivity 1:5 dS/m)	Effective Cation Exchange Capacity (cmol(+)/kg)	Soil Texture	Clay content (%)	Structure Size	Structure Organisation	Potential infiltration rate	Organic Carbon (%)	Organic Matter (%)	Est. Plant Available Water (%)
CEEC												
S1	300	4.52	0.02	4.8	Sandy Clay Loam	20-30	Fine (1-10 mm)	Pedal – weak	Moderate	1.3	2.2	11
S5	300	4.14	0.03	5	Fine Sandy Clay Loam	20-30	Fine (1-10 mm)	Pedal - weak	Moderate	1.6	2.7	13
S9	300	4.51	0.02	2.4	Fine Sandy Clay Loam	20-30	Fine (1-10 mm)	Pedal – weak	Moderate	0.6	1.1	13
AVG	300	4.39	0.02	4.07	Mostly Fine Sandy Clay Loam	20-30	All Fine (1-10 mm)	All Pedal – weak	All Moderate	1.17	2	12.33
DNG												
S2	600	4.7	0.03	5.2	Fine Sandy Clay Loam	20-30	Medium (11-25 mm)	Pedal - moderate	Moderate	0.7	1.1	13
S3	300	4.8	0.04	7.3	Sandy Clay	35-45	Medium (11-25 mm)	Pedal - strong	Slow	1.9	3.2	10
S4	200	4.31	0.02	6.60	Sandy Clay Loam	20-30	Fine (1-10 mm)	Pedal - weak	Moderate	2.20	3.7	11.00
S6	200	4.39	0.04	6.2	Fine Sandy Clay Loam	20-30	Fine (1-10 mm)	Pedal – weak	Moderate	1.9	3.2	13
S8	300	4.58	0.01	3.5	Fine Sandy Clay Loam	20-30	Medium (11-25 mm)	Pedal – weak	Moderate	1.1	1.8	13
AVG	233	4.56	0.03	5.76	Mostly Fine Sandy Clay Loam	Mostly 20-30	Mostly Medium (11-25 mm)	Mostly pedal – weak	Mostly Moderate	1.56	2.60	12.00
Other												
S7	250	4.20	0.02 Very Low	4.4 Very Low	Sandy Clay Loam	20-30	Fine (1-10 mm)	Pedal - weak	Moderate	0.9 Low	1.5	11.00

Table B2: Soil nutrient analysis of nine topsoil locations within the BOA.

Sample #	Nitrate-N (NO3) (mg N/kg)	Phosphorus (P) mg P/kg	Potassium (K) mg/kg	Sulfur (S) mg S/kg	Calcium (Ca) mg/kg	Magnesium (Mg) mg/kg	Iron (Fe) mg/kg	Manganese (Mn) mg/kg	Zinc (Zn) mg/kg	Copper (Cu) mg/kg	Boron (B) mg/kg
CEEC											
S1	0.18	5	32	5.9	240	69	260	1.7	0.65	0.64	0.1
S5	0.52	5	80	6.2	27	100	260	1.6	0.97	0.64	0.1
S9	0.22	5	73	5.3	30	55	170	2	0.65	0.64	0.1
Average	0.31	5.00	61.67	5.80	99.00	74.67	230.00	1.77	0.76	0.64	0.10
DNG											
S2	0.18	5	50	3.8	130	270	160	6.2	0.65	0.64	0.1
S3	0.71	5	60	16	480	200	340	2.2	1.6	0.64	0.1
S4	0.23	7.8	76	6.8	220	77	260	1.8	1.12	0.64	0.1
S6	0.05	11	42	8.9	250	120	230	1.7	0.75	0.64	0.1
S8	0.19	11	32	5.4	170	48	260	1.3	0.65	0.64	0.1
Average	0.27	7.96	52.00	8.18	250.00	143.00	250.00	2.64	0.95	0.64	0.10
Other											
S7	0.19	5	59	5.4	14	51	240	0.59	0.65	0.64	0.1

Table B3: Soil characteristics analysis of the three subsoil locations within the BOA.

Sample #	Subsoil depth (mm)	pH (CaCl ₂)	Salinity (Electrical Conductivity 1:5 dS/m)	Effective Cation Exchange Capacity (cmol(+)/kg)	Soil Texture	Clay content (%)	Structure Size	Structure Organisation	Potential infiltration rate	Est. Plant Available Water (%)
CEEC										
S9	300-700	4.22	0.04 Very Low	16.4 Moderate	Sandy Clay	35-45	Medium (11-25 mm)	Pedal - strong	Slow	10
DNG										
S6	200-500	4.32	0.04 Very Low	4.3 Very Low	Sandy Clay Loam	20-30	Fine (1-10 mm)	Pedal - weak	Moderate	11
Other										
S7	250-700	4.10	0.02 Very Low	7.1 Low	Sandy Clay Loam	20-30	Medium (11-25 mm)	Pedal - weak	Moderate	11

Table B4: Soil nutrient analysis of three subsoil locations within the BOA.

Sample #	Potassium (K) mg/kg	Calcium (Ca) mg/kg	Magnesium (Mg) mg/kg
CEEC			
S9	150 (Very Low)	6.9 (Very Low)	940 (High)
DNG			
S6	35 (Very Low)	60 (Very Low)	180 (High)
Other			
S7	53 (Very Low)	16 (Very Low)	280 (High)

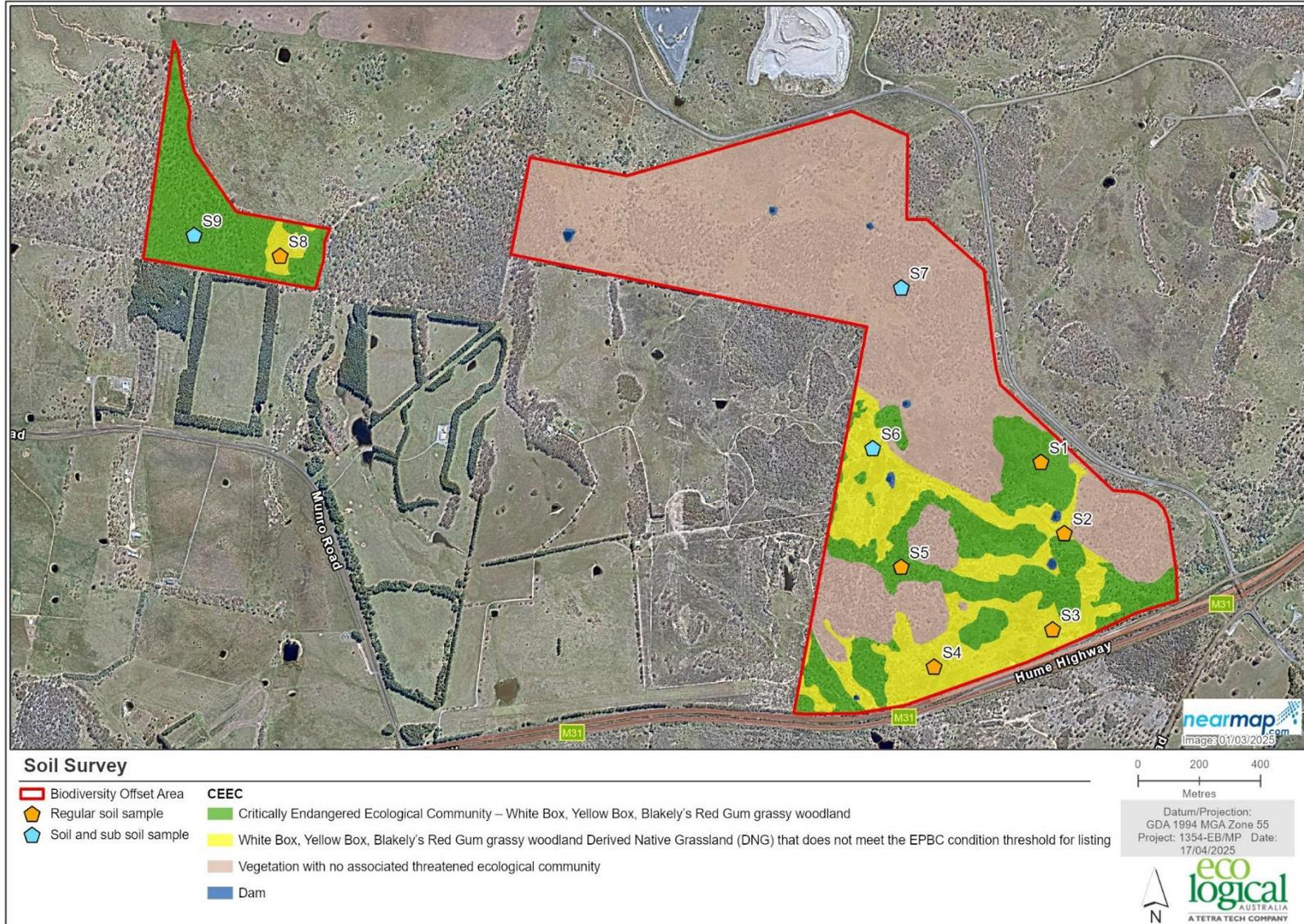


Figure B1: Soil survey locations

Appendix C Flora survey results

Provided as a separate document

Appendix D Fauna survey results

Provided as a separate document.

Appendix E Weeds recorded within the BOA

Species	Common Name	Species	Common Name
<i>Acetosella vulgaris</i>	Sheep Sorrel	<i>Hypochaeris radicata</i>	Catsear
<i>Aira caryophylla</i>	Silvery Hairgrass	<i>Juncus cognatus</i>	
<i>Anthoxanthum odoratum</i>	Sweet Vernal Grass	<i>Lysimachia arvensis</i>	Scarlet Pimpernel
<i>Arctotheca calendula</i>	Capeweed	<i>Medicago polymorpha</i>	Burr Medic
<i>Briza minor</i>	Shivery Grass	<i>Misopates spp.</i>	
<i>Cenchrus clandestinus</i>	Kikuyu Grass	<i>Nassella trichotoma</i>	Serrated Tussock
<i>Centaurium tenuiflorum</i>	Branched Centaury, Slender centaury	<i>Paronychia brasiliiana</i>	Chilean Whitlow Wort, Brazilian Whitlow
<i>Cerastium glomeratum</i>	Mouse-ear Chickweed	<i>Paspalum dilatatum</i>	Paspalum
<i>Cicendia quadrangularis</i>		<i>Phalaris aquatica</i>	Phalaris
<i>Cirsium vulgare</i>	Spear Thistle	<i>Phytolacca octandra</i>	Inkweed
<i>Conyza bonariensis</i>	Flaxleaf Fleabane	<i>Plantago coronopus subsp. coronopus</i>	
<i>Cotula coronopifolia</i>	Water Buttons	<i>Plantago lanceolata</i>	Lamb's Tongues
<i>Cyperus eragrostis</i>	Umbrella Sedge	<i>Rubus anglocandicans</i>	Blackberry
<i>Eragrostis curvula</i>	African Lovegrass	<i>Senecio madagascariensis</i>	Fireweed
<i>Facelis spp.</i>		<i>Setaria parviflora</i>	
<i>Festuca elatior</i>	Tall Fescue	<i>Solanum nigrum</i>	Black-berry Nightshade
<i>Festuca elatior</i>	Tall Fescue	<i>Sonchus oleraceus</i>	Common Sowthistle
<i>Festuca pratensis</i>	Meadow Fescue	<i>Stellaria media</i>	Common Chickweed
<i>Fumaria muralis subsp. muralis</i>	Wall Fumitory	<i>Taraxacum officinale</i>	Dandelion
<i>Gamochaeta coarctata</i>		<i>Trifolium repens</i>	White Clover
<i>Gamochaeta purpurea</i>	Purple Cudweed		
<i>Hirschfeldia incana</i>	Buchan Weed		
<i>Holcus lanatus</i>	Yorkshire Fog		
<i>Hypericum kouytchense</i>			
<i>Hypericum perforatum</i>	St. Johns Wort		
<i>Hypochaeris glabra</i>	Smooth Catsear		

Appendix F Recommended BGW Revegetation list

Recommended Trees		Recommended Shrubs	
<i>Eucalyptus melliodora</i>	Yellow Box	<i>Acacia deanei</i>	Green Wattle
<i>Eucalyptus blakelyi</i>	Blakely's Red Gum	<i>Acacia falciformis</i>	Broad-leaved Hickory
<i>Eucalyptus bridgesiana</i>	Apple Box	<i>Acacia genistifolia</i>	Early Wattle
<i>Eucalyptus rossii</i>	Inland Scribbly Gum	<i>Acacia implexa</i>	Hickory Wattle
<i>Acacia dealbata</i>	Silver Wattle	<i>Acacia mearnsii</i>	Black Wattle
<i>Eucalyptus macrorhyncha</i>	Red Stringybark	<i>Acacia paradoxa</i>	Kangaroo Thorn
<i>Eucalyptus mannifera</i>	Brittle Gum	<i>Acacia rubida</i>	Red-stemmed Wattle
<i>Eucalyptus rubida</i>	Candlebark	<i>Acacia ulicifolia</i>	Prickly Moses
<i>Eucalyptus polyanthemos</i>	Red Box	<i>Bursaria spinosa</i>	Native Blackthorn
		<i>Calytrix tetragona</i>	Common Fringe-myrtle
		<i>Cassinia aculeata</i>	Dolly Bush
		<i>Cassinia laevis</i>	Cough Bush
		<i>Cassinia longifolia</i>	Shiny Cassinia
		<i>Cassinia quinquefaria</i>	Rosemary Cassinia
		<i>Daviesia ulicifolia</i>	Gorse Bitter Pea
		<i>Dillwynia phyllicoides</i>	Parrot-pea
		<i>Dodonaea viscosa</i>	Sticky Hop-bush
		<i>Exocarpos cupressiformis</i>	Cherry Ballart
		<i>Indigofera australis</i>	Australian Indigo
		<i>Kunzea ericoides</i>	Burgan
		<i>Lissanthe strigosa</i>	Peach Heath
		<i>Rubus parvifolius</i>	Native Raspberry

Recommended Grasses		Recommended Forbs	
<i>Austrostipa scabra</i>	Speargrass	<i>Hydrocotyle laxiflora</i>	Stinking Pennywort
<i>Aristida ramosa</i>	Purple Wiregrass	<i>Acaena echinata</i>	Sheep's Burr
<i>Aristida vagans</i>	Threeawn Speargrass	<i>Acaena novae-zelandiae</i>	Bidgee-widgee
<i>Austrostipa bigeniculata</i>	Yanganbil	<i>Acaena ovina</i>	Acaena
<i>Austrostipa densiflora</i>	Foxtail Speargrass	<i>Ajuga australis</i>	Austral Bugle
<i>Austrostipa mollis</i>	Soft Speargrass	<i>Arthropodium minus</i>	Small Vanilla Lily
<i>Bothriochloa macra</i>	Red Grass	<i>Bulbine bulbosa</i>	Bulbine Lily
<i>Carex appressa</i>	Tall Sedge	<i>Burchardia umbellata</i>	Milkmaids
<i>Chloris truncata</i>	Windmill Grass	<i>Calotis lappulacea</i>	Yellow Burr-daisy
<i>Cymbopogon refractus</i>	Barbed Wire Grass	<i>Chrysocephalum apiculatum</i>	Common Everlasting
<i>Dichelachne micrantha</i>	Shorthair Plumegrass	<i>Cotula australis</i>	Common Cotula
<i>Echinopogon ovatus</i>	Forest Hedgehog Grass	<i>Cymbonotus lawsonianus</i>	Bear's Ear
<i>Elymus scaber</i>		<i>Cynoglossum australe</i>	
<i>Enneapogon nigricans</i>		<i>Daucus glochidiatus</i>	Native Carrot
<i>Eragrostis leptostachya</i>	Paddock Lovegrass	<i>Dianella longifolia</i>	Blueberry Lily
<i>Juncus filicaulis</i>	0	<i>Dianella revoluta</i>	Blueberry Lily
<i>Lomandra filiformis</i>	Wattle Matt-rush	<i>Dichondra repens</i>	Kidney Weed
<i>Lomandra longifolia</i>	Spiny-headed Mat-rush	<i>Dysphania pumilio</i>	Small Crumbweed
<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	Many-flowered Mat-rush	<i>Einadia hastata</i>	Berry Saltbush
<i>Microlaena stipoides</i>	Weeping Grass	<i>Einadia nutans</i>	Climbing Saltbush
<i>Panicum effusum</i>	Hairy Panic	<i>Einadia trigonos</i>	Fishweed
<i>Poa labillardierei</i> var. <i>labillardierei</i>	Tussock	<i>Epilobium billardierianum</i>	
<i>Poa sieberiana</i>	Snowgrass	<i>Erodium crinitum</i>	Blue Crowfoot
<i>Rytidosperma caespitosum</i>	Ringed Wallaby Grass	<i>Euchiton japonicus</i>	
<i>Rytidosperma pallidum</i>	Redanther Wallaby Grass; Silvertop Wallaby Grass	<i>Euchiton sphaericus</i>	Star Cudweed
<i>Rytidosperma racemosum</i>	Wallaby Grass	<i>Euphorbia dallachyana</i>	

Recommended Grasses		Recommended Forbs	
<i>Rytidosperma setaceum</i>	Small-flowered Wallaby-grass	<i>Galium gaudichaudii</i>	Rough Bedstraw
<i>Sporobolus creber</i>	Slender Rat's Tail Grass	<i>Geranium retrorsum</i>	Cranesbill Geranium
<i>Themeda triandra</i>	0	<i>Geranium solanderi</i>	Native Geranium
		<i>Gonocarpus tetragynus</i>	Poverty Raspwort
		<i>Goodenia hederacea</i>	Ivy Goodenia
		<i>Hovea linearis</i>	
		<i>Hypericum gramineum</i>	Small St John's Wort
		<i>Opercularia aspera</i>	Coarse Stinkweed
		<i>Opercularia diphylla</i>	Stinkweed
		<i>Oxalis exilis</i>	
		<i>Oxalis perennans</i>	
		<i>Ranunculus lappaceus</i>	Common Buttercup
		<i>Rumex brownii</i>	Swamp Dock
		<i>Senecio quadridentatus</i>	Cotton Fireweed
		<i>Urtica incisa</i>	Stinging Nettle
		<i>Veronica plebeia</i>	Trailing Speedwell
		<i>Vittadinia cuneata</i>	A Fuzzweed
		<i>Vittadinia muelleri</i>	A Fuzzweed
		<i>Wahlenbergia gracilis</i>	Sprawling Bluebell
		<i>Wahlenbergia luteola</i>	Bluebell
		<i>Wahlenbergia stricta</i>	Tall Bluebell

Appendix G Techniques and specifications

Weed Control

Weed control involves a combination of mechanical, physical and chemical techniques to remove the weeds and prevent regrowth. Weed control will be undertaken across the entire zone. A selection of the best suited weed control method within the site depends on a number of factors, including:

- the species or combination of weeds being targeted.
- the density of weeds present.
- resources available (time, labour, equipment and finances).
- weather conditions on the day

Weed Control Techniques

Detail of specific weed control techniques to be used such as cut-and-paint, scrape-and-paint, herbicide spraying, and hand weeding are provided in Brodie (1999). The principles of bush regeneration and techniques to trigger natural regeneration are to be in accordance with the Bradley Method and other techniques described in Buchanan (2009). Management techniques for different types of weeds are provided below.

Annual grasses

Annual grasses should be hand removed or spot-sprayed where isolated or in low concentrations. Larger patches of annual grasses may be slashed/brush cut in late spring to early summer, after flowering, but prior to seed set. For most species, slashing/brush cutting prior to late spring through to early summer will promote vigorous growth and should not occur. However, some annual grasses can grow and produce seed at any time of the year dependent on climatic conditions such as high rainfall and warm temperatures. Monitoring of annual species should be undertaken and if new growth occurs, the same treatment will be applied to the new growth to prevent seed production. Individual plants should be hand removed, bagged and disposed of appropriately off-site.

Perennial grasses

Perennial grasses will be hand removed where isolated or present in low concentrations. Larger patches may be slashed prior to seed production in spring or summer (depending on the growth cycle of the species) and the regrowth spot-sprayed 2-3 weeks later when it is actively growing and approximately 10 cm in length. Monitoring of these species will occur and if new seed production occurs, the same treatment will be applied again as required. However, slashing will not reduce the presence of exotic grasses on its own and must always be combined with targeted removal to reduce densities and allow for native regeneration. Individual plants should be hand removed, bagged and disposed of appropriately off-site.

Woody weeds

Primary control of woody weeds such as *Lantana camara* (Lantana), should be implemented by using the cut and paint or drill and fill method using a non-selective herbicide. The most appropriate method to be used depends on the size of the individual to be removed and will be determined by the bush regeneration contractor. Primary weed control should use techniques that will not encourage flushes of secondary weed growth. All seedlings of woody weeds will be hand pulled or spot-sprayed with a non-selective herbicide.

Follow up treatment of woody weeds such as *Lantana camara* (Lantana) will be controlled by the cut and paint or drill and fill method using a non-selective herbicide.

Creepers and climbers

The control of exotic vines should be managed by skirting at chest height then spraying the target once it is on the ground. This should be done with a dicot specific herbicide such as Grazon®. Follow up treatments will be necessary and should be done as the germinating vines are still saplings.

The control of creepers varies depending on the species. For the most part, seedlings will be hand pulled, while mature plants can be controlled by the stem-scrape method or spot spraying using a non-selective herbicide. The precise method to be used will be determined by the bush regeneration contractor depending on the species, size, and reproductive status of the individual. All vegetative material removed should be bagged, removed from site, and disposed of appropriately.

Herbaceous weeds

Where individual plants of herbaceous weeds, including *Senecio madagascariensis* (Fireweed) and *Solanum nigrum* (Black-berry Nightshade) are found, they will be hand-pulled prior to flowering. Where large swathes of these species occur, they will be sprayed using a non-selective herbicide. If high densities of mature stands occur, weeds may be slashed first using a brush cutter and any subsequent regrowth sprayed. Regular monitoring of these species will be required to prevent seed production. All vegetative material that is pulled out and has the potential to regrow if deposited on ground and will be bagged, removed from site and disposed of appropriately off-site.

Management of weed waste

All weed propagules, especially priority weeds, will be bagged and disposed of as directed by legislation at facility licensed to receive green waste. All weed waste without propagules will be composted onsite in small, unobtrusive piles.

Herbicide use

The use of herbicide to control weeds should be carefully considered. Herbicide must only be used for the purpose described on the product label, as per the *NSW Pesticides Act 1999*. Herbicide use should assess potential long-term impacts of the technique, including whether the proposed works address the source of the weed infestation. However, herbicide application forms an important and useful component of an integrated weed management approach and can be the most appropriate method for the control and eventual eradications of some weed species.

Herbicide use should occur during the active growing season for plants to encourage the chemical uptake into the plant. The selection of herbicides should also consider the type of weed and the location. Where non-selective herbicides are required for use, glyphosate is the most suitable. A glyphosate-based herbicide, formulated for use near waterways, will be used if works require herbicide application near waterways (e.g. Roundup Biactive®).

Broad-leaf selective herbicide may be used as per the *NSW Weed Control Handbook* (DPI 2018). However, this type of herbicide is extremely toxic to aquatic life and must not be used in, or adjacent to, waterways.

Registration and records must be kept in accordance with the *NSW Pesticides Regulation 2017*.

Revegetation Works

Revegetation has the primary aim of re-establishing the original native vegetation community at the site and reducing erosion.

Any plantings should consist of local provenance stock. Planting of Hiko for trees and shrub species and Hiko or Viro cells for grasses and other groundcover species is the preferred method. Planting should be done via a low impact method such as hand digging or hand auger. The holes dug for each plant should be at least 1.5x the width and 2x the depth of the root ball. Fertiliser should be added to each hole dug as per the label specifications. Water crystals or wetting agents should be added to each plant hole. This will increase the water holding capacity of the soil and reduce watering schedules. Initial irrigation of the plantings is essential to ensure that the soil forms around the root ball and air pockets are removed. This will be required unless sufficient rainfall (approx. 10 mm) occurs on the day of planting.

Tree guards will need to be installed on each tree or shrub to protect seedlings from extreme weather (frosts and heat), herbivorous grazing and herbicide drift during maintenance works. Bio-degradable tree guards are recommended to protect the seedlings. Following the revegetation works, irrigation needs to be undertaken for at least eight weeks following planting to ensure the establishment of the plants. The level of irrigation will be determined by rainfall and temperature experienced at the planting site.

Though a temporary irrigation system will not be installed on site, it is assumed site access will be available to a work ute and water cart to irrigate plantings when needed. Timing of the planting of these areas will need to take into consideration surrounding civil works and erosion/sediment control requirements, these areas will not be planted until earthworks have been completed. A minimum rate of attrition of 10% is to be expected and should be allowed for.

Mulch can be derived from vegetation removed from the development area, if available. Alternately, mulch should be comprised of un-composted wood (preferably wood waste), with a particle size of 15 mm to 40 mm, with no fines, and good air-filled porosity. Mulch should not contain any weed seeds, nor be derived from diseased trees or from any part of the tree lower than 1 m above the ground. Mulch, where required, should be installed to a depth of 100 mm.

Jute matting, where required, must be comprised of 100% biodegradable jute fibres with a minimum weight of 680 g / m² (~6 mm thickness). Jute must be pegged with at least 3 x 150 mm pins per m² and each roll overlapped by 100 mm.

Seed collection

For the growth of the plants used in the revegetation works, seed must be collected from local provenance species. Groundcovers, shrubs and trees should be collected as within close proximity (i.e., <20km) to the site. However, soil type, climate and aspect of the collection site(s) should also be considered. Native grasses typically have much larger dispersal mechanisms and are to be collected from within the Sydney basin.

Where species identified in this VMP cannot be sourced, they may be substituted for other species as identified by Tozer (2003). Species must be substituted with species of a similar form, e.g., trees for tree, grasses for grasses, etc. Only wild native species are to be used. Plants are not to be substituted with horticultural varieties under any circumstances.

Record keeping of seed collection and planting locations are to follow the Florabank guidelines (Mortlock, 2000). A Section 132C licence under the NSW *National Parks and Wildlife Act 1974* will be required to undertake seed collection works.

Bush Regeneration Contractors

All vegetation management works in the establishment phase will be undertaken by suitably qualified and experienced bush regeneration contractors who are members of the Australian Association of Bush Regenerators (AABR) or fulfil the membership criteria. Additionally, team leaders should have, as a minimum, a Certificate III in Conservation & Land Management or equivalent. The contractor will need to carry out best practice bush regeneration techniques as described by Buchanan (2009). A flexible approach to this site is recommended since techniques may need to be changed or modified to suit site conditions. This approach is consistent with adaptive management and allows the contractor to develop and build on site knowledge whilst implementing this VMP. Monitoring will assist in the development of the VMP actions in subsequent years.

Hygiene Protocols

To avoid introducing soil pathogens / diseases into a site, in particular *Phytophthora cinnamomi* (Root-rot Fungus), a hygiene protocol should be undertaken as per the guidelines developed by the Royal Botanic Gardens (Suddaby and Liew, 2008).

For Bush Regenerators, all tools and boots should be washed down and thoroughly cleaned of soil / mud using a solution of water and disinfectants prior to undertaking works on-site. All machinery should be thoroughly cleaned of all soil / mud / debris prior to working within the VMP area. ELA recommends the use of 70% methylated spirits in water as a disinfectant for *Phytophthora cinnamomic*.

Weed Control

Contaminated weed removal machinery, such as a slasher or mower, can further spread the seed of invasive weed species. Machinery hygiene protocols must be implemented and followed to prevent the spread of weeds (DPIRD 2020).

- All vehicles, slashers, mowers and any other machinery must be cleaned and disinfected thoroughly after working on an infested site before being moved to a new or clean site.
- Check and regularly clean clothing that has been worn to infested sites before entering a clean site.
- Remove weed seeds, plant fragments, or soil from clothing, footwear, equipment, or any other form of PPE upon leaving an infested site.

Phytophthora Control

The destructive plant pathogen *Phytophthora cinnamomic* and other *Phytophthora* species cause the destructive root-rot disease of which many native Australian plants are susceptible to. Appropriate hygiene protocols must be in place to limit and prevent the spread of *Phytophthora* spores into uncontaminated areas. Adherence to basic messages such as 'Check, Clean, Disinfect, Dry' can help prevent an increase in the extent of this disease (DPIE 2020b).

The following should be implemented to facilitate good hygiene protocols:

- Install quarantine/ foot disinfection stations that must be used prior to entering and leaving the site.
- Provide hygiene kits in vehicles to allow staff to implement hygiene measures as required (brushes, disinfectant spray, soap, wipes, gloves)

- Provide a vehicle washdown station or wash any vehicle that has had potential exposure at a washing facility.
 - Provide a cleaning checklist for vehicles to ensure full decontamination.
- Provide disinfectant in vehicles and stations for application when needed.
- Ensure that hygiene practices are instilled into the daily routine of personnel who access the site.

Appendix H EPBC Condition classes and thresholds (Commonwealth DCCEEW 2023)

Condition Class	Patch Size*	Features present
Class A Good quality understorey and mature overstorey both present.	0.1 ha (1,000 m ²) or larger	<ul style="list-style-type: none"> • The ground layer is predominantly native* and • the understorey contains at least 12 native, non-grass species (such as forbs, shrubs, ferns and sedges) and • at least one of the understorey species should be a species recognised as 'important' (e.g. grazing-sensitive, regionally significant, listed threatened or uncommon species) (see 'Important' column in plant species list at Appendix A – Species lists) and • the patch contains 10 or more mature trees* per hectare consistent with the key diagnostics for the ecological community
Class B Good quality understorey present. Characteristic trees may be absent.	0.1 ha (1,000 m ²) or larger	<ul style="list-style-type: none"> • The ground layer is predominantly native* and • the understorey contains at least 12 native, non-grass species (such as forbs, shrubs, ferns and sedges) and • at least one of the understorey species should be a species recognised as 'important' (e.g. grazing-sensitive, regionally significant, listed threatened or
		uncommon species) (see 'Important' column in plant species list at <ul style="list-style-type: none"> • Appendix A – Species lists)
Class C Allows for a lower diversity in the understorey in areas where there is regeneration and/or tree density may be relatively dense.	2 ha (20,000 m ²) or larger	<ul style="list-style-type: none"> • The ground layer is predominantly native* and • The patch contains 20 or more mature trees* per hectare and/or • The patch contains natural regeneration of dominant overstorey eucalypts*

Definitions:

*Note: The following definitions apply to this table of condition categories (also refer to [section 2 Identifying areas of the ecological community](#)):

- Patch: a continuous area containing the ecological community. The patch is the larger of:
 - an area that contains five or more trees in which the gap between the outer canopy of any tree and the outer canopy of the nearest tree is no greater than 75 m, or
 - the area over which the ground layer is predominantly native (at least 50% of the perennial vegetation cover in the ground layer is made up of native species).
- The ground layer is the structural layer closest to the ground containing grasses, forbs and sub-shrubs (below 50 cm tall).
- Regeneration of dominant overstorey species: the patch contains eucalyptus saplings of the dominant species that are 5 cm diameter or greater at breast height.
- Mature trees are those with a circumference of at least 125 cm measured at a height of 130 cm above the ground (equivalent to diameter of 40 cm). _

