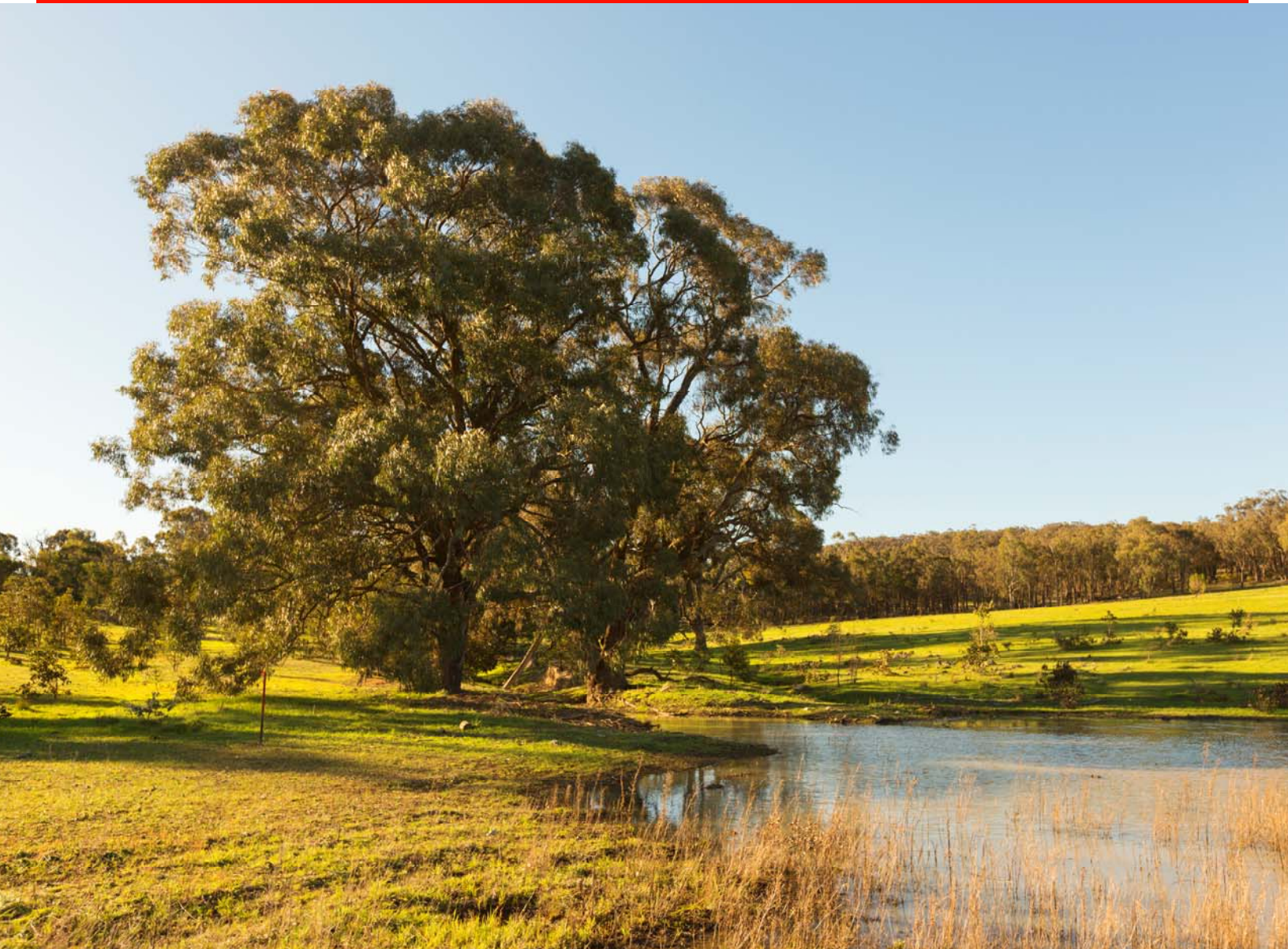


Lynwood Quarry, Marulan EPBC Approval 2012/6560

Annual Compliance Report

May 2015



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EPBC Approval 2012/6560
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Version	Date	Author	Approver	Change Description
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1.0 Introduction

Lynwood quarry (the quarry) is a hard rock quarry owned and managed by Holcim (Australia) Pty Ltd (Holcim Australia) located west of Marulan in the Southern Tablelands region of NSW (refer to Figure 1.1 in Appendix 1), about 27 kilometres north-east of Goulburn.

Holcim Australia was granted development consent under Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act) in December 2005 by the NSW Minister for Planning to construct and operate the quarry. Lynwood Quarry is approved to transport a maximum of 5 million tonnes per annum (Mtpa) of product from the site. The key features of the approved operations are shown in Figure 1.2 in Appendix 1.

The quarry will provide a long-term supply of high quality construction material into the Sydney, regional and local markets as other quarries around Sydney become depleted of resources.

As part of the 2005 environmental assessment process there was detailed consideration of the listed matters of national environmental significance (MNES) in relation to the quarry. This assessment did not identify the potential for the quarry to significantly impact on any MNES. At that time, no nationally listed threatened species or ecological communities were recorded within the disturbance footprint for the quarry or within the broader Lynwood Quarry project area.

Holcim Australia commenced construction of the quarry in late 2010 and the quarry is now in the commissioning phase with operations scheduled to commence in mid to late 2015.

Part way through construction works, as a result of pre-clearance site inspections by environmental personnel, ecological matters of national environmental significance (MNES) were identified within the site. The MNES identified were the hoary sunray (*Leucochrysum albicans* var. *tricolor*) and the White Box, Yellow Box, Blakely's Red Gum Grassy Woodland and Derived Native Grassland Critically Endangered Ecological Community (CEEC).

The hoary sunray is listed as an endangered species under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). Detection of hoary sunray was likely assisted by the prior removal of grazing stock in addition to preceding seasons of favourable weather conditions, following a significant drought preceding the 2005 ecological assessment.

At the time of the original ecological assessment in 2005 the White Box, Yellow Box, Blakely's Red Gum Grassy Woodland and Derived Native Grassland was not listed under the EPBC Act. The woodland community was subsequently listed under the EPBC Act in May 2006.

Approximately 19.6 hectares of the CEEC has been identified within the project area, of which 7.9 hectares will be impacted by the quarry development.

In September 2012, the future works associated with construction and operation of the quarry were referred to the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). On 25 October 2012, the project was deemed a controlled action requiring assessment and approval under the EPBC Act. The project was assessed by preliminary documentation and on 13 September 2013 the project was granted approval under the EPBC Act (EPBC Ref: 2012/6560) subject to conditions.

Following the Department's approval decision evidence of completion of conditions required to be undertaken prior to commencement of the action, was provided to the Department on 26 November 2013, and receipt confirmed on 27 November 2013. The action was then commenced by Holcim Australia on the 20th of December 2013.

1.1 Background

The approved action comprises aspects of the quarry that will result in new or additional surface disturbance as shown in Figure 1.4 in Appendix 1. Ecological impacts associated with the action include impacts on the identified MNES, specifically, the removal of:

- 7.9 hectares of the EPBC listed White Box, Yellow Box, Blakely's Red Gum Grassy Woodland and Derived Native Grassland CEEC; and
- about 160 individuals of the EPBC listed endangered plant species, the hoary sunray (*Leucochrysum albicans var. tricolor*), out of a very large total population or about 558,000 plants (refer to Figure 1.3 in Appendix 1).

A range of measures to avoid or mitigate impacts on MNES will be implemented as part of the Lynwood quarry development, and a Biodiversity Offset Package has been approved to compensate for residual and unavoidable impacts (refer to Figure 1.4 in Appendix 1).

A Box Gum Woodland Management Plan (BGWMP) has been prepared and approved, providing a framework for the implementation of ecological management actions, regeneration and revegetation strategies, procedures, controls and monitoring programs for the Biodiversity Offset Area.

The Biodiversity Offset Area aims to protect and enhance the extent and condition of critically endangered box gum woodland, provide protection for hoary sunray habitat and increase local and regional biodiversity connectivity.

1.2 Purpose and Scope

This Annual Compliance Report for January to December 2014 has been prepared to meet the reporting requirements of condition 8 of the EPBC Approval 2012/6560. Condition 8 of the EPBC Approval 2012/6560 states:

8. 'Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of the BGWMP as specified in the conditions. Documentary evidence providing proof of the date of publication must be provided to the Department at the same time as the compliance report is published. Non-compliances with any of the conditions of this approval must be reported to the Department within 2 business days of becoming aware of the non-compliance.'

1.3 Status of Operations

Lynwood Quarry is currently in the final stages of commissioning with operations proposed to commence in mid to late 2015. To date, all major civil works associated with the Hume highway interchange, access road, infrastructure area, rail spur and water management system have been completed. Construction of key infrastructure including the crushing and screening plant, conveyor system, office, amenities, workshop, laboratory, parking areas, weighbridges and other minor ancillary infrastructure has also been completed.

Earthworks have commenced and will continue over the life of the quarry within the pit area, rail emplacement area and excess product emplacement area.

2.0 Compliance Status

The project was granted approval as a controlled action under the EPBC Act subject to 13 conditions to ensure the protection, sustainability and viability of the MNES affected by the development. The approval conditions are detailed in **Table 1**, along with a statement of compliance for the current reporting period.

In addition to the project approval, the BGWMP contains management actions designed to improve the ecological quality of box gum woodland on the project area and proposed biodiversity offset area and protect it from degradation for the duration of the action's impact on box gum woodland. The implementation status of management actions and commitments contained in the BGWMP is detailed in **Table 2**.

Table 1 – Approval Conditions - Compliance Status

Condition of Approval	Compliance Status 2014
<p>1. The person taking the action must not clear more than 7.9 hectares of the ecological community <i>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</i>.</p>	<p>A total 7.9 hectares of the ecological community <i>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</i> has now been cleared. No further <i>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</i> occurs within the approved disturbance area. The remaining 12 hectares of the community identified within the project area, is located within the non-disturbance area and is protected from any future clearing associated with the project.</p>
<p>2. To assist in mitigating the impacts of the proposal on <i>White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland</i> (box gum woodland), the person taking the action must prepare and submit a Box Gum Woodland Management Plan (BGWMP) for <u>Minister's</u> written approval prior to <u>commencement</u> of the action. The BGWMP must include;</p> <ol style="list-style-type: none"> 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 indicators, and an adaptive management framework for the duration of the 	<p>A Box Gum Woodland Management Plan (BGWMP) was prepared prior to commencement of the action. The BGWMP was submitted to the Minister for approval on 24 September 2013 and approval was granted on 11 November 2013. Confirmation of this approval is provided in Appendix 2. A copy of the BGWMP is provided in Appendix 1.</p> <p>The BGWMP includes:</p> <ul style="list-style-type: none"> - management actions to improve the ecological quality of the box gum woodland and protect it from degradation; - regeneration and revegetation initiatives for the box gum woodland to improve the ecological quality of these areas; - a monitoring program with defined measurable targets of management actions, performance indicators, and an adaptive management framework; and - management of the offset site as above.

Condition of Approval	Compliance Status 2014
<p>action's impact on box gum woodland.</p> <p>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 <u>Minister</u>. The approved BGWMP must be implemented.</p>	
<p>3. To compensate for the loss of 7.9 hectares of box gum woodland the person taking the action must secure the lands identified as the <i>'Proposed Biodiversity Offset Area'</i> 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 <i>NSW National Parks and Wildlife Act 1974</i>. The conservation agreement must state; <i>'This agreement must not be terminated without the written consent of 'The Minister Administering the Commonwealth Environment Protection and Biodiversity Conservation Act 1999'</i>.</p>	<p>Holcim has secured and owns the four lots within which the Biodiversity Offset Area is located. A section 69 conservation agreement has been lodged with the NSW Office of Environment and Heritage (OEH) to protect the lands for the duration of the action's impact. The agreement is awaiting assessment by OEH and will include that statement, <i>'This agreement must not be terminated without the written consent of 'The Minister Administering the Commonwealth Environment Protection and Biodiversity Conservation Act 1999'</i>.</p>
<p>4. Prior to the <u>commencement</u> of the action the person taking the action must provide evidence to the <u>Department</u> of;</p> <p>a. Their ownership of the offset lands described in Condition 3 along with offset attributes, <u>shapefiles</u> and textual descriptions and maps to clearly define the location and boundaries of the offset sites.</p> <p>b. Lodgement of the section 69 conservation agreement application form with the NSW Office of Environment & Heritage.</p>	<p>Holcim provided evidence of the ownership of the offset lands along with offset attributes, <u>shapefiles</u> and textual descriptions and maps to clearly define the location and boundaries of the offset sites on 26 November 2013.</p> <p>A section 69 conservation agreement was lodged with the NSW Office of Environment and Heritage (OEH) on 18 November 2013 and confirmation of lodgment is provided as Appendix 3.</p>
<p>5. If the person taking the action is unable to comply with Conditions 3</p>	<p>Not applicable.</p>

Condition of Approval	Compliance Status 2014
<p>and 4 above they must propose an alternative offset strategy for box gum woodland that meets the current <u>Commonwealth EPBC Act Environmental Offsets Policy</u>. The proposed action must not commence until the alternative proposed offset has been approved in writing by the Minister.</p>	
<p>6. Within 30 days after the <u>commencement</u> of the action, the person taking the action must advise the <u>Department</u> in writing of the actual date of commencement.</p>	<p>Holcim notified the Department on 5 December 2013 that the action was scheduled to commence in early January 2014. The action was later commenced by Holcim on the 20 December 2013. Written notification of the actual commencement date was overlooked due to staffing changes. Formal notification has been since provided to the Department along with evidence of the date of publication of this report.</p>
<p>7. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to these conditions of approval, including measures taken to implement the offset and BGWMP, and make them available upon request to the <u>Department</u>. Such records may be subject to audit by the <u>Department</u> or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the <u>Department's</u> website. The results of audits may also be publicised through the general media.</p>	<p>A compliance register has been developed for the Lynwood Quarry project to maintain all records and evidence to substantiate activities undertaken on the site to implement this approval, the BGWMP and protect the Biodiversity Offset Area.</p> <p>The register is maintained onsite by the Lynwood Quarry Senior Environment and Community Liaison Officer.</p>
<p>8. Within three months of every 12 month anniversary of the <u>commencement</u> of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of the BGWMP as specified in the conditions. Documentary evidence providing proof of the date of publication must be provided to the <u>Department</u> at the same time as the compliance report is published. Non compliance with any of the conditions of this approval must be reported to the Department within 2 business days of becoming aware</p>	<p>This Annual Compliance Report covering the period January to December 2014 has been prepared to meet the reporting requirements of this condition. This report has been published on the Holcim website and can be located at http://www.holcim.com.au/lynwood.html</p> <p>Evidence of the date of publication was provided to the Department on the 2 June 2015</p>

Condition of Approval	Compliance Status 2014
of the non-compliance.	One noncompliance with the conditions of this approval occurred within the current reporting period. Written notification of the actual commencement date was overlooked due to staffing changes. Formal notification has now been provided to the Department along with evidence of the date of publication of this report.
<p>9. Upon the direction of the <u>Minister</u>, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the <u>Minister</u>. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the <u>Minister</u> and the audit report must address the criteria to the satisfaction of the Minister.</p>	Not applicable. No direction has been provided by the Minister.
<p>10. If the person taking the action wishes to carry out any activity otherwise than in accordance with the Plan as specified in the conditions, the person taking the action must submit to the Department for the <u>Minister's</u> written approval a revised version of that Plan. The varied activity shall not commence until the <u>Minister</u> has approved the varied Plan in writing. The <u>Minister</u> will not approve a varied Plan unless the revised Plan would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised Plan, that Plan must be implemented in place of the Plan originally approved.</p>	There have been no variations to the activity or intended management of the offset area.
<p>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 <u>Minister</u> may request that the person taking the action make specified revisions to the Plan specified in the conditions and submit the revised Plan for the <u>Minister's</u> written approval. The person taking the action must comply with any such request. The revised approved Plan must be implemented. Unless the <u>Minister</u> has approved the</p>	Not applicable. No request has been provided by the Minister.

Condition of Approval	Compliance Status 2014
revised Plan then the person taking the action must continue to implement the Plan originally approved.	
12. If, at any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister.	The action was commenced by Holcim Australia on the 20 December 2013 and was substantially progressed during 2014.
13. Unless otherwise agreed to in writing by the <u>Minister</u> , the person taking the action must publish the Plan and Program referred to in these conditions of approval on their website. The Plan and Program must be published on the website within 1 month of being approved.	The management plan has been uploaded to the Holcim website and can be located at http://www.holcim.com.au/lynwood.html Confirmation that the management plan had been uploaded to the Holcim website on 5 December 2013.

Table 2 – BGWMP Management Actions and Commitments - Compliance Status

MPC #	Management Plan Commitments	MA#	Action*	Timeframe committed as per BGWMP	Progress in 2014	Compliance status*	Planned in 2015
1	Protect the area the offset area from livestock and development activities	1.1	Fencing entire offset area	2013/14	Approximately 80% of livestock proof fencing has been completed. Signage accompanies the fencing and all personnel are restricted from accessing the area unless approved by the environment manager.	Near Complete	Remainder of fencing to be completed
2	Remove grazing from the offset area	2.1	Progressively remove grazing through cessation of agistment agreements*	N/A	Approximately 80% of area free from grazing activities. The remaining 20% is lightly grazed with sheep irregularly.	Near Complete	Final agistment agreement ceased within offset area
3	Ensure the	3.1	Develop a weed	N/A	Weed mapping for the offset area is underway	Progressing	Finish weed mapping and

MPC #	Management Plan Commitments	MA#	Action*	Timeframe committed as per BGWMP	Progress in 2014	Compliance status*	Planned in 2015
	viability of rehabilitation efforts through weed management initiatives		map and associated management plan*				draft weed management plan for offset area
		3.2	Implement prioritised weed suppression and control activities	2013/14 to 2017/18	Blackberry control within the prioritised area for rehabilitation occurred in 2014.	Progressing	Review bio control potential for Patterson's curse Implement weed
		3.3	Monitor progress and update weed and feral management	6 monthly from establishment of offset area	Progress toward weed species, extent and control has been made. Further resources will be allocated in 2015.	Progressing	Scheduled in August 2015
4	Revegetate 11 ha with local provenance and targeting corridor creation	4.1	Direct seeding of areas with top soil	2013/14		To be initiated in 2015	To be completed across 10 hectares of offset area
		4.2	Seed collection	2013/14	Completed in 2014. Native grass and tree species were collected by Greening Australia and are being prepared for propagation.	Completed	Completed
		4.3	Tubestock establishment in nursery	2013/14	Underway with the assistance of Greening Australia	Underway	Continue with the assistance of Greening Australia
		4.4	Plant tubestock	2013/14		To be initiated in	

MPC #	Management Plan Commitments	MA#	Action*	Timeframe committed as per BGWMP	Progress in 2014	Compliance status*	Planned in 2015
						2016	
		4.6	Spread mulch from clearing over site*	N/A	Mulch spread across site in 2014 covering approximately 2 hectares with light organic material	Completed	Completed
		4.7	Monitoring of all revegetation works	Ongoing		To be initiated in 2016	
		4.8	Maintenance of all revegetation works^			To be initiated in 2016	
5	Develop an adaptive management program	5.1	Develop a continuous improvement program^		Program has been developed with an annual review process	Completed	Completed
		5.2	Develop indicators and representative monitoring sites		Work progressed in 2014 toward developing indicators	Progressing	Finalise indicators and representative monitoring sites by October 2015
		5.3	Annual baseline continuous improvement survey		Contractor has been selected for works with scope and requirements defined.	Scheduled in 2015	To be completed in November 2015
		5.4	Annual review and refinement			To be initiated in 2015	To be completed in December 2015
		5.5	Update management actions as required				To be completed in December 2015
6	Protect the	6.1	Submit	N/A	Completed	Completed	Completed

MPC #	Management Plan Commitments	MA#	Action*	Timeframe committed as per BGWMP	Progress in 2014	Compliance status*	Planned in 2015
	area formally through a conservation agreement		application for conservation agreement*				
		6.2	Coordinate site visit				Dependant on department availability
		6.3	Implement conservation agreement				
8	Decrease erosion and sedimentation	7.1	Identify highly eroded areas*	N/A		To be initiated in 2015	To be completed in August 2015
		7.2	Develop a prioritised management plan*	N/A		To be initiated in 2015	To be drafted by December 2015
		7.3	Implement erosion management^	N/A		To be initiated in 2016	
		7.4	Monitor and review*	N/A		To be initiated in 2016	
9	Ensure effective fire management across the site for ecological purposes	8.1	Annual audit and site review by NSW rural fire brigade*	N/A	Completed and recommendations to be formalised within a bushfire management plan	Scheduled in 2015	To be completed in November 2015
		8.2	Develop a fire management	N/A		To be initiated	To be drafted in 2015

MPC #	Management Plan Commitments	MA#	Action*	Timeframe committed as per BGWMP	Progress in 2014	Compliance status*	Planned in 2015
			plan*			2015	
		8.3	Manage fuel loads^	N/A	Assessment of fuel loads completed in 2014 with an associated plan developed.	To be initiated in 2015	Implementation of fuel reduction activities
		8.4	Identify species requirements for fire and implement as required for species diversity and enrichment*	N/A		To be initiated in 2015	Species to be identified in 2015
10	Develop and implement a surface water management plan	9.1	Surface water management plan*	N/A	Completed for site and implemented across offsets area	Completed	Completed
11	Adaptive management for newly identified species as required	10.1	Not yet required				

*Actions committed to within other management plans (i.e. Rehabilitation and Landscape Management Plan) that cover the offset area but are not detailed with specified timeframes within the BGWMP

^Actions committed to within, or required by, the BGWMP without a specific timeframe

Holcim is dedicated to meeting its objectives under the EPBC Act by meeting the actions committed to under the BGWMP and the referral documentation. Holcim recognises there are multiple management plans that provide direction on the management of the land within and surrounding the offsets area and intend to fulfil all the management objectives, actions and initiatives as described.

3.0 Conclusion

Holcim has made progress toward achieving their approval commitments in 2014 with a substantial financial undertaking completed through the fencing of approximately 80% of the offset area. Agistment agreements within the same area were ceased and the area is now protected from livestock grazing activities. Signage has been installed along the fence to identify the area as a protected area and restrict access. Access is highly restricted and under the control of the Senior Environment and Community Liaison Office on the site.

In 2015, the work and investment into the betterment and protection of the biodiversity offset area will continue as outlined in **Table 2**. Progress will continue to be demonstrated in 2015 through monitoring of key indicators against the baseline ecological survey.

Appendix 1



LYNWOOD QUARRY – BOX GUM WOODLAND MANAGEMENT PLAN

September 2013



LYNWOOD QUARRY – BOX GUM WOODLAND MANAGEMENT PLAN

September 2013

Prepared by
Umwelt (Australia) Pty Limited
on behalf of
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Report No. **2999/R12/FINAL**
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Glossary of Terms

BGW	Box Gum Woodland
BGWMP	Box Gum Woodland Management Plan
Box Gum Woodland	'White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland' Critically Endangered Ecological Community
CEEC	Critically Endangered Ecological Community
DECCW	Department of Environment, Climate Change and Water (now Office of Environment and Heritage)
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i> (Commonwealth)
Ha	Hectares
Holcim Australia	Holcim (Australia) Pty Ltd
The Minister	Minister administering the EPBC Act (includes a delegate of the Minister)
MNES	Matters of National Environmental Significance
Mtpa	Million tonnes per annum
NSW	New South Wales
NPW Act	<i>National Parks and Wildlife Act 1974</i> (NSW)
SEWPaC	Department of Sustainability, Environment, Water, Population and Communities (Commonwealth)

1.0 Introduction

Lynwood Quarry (the quarry) is a hard rock quarry currently under construction west of Marulan in the Southern Tablelands region of NSW (refer to **Figure 1.1**). Holcim (Australia) Pty Ltd (Holcim Australia) was granted development consent in December 2005 by the NSW Minister for Planning to construct and operate the quarry with a production rate of up to 5 million tonnes per annum (Mtpa) (refer to **Figure 1.2**). Holcim Australia commenced construction of the quarry in late 2010, with operation of the quarry planned to commence in the last quarter of 2014.

During construction, ecological matters of national environmental significance (MNES) were identified within the site. In September 2012, the future works associated with construction and operation of the quarry were referred to the Australian Government under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). On 25 October 2012, the project was deemed to be a controlled action requiring assessment and approval under the EPBC Act. The project was assessed by preliminary documentation and on 13 September 2013 the project was granted approval under the EPBC Act (EPBC Ref: 2012/6560) subject to conditions.

This Box Gum Woodland Management Plan (BGWMP) has been developed to meet the requirements of the approval decision for the Lynwood Quarry. As stipulated in Condition 2 of the approval decision, which is described in **Section 1.3**, and summarised below, this management plan includes:

- management actions;
- regeneration and revegetation strategies; and
- an ecological monitoring program for box gum woodland.

1.1 Background

Ecological impacts associated with the development of the quarry include impacts on ecological MNES, specifically, the removal of 7.9 hectares of the EPBC-listed critically endangered ecological community (CEEC), White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland (hereafter referred to as box gum woodland); and around 160 individuals of the EPBC-listed endangered plant species hoary sunray (*Leucochrysum albicans* var. *tricolor*), out of a very large total population of approximately 558,000 plants (refer to **Figure 1.3**).

A range of measures to avoid or mitigate impacts on MNES will be implemented as part of the project, however due to residual and unavoidable impacts on box gum woodland, a Biodiversity Offset Package is required.

As shown in **Figure 1.3**, box gum woodland occurs in three discreet locations within the project area. In addition to the 7.9 hectare patch impacted by the action, there is also a small 1.4 hectare patch located to the north of the site access road, near Marulan Creek (refer to **Section 4.2**), and approximately 27 hectares to the south of the proposed access road which will be incorporated into the proposed Biodiversity Offset Area.

The Biodiversity Offset Package will comprise two components; a 185 hectare direct land offset (the Biodiversity Offset Area) in the south western part of Holcim Australia's holdings (refer to **Figure 1.4**) which will protect all box gum woodland to the south of the access road; and a package of direct actions (non-land) which will enhance quality and resilience of the Biodiversity Offset Area. These components are detailed in **Section 2.0**.

1.2 Purpose and Scope

The purpose of this BGWMP is to provide a framework for the implementation of ecological management actions, regeneration and revegetation strategies, procedures, controls and monitoring programs for the Biodiversity Offset Area. Specifically, the strategy aims to protect and enhance the extent and condition of critically endangered box gum woodland, provide protection for hoary sunray habitat, increase local and regional biodiversity connectivity and protect sites of cultural heritage significance.

This BGWMP has been developed for a 185 hectare area in the south western part of Holcim Australia's Marulan holdings identified as the proposed Biodiversity Offset Area in EPBC Referral 2012/6560 and described further in **Section 2.0** of this BGWMP. The Biodiversity Offset Area was identified due not only to it being able to specifically target the MNES significantly impacted by the proposal, but it also adds further protection to other MNES and heritage values in addition to enhancing connectivity by protecting non-MNES remnant vegetation as part of an overall strategy to optimise biodiversity values.

The action must not commence until this BGWMP has been approved by the Minister. The approved BGWMP must be implemented (EPBC Approval Condition no. 2).

1.3 Regulatory Requirements

The Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) deemed the project to be a 'controlled action' under the EPBC Act as it was likely to result in significant impacts on EPBC-listed threatened species and ecological communities. The project was assessed by preliminary documentation and on 13 September 2013 the project was granted approval under the EPBC Act (EPBC Ref: 2012/6560) subject to the preparation and approval of a BGWMP and related actions, as summarised below:

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 measureable targets of management actions, performance 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 Administering the Commonwealth Environment Protection and Biodiversity Conservation Act 1999'.

Other relevant conditions of approval are referred to within this plan and in the summary of commitments in **Section 8.0**. A copy of the conditions of approval is also presented in **Appendix 1**.

An assessment of the consistency of the Biodiversity Offset Area with the EPBC Offset Policy released in October 2012, and the accompanying Offset Assessment Guide, has been undertaken and is included in **Section 2.0**.

1.4 Authority Consultation

Consultation with SEWPaC has been undertaken as part of the EPBC Referral process and the BGWMP will be subject to Commonwealth review and approval.

In addition, Holcim Australia will consult with the NSW Office of Environment and Heritage (OEH) in relation to the preparation of a Conservation Agreement under Section 69 the NSW *National Parks and Wildlife Act 1974* (NPW Act) to provide for the long term conservation of the proposed Biodiversity Offset Area. The Conservation Agreement will be registered on the title of the land and would therefore be transferred should any future sale of the land occur.

1.5 Roles and Responsibility

Roles and responsibilities associated with the implementation of this BGWMP are presented in **Table 1.1** below.

Table 1.1 – Roles and Responsibilities

Title	Roles and Responsibilities
Operations Manager	<ul style="list-style-type: none">• ensure that sufficient resources are allocated for the implementation of the BGWMP• authorising internal and external reporting requirements as well as subsequent revisions of the BGWMP• implementation of the BGWMP to ensure compliance

Table 1.1 – Roles and Responsibilities (cont.)

Title	Roles and Responsibilities
Environmental Officer	<ul style="list-style-type: none"> • coordinate the day to day implementation of the BGWMP, including the design and implementation of all ecological management and rehabilitation activities • ensure that sufficient time and resources are allocated to allow for the implementation of ecological management and rehabilitation strategies for the Biodiversity Offset Area • ensure that sufficient resources and time are allocated to implement the BGWMP monitoring programs • ensure that the results of the BGWMP monitoring programs are utilised to refine completion criteria for the site as well as to evaluate the effectiveness of regeneration/rehabilitation practices so as to facilitate continual improvement • periodically review progress against condition improvement targets • ensure all internal and external reporting requirements are met • facilitate that all relevant records are effectively maintained on site • ensure that personnel involved in carrying out and monitoring the BGWMP activities are appropriately qualified, licensed and experienced to undertake the task • manage/control access to biodiversity offset area • ensure staff and contractors are informed and trained where relevant in relation to controls on activities within the Biodiversity Offset Area
Holcim Staff and Contractors	<ul style="list-style-type: none"> • receive training regarding controls on activities within the Biodiversity Offset Area • observe boundaries of Biodiversity Offset Area when undertaking work on site • undertake activities in Biodiversity Offset Area in line with directions from Operations Manager and Environmental Officer

2.0 Offset Description

The Biodiversity Offset Package comprises two components. A direct land offset (the Biodiversity Offset Area), as described by **Section 2.1** and a package of direct actions (non-land) described in **Section 2.2**, which will enhance quality and resilience of the Biodiversity Offset Area.

2.1 Direct Land Offset

The Biodiversity Offset Area is shown on **Figure 1.4** and consists of a 185 hectare area located in the south western part of Holcim Australia's holdings. The Biodiversity Offset Area contains both land directly targeting box gum woodland, as well as complementary areas that include non-target MNES, cultural heritage and native vegetation management areas.

The Biodiversity Offset Area consists of two patches of box gum woodland, each containing both woodland and grassland forms of the community; a large patch of hoary sunray habitat; as well as a habitat management area and cultural heritage management area linking the two patches together, which comprise the complementary actions discussed in **Section 2.3**.

The Biodiversity Offset Area was identified as the preferred offset for the following reasons:

- the area specifically targets the MNES significantly affected by the proposal;
- adds further protection to other MNES and heritage values; and
- enhances connectivity with other habitat and riparian management areas, by protecting non-MNES remnant vegetation as part of an overall strategy to optimise biodiversity values.

The following table provides a summary of the key features of the Biodiversity Offset Area and the offset values as presented in the EPBC Referral. The Biodiversity Offset Area as described in this BGWMP is considered to be consistent with the requirements of the EPBC Environment Offsets Policy (SEWPaC 2012)¹.

Table 2.1 – Offset Statistics

Aspect	Quantity
Total area of offset	185 Ha
Area of BGW (Woodland form)	18.9 Ha
Area of BGW (Grassland form)	8.3 Ha
Total extant BGW in offset	27.2 Ha
Area of native pasture to be rehabilitated to BGW	22.0 Ha
Other MNES	
Hoary sunray habitat	27.3 Ha
Hoary sunray estimated numbers	200,000 individual plants
Summary	
Total impact to BGW	7.9 hectares comprised of: 7.4 Ha woodland form; and 0.5 Ha grassland form

¹ Australian Government (2012) *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*, Department of Sustainability, Environment, Water, Population and Communities (October 2012).

Aspect	Quantity
Resulting offset ratio (extant vegetation)	27.2 Ha ÷ 7.9 Ha = 3.4
Resulting offset ratio, inclusive of rehabilitation	27.2 Ha + 22.0 Ha = 49.2 Ha 49.2 Ha ÷ 7.9 Ha = 6.2

2.2 Additional Direct Actions

In addition to the direct land offsets shown in **Table 2.1**, a number of additional direct actions will be undertaken to improve the quality and resilience of the MNES protected within the land offsets. These are summarised in **Table 2.2**, and are detailed in the Offset Management Program in **Section 5.3**.

Table 2.2 – Summary of Direct Actions

Action	Description
Fencing and establishment of exclusion zones	Fence entire Biodiversity Offset Area and map on operational plans.
	Implement staged removal of grazing stock from Biodiversity Offset Areas supporting box gum woodland.
	Guide stock removal by outcomes of regeneration and weed monitoring.
Weed management	Undertake weed suppression
Regeneration and revegetation	Undertake natural regeneration of box gum woodland derived native grassland through the exclusion of stock.
	Revegetate 11 hectares of the 22 hectare proposed regeneration area (existing native pasture) within the Biodiversity Offset Area with direct seeding and also tube stock propagated from local provenance seed targeting box gum woodland species consistent with the community species list (Australian Government 2006a) ² .

2.3 Complementary Actions

In addition to the areas of the offset targeting box gum woodland, the offset also includes a significant area of hoary sunray habitat, as well as patches of non-MNES vegetation and an existing cultural heritage management zone. The offset creates a contiguous corridor through the south of Holcim Australia's holdings, which links to existing habitat management areas and stepping stone corridors (refer to **Figure 2.1**) that have been established under previous planning approvals.

The corridor that results from implementation of this offset package will provide further enhanced connectivity within the area south of Marulan. The Biodiversity Offset Area will be under consistent long-term management and along with the habitat and cultural heritage management areas already committed to by Holcim Australia, represents an important link from a regional perspective.

These areas will perform a significant connectivity role that will enhance the viability and value of the Biodiversity Offset Area.

The Biodiversity Offset Area also includes the existing cultural heritage management zone. This area forms part of the corridor linking the two patches of box gum woodland and the

² Australian Government (2006a) *Species List for the EPBC Act Policy Statement – White Box – Yellow Box – Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands*, Department of the Environment and Heritage, Canberra (May 2006).

habitat management area. The cultural heritage management zone will continue to be managed in accordance with the existing Lynwood Quarry Aboriginal Heritage Management Plan (Umwelt 2011a)³; in addition to the existing Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b)⁴.

2.4 Process for Establishing the Offset

Holcim Australia will prepare a Conservation Agreement under Section 69 of the NPW Act to provide for the long term conservation of the proposed Biodiversity Offset Area. The lands must be protected for the duration of the action's impact. The Conservation Agreement will be registered on the title of the land and would therefore be transferred should any future sale of the land occur. This will require consultation with the NSW Office of Environment and Heritage (OEH).

As per EPBC Approval Condition no. 3, the Conservation Agreement must state *'This agreement must not be terminated without the written consent of the Minister administering the Commonwealth Environment Protection and Biodiversity Conservation Act 1999'*.

Holcim Australia must provide evidence to SEWPaC that it owns the offset land, provide SEWPaC with attribute information and maps and evidence that it has lodged a conservation agreement application form with OEH prior to the commencement of the action (EPBC Approval Condition no. 4).

³ Umwelt (Australia) Pty Limited (2011a) *Caring for Country Lynwood Quarry, Marulan Aboriginal Heritage Management Plan Revision 2*, Report prepared for Holcim (Australia) Pty Limited.

⁴ Umwelt (Australia) Pty Limited (2011b) *Lynwood Quarry Rehabilitation and Landscape Management Plan Revision 2*, Report prepared for Holcim (Australia) Pty Limited.

3.0 Objectives and Targets

Consistent with the EPBC Environment Offsets Policy (SEWPaC 2012), the Biodiversity Offset Area is to provide 'an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed development'. In this case the 'aspect of the environment' is box gum woodland as a matter of national environmental significance.

Holcim Australia commit to the following objectives and targets to ensure the maintenance or improvement of box gum woodland.

3.1 Objectives

The key management actions designed to enhance the quality and extent of box gum woodland include active and passive regeneration and revegetation initiatives. The specific objectives for revegetation and regeneration activities to be implemented to offset significant impacts as a result of the quarry include the following:

- enhance the ecological quality of existing box gum woodland within the Biodiversity Offset Area and protect it from degradation for the duration of the action's impact on box gum woodland;
- re-establish box gum woodland through regeneration and revegetation strategies in areas of native pasture that are consistent with the structure and floristics of the listed community; and
- improve connectivity between remnants of woodland within the Biodiversity Offset Area.

3.2 Targets

The following targets have been developed so that the required works are completed in accordance with this BGWMP, the conditions of approval and rehabilitation and biodiversity management objectives are achieved. Timeframes for targets are identified in **Section 4.4**.

General Management Targets

- no more than 7.9 hectares of box gum woodland has been cleared (EPBC Approval Condition no. 1);
- the Biodiversity Offset Area has been fenced;
- the Biodiversity Offset Area has been appropriately separated from ongoing quarry operations;
- an adaptive management process has been developed and implemented;
- the monitoring program is being implemented in line with **Section 6.0**; and
- a Conservation Management Agreement has been registered for the site under Section 69 of the NPW Act.

3.3 Performance Indicators

The following performance indicators are to be used to assess the findings of the monitoring program against the approval conditions.

- revegetation areas within the Biodiversity Offset Area contain a flora species assemblage characteristic of the EPBC listed box gum woodland community, including a range of vegetation structural elements such as trees, shrubs, ground cover forbs and grasses, and litter as per the box gum woodland listing advice (Australian Government 2006b)⁵ and recovery plan (DECCW 2011)⁶;
- success of the revegetation is in keeping with targets established under the *Lynwood Quarry Rehabilitation and Landscape Management Plan* (Umwelt 2011b) as summarised below:
 - vegetation has been established;
 - the rehabilitated area is stable;
 - the area is free of significant weed or feral animal problems;
 - the rehabilitated community is representative of the targeted vegetation community;
 - monitoring has indicated that natural regeneration is occurring; and
 - the area has been appropriately separated from ongoing quarry operations;
- success of the revegetation is in keeping with targets which have been developed for box gum woodland regeneration and revegetation areas:
 - no less than 75 percent of planted and regenerating trees are healthy and growing as determined by monitoring;
 - weeds comprise less than 5 percent (foliage cover) of the perennial ground storey; and
 - bare ground comprises no more than 15 percent of the ground layer;
- natural regeneration of the dominant overstorey species (white box, yellow box or Blakely's red gum) within the Biodiversity Offset Area regeneration zones (refer to **Figure 2.1**) is present as determined through monitoring;
- there is no evidence of pest animal infestation within offset area that are adversely impacting vegetation quality (e.g. rabbit warrens, fox dens, competition for hollows from wasps, bees, mynas, etc.); and
- accurate records are being maintained substantiating all activities associated with the BGWMP and approval conditions (EPBC Approval Condition no. 7).

⁵ Australian Government (2006b) *White Box – Yellow Box – Blakely's Red Gum Grassy Woodlands and Derived Native Grasslands Listing Advice*, Department of the Environment and Heritage, Canberra.

⁶ Department of Environment, Climate Change and Water NSW (2011) *National Recovery Plan for White Box - Yellow Box - Blakely's Red Gum Grassy Woodland and Derived Native Grassland*, Department of Environment, Climate Change and Water NSW, Sydney (May 2011).

3.4 *Process for Review and Refinement of Targets*

The preliminary targets as described in **Section 3.2** will be reviewed annually (during the annual reporting process) and revised as appropriate throughout the life of the quarry with the targets to be used as the basis for further refinement following:

- the commencement of ecological management activities; and
- consideration of the results of monitoring programs.

It is envisaged that this process will occur as part of subsequent reviews of the BGWMP and throughout the adaptive management process.

Progress against the targets will be assessed and discussed in an annual report to SEWPaC (refer to **Section 6.0**), which will include the identification of any failures of the criteria, and corrective measures taken to address any such issue or to improve offset management techniques. The monitoring program developed to assess the performance of the Offset Area is outlined in **Section 5.0**.

4.0 Management Actions

4.1 *Existing Management Commitments*

The existing State planning approval for the Lynwood Quarry required Holcim Australia to implement a range of management and improvement actions which are complementary to the management of the Biodiversity Offset Area. This BGWMP assumes the application of all existing management plans (as summarised in **Sections 4.1.1 to 4.1.3**) to the proposed Biodiversity Offset Area in addition to further measures to enhance or rehabilitate box gum woodland as described in **Section 4.4**.

All box gum woodland within the Biodiversity Offset Area would be subject to revegetation or rehabilitation, and ongoing management in accordance with the BGWMP.

All other box gum woodland within Holcim Australia's Lynwood Quarry holdings would be managed in accordance with existing management plans and approvals (refer to **Section 4.2**).

In the event of any inconsistency between this BGWMP and any other existing management plans, this BGWMP prevails to the extent of the inconsistency within the area subject to this plan.

4.1.1 **General Native Vegetation Management**

The Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b) commits to a number of activities for the management of native vegetation which would be applied to the Biodiversity Offset Area and the Habitat Management Area. These are listed below:

- exclusion of stock from operational and sensitive areas, including the Habitat Management Area, Cultural Heritage Management Zone and core riparian areas;
- feral animal and noxious weed control;
- management of erosion and sedimentation;
- management of fire regimes;
- rehabilitation of disturbed areas with local indigenous species;
- use of local indigenous species in landscaped areas and the linkage and integration of new areas with existing vegetated areas to improve ecological function and provide habitat;
- management of surface water;
- adaptive management, as required, if a previously unrecorded or assessed threatened species is identified in the Project Area during construction or operation;
- ongoing monitoring and maintenance of all revegetation works and habitat enhancement activities; and
- creation of habitat corridors linking isolated remnant vegetation stands.

4.1.2 Habitat Management Areas

An additional 29.8 hectare Habitat Management Area will form part of the corridor between the eastern and western portions of the Biodiversity Offset Area. Management of this area will involve enhancement of the floristic and fauna habitat values through restriction of access, management and general exclusion of stock, and planting or assisted regeneration of indigenous species in accordance with the Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b).

While not necessarily achieving the same level of restoration as the Biodiversity Offset Area, these areas will perform a significant connectivity role that will enhance the viability and value of the Biodiversity Offset Area.

4.1.3 Rehabilitation of Disturbed Areas

Although outside of the Biodiversity Offset Area, land disturbed by the quarry will be rehabilitated in accordance with the Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b) using native species with the objective of facilitating development of native vegetation communities comparable in composition to those presently found within the quarry area. Rehabilitation will be undertaken progressively throughout the life of the quarry as areas become available. Rehabilitation practice and staging will be managed in accordance with the Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b).

Rehabilitation works will include the spreading of cleared vegetation (including weed-free mulch created during clearing) over the rehabilitated surfaces to provide organic matter and a local seed source, plus seeding of top-soiled areas with native species. A revegetation species list has been developed on the basis of extant vegetation communities and will enable use of species mixes targeted at development of vegetation communities appropriate to the landscape and adjacent remnant communities.

4.2 *Management of Box Gum Woodland outside Biodiversity Offset Area*

Within the project area, 1.4 hectares of box gum woodland will be retained outside the Biodiversity Offset Area. This patch will not be disturbed by the action, however it has not been included as part of the offset as it is located on the northern side of the access road, and is disconnected from the Biodiversity Offset Area.

This patch will be managed in accordance with existing management plans and approvals, in particular, the Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b). As described in **Section 4.1.1**, management of this patch would include (but not be limited to) the following actions:

- exclusion of stock;
- feral animal and noxious weed control;
- management of erosion and sedimentation;

- management of fire regimes; and
- rehabilitation of disturbed areas with local indigenous species.

All other box gum woodland within the project area not disturbed by the action are within the offset area, with the management measures to be implemented for these areas outlined within this BGWMP.

4.3 Adaptive Management

A strong feedback loop between monitoring and management will be established. Adaptive management of the Biodiversity Offset Area will be responsive to any new ecological data that may arise through the monitoring described in **Section 5.0**, legislative change or any other studies completed at the site. This will enable a flexible approach to management requirements of the Biodiversity Offset Area, allowing ongoing feedback and refinement of the management strategy.

Adaptive management will be a key mechanism to address the risks to the successful implementation of this BGWMP (refer to **Section 1.5**). This will involve ongoing evaluation of management measures required to address issues such as weed infestation, bushfire, feral animals and revegetation failure.

The guide to undertaking strategic assessments (Australian Government 2012)⁷ describes the framework of adaptive management as a systematic process for continually improving management practices through learning from the outcomes of previous management. **Figure 4.1** is reproduced from the guide and illustrates the process of adaptive management to be implemented in this BGWMP.

⁷ Australian Government (2012) *A Guide to Undertaking Strategic Assessments: Environment Protection and Biodiversity Conservation Act 1999*, Department of Sustainability, Environment, Water, Population and Communities (November 2012).

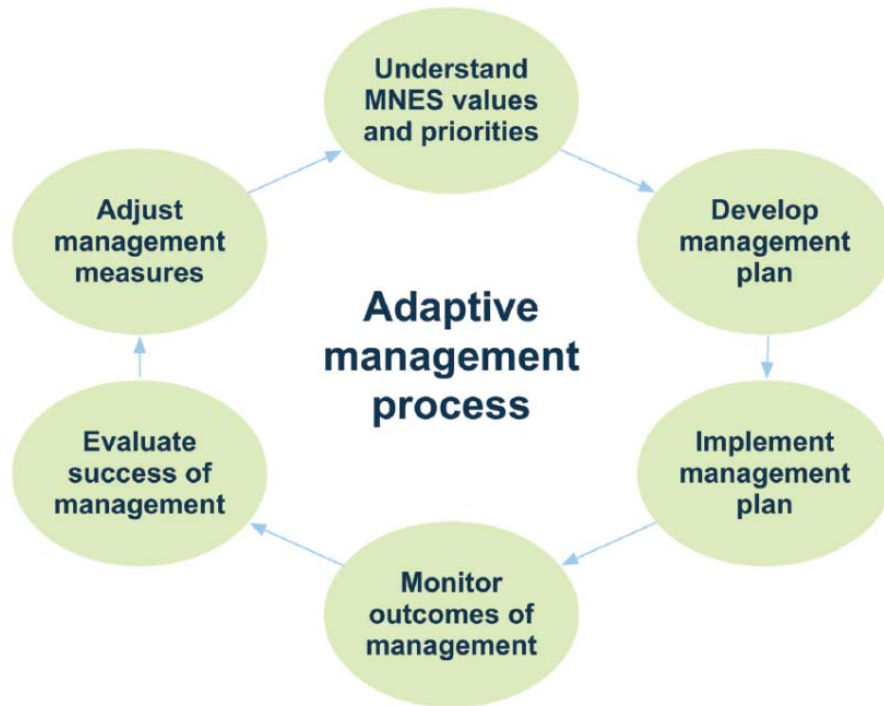


Figure 4.1 – Adaptive Management Process

Source: Figure 2 in Australian Gov't (2012)

The flowchart presented in **Figure 4.2** provides a summary of the hierarchy of management plans associated with the management of the Biodiversity Offset Area. The overarching management plan is the Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b), which links in to the Aboriginal Heritage Management Plan and this BGWMP. The green elements of the flow chart represent components of the BGWMP, while blue elements represent established plans under the NSW State Government Approval.

Key components of the BGWMP will be the adaptive management continual improvement loop between the monitoring and management programs.

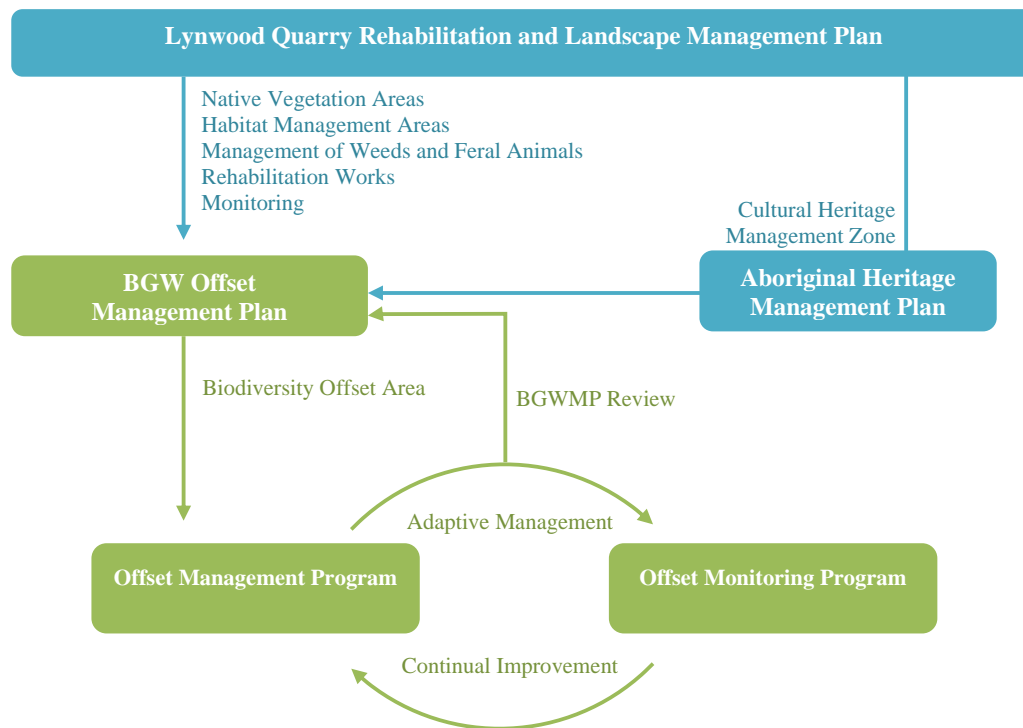


Figure 4.2 – Hierarchy of Management Plans

4.4 *Offset Management Program*

The Offset Management Program as shown in **Tables 4.1 to 4.4** details the direct actions and an estimate of the associated investment required by Holcim Australia to improve the quality and resilience of box gum woodland in the Biodiversity Offset Area.

Management and rehabilitation activities over an initial five year period estimated to a value of approximately \$100,000 (including a 10 percent contingency) will be funded by Holcim Australia.

Table 4.1 – Offset Management Program: Establishment of Biodiversity Offset Area

Activity	Description	Responsibility	Timeframe	Estimated Budget
Fencing	Fence entire Biodiversity Offset Area. Estimated cost includes installation of 2,550 metres of stock proof perimeter fence by fencing contractor.	Operations Manager	2013/14	\$38,250.00

Table 4.2 – Offset Management Program: Regeneration and Revegetation

Activity	Description	Responsibility	Timeframe	Estimated Budget
Natural regeneration of derived native grassland	Natural regeneration of derived native grassland through fencing and exclusion of stock.	Operations Manager	2013/14	See Table 4.1
Seed collection for direct seeding	Seed collection will target key box gum woodland using local provenance where available. 11 hectares (50%) of the existing native pasture will require active revegetation works in the form of tube stock planting or direct seeding. 5.5 hectares will be direct seeded and the remainder will be planted with tube stock. A seeding rate of 2000g/ha has been used with this mix to be comprised of both canopy and understorey species. It is not considered necessary to include grass species in the seed mix given the quality of existing groundcover.	Environmental Officer	2013/14	\$9,240.00
Site preparation for direct seeding	Depending on conditions at the time of seeding, light scarification of the ground surface may be required in order to create niche areas for seeds to germinate. In order to minimise the impact on the existing native grassland. This method will only be used where considered essential to seed germination and establishment.	Environmental Officer	2014/15	\$1,600.00
Direct seeding	It is assumed that 5.5 hectares of the site will be revegetated using direct seeding. Seeding will be conducted using a tractor with fertiliser spreader (no fertiliser to be used) and vermiculate (bulking agent).	Environmental Officer	2014/15	\$1,600.00

Table 4.2 – Offset Management Program: Regeneration and Revegetation (cont.)

Activity	Description	Responsibility	Timeframe	Estimated Budget
Tube stock propagation (including local provenance seed collection).	5.5 hectares of the existing native pasture will be revegetated using tube stock. The final target rate for box-gum grassy woodlands is 30/40 stems per hectare of canopy species with scattered shrubs (Rawlings et al 2010). In order to allow for seedling mortalities as revegetation areas mature, it is recommended that small trees (trees that have grown to less than 10cm diameter at breast height) have a density of at least 400 stems per hectare. As trees mature to dimensions greater than 10cm diameter and taller than breast height it is considered that 250 stems per hectare is a minimum target density (Rawlings et al 2010). In order to account for mortality of seedlings a planting rate of 600 stems per hectare has been allowed.	Environmental Officer	2013/14	\$5,940.00
Site preparation for tube stock planting	Slashing/mowing of 5.5 hectare site prior to planting.	Environmental Officer	2014/15	\$800.00
Planting of tube stock	It is assumed that 5.5 hectares of the site will be revegetated using tube stock and a planting rate of 600 stems per hectare has been allowed. Given that the native grasslands at the site are considered to be in good health no allowance has been made for deep ripping of the substrate. It is considered that deep ripping may expose the disturbed ground to infestation of exotic grass and broadleaf species.	Environmental Officer	2014/15	\$6,600.00

Table 4.3 – Offset Management Program: Operational Management Actions

Activity	Description	Responsibility	Timeframe	Estimated Budget
Weed management within revegetation/regeneration area	Weed density is considered to be low to moderate within the Biodiversity Offset Area. It is considered that weed management will be required to be undertaken on a biennial basis across 30% (approximately 7 hectares) of the Biodiversity Offset Area. Spraying will be timed to occur prior to flowering of weed species with follow up spraying to be conducted after the initial round of spraying has taken effect. This approach will ensure that weed management works provide an effective kill of target species. It is considered that 7 hectares could be covered in 1.5 days (3 days per year).	Environmental Officer	6 monthly until 2017/18	\$3,000.00 per annum
Monitoring of revegetation/regeneration areas	Annual monitoring will be conducted in order to determine the success or otherwise of revegetation works and the progress of natural regeneration. Permanent monitoring plots will be established within the Biodiversity Offset Area during this first year of monitoring. Includes 8 hours field work for two ecologists and reporting.	Environmental Officer	2015/16 2016/17 2017/18	\$3,220.00 per annum

Table 4.4 – Offset Management Program: Contingency Costs

Activity	Description	Responsibility	Timeframe	Estimated Budget
Adaptive management costs	Allowance for further land management works such as weed management, feral fauna control, supplementary direct seeding or tube stock propagation and planting if required.	Operations Manager	2016/17 2017/18	\$3,000.00 \$2,000.00
Total contingency costs	Allowance of 10% contingency to allow for price increases etc.	Operations Manager	Life of Project	\$9,369.00

5.0 Offset Monitoring Program

The Biodiversity Offset Area will be subject to ongoing monitoring and maintenance actions to ensure that the area progresses towards meeting the objectives and targets set out in **Section 3.0** in a timely manner. The monitoring program will monitor the success of the management actions, in addition to compliance with the approval conditions, against performance indicators described in **Section 3.3**.

Monitoring events will identify any corrective actions required or whether assistance is required to achieve targets. Monitoring events will target issues such as progression of regenerating native vegetation and the need for targeted weeding programs.

Monitoring requirements for the Biodiversity Offset Area are detailed in **Table 5.1**.

5.1 *Monitoring Schedule*

The following monitoring program has been developed to integrate with existing commitments as detailed in the Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b).

Monitoring results will be assessed and utilised in the continual improvement of revegetation techniques and management actions, and will be documented as part of the annual reporting.

Table 5.1 – Monitoring Program

Focus	Monitoring	Frequency
Weeds	The Biodiversity Offset Area will be subject to six monthly weed assessments by the Environmental Officer. Outbreaks of weeds, in particular noxious weeds as defined by the <i>Noxious Weeds Act 1993</i> , will be controlled using suitable control measures such as spraying, slashing or manual removal. Where appropriate, the local weeds authority and Goulburn-Mulwaree Council will be consulted regarding weed control measures.	6 monthly from establishment of Biodiversity Offset Area.
Feral animals	Feral fauna species will be visually monitored during the Environmental Officer's six monthly inspections and during fauna surveys undertaken once every three years. Measures to control feral species will be implemented as required and in consultation with the Rural Lands Protection Board, where necessary.	Opportunistic and during scheduled 6 monthly and 3 yearly monitoring.
Retained vegetation	<p>The condition of retained vegetation is currently monitored on a three yearly basis by a suitably qualified and experienced ecologist to identify any change in habitat quality (either deterioration or improvement). Permanent plots are located within the northern Habitat Management Area, on Joarimin Creek, and in the Cultural Heritage Management Zone.</p> <p>The permanent 400 m² vegetation plot in the Cultural Heritage Management Zone within the Biodiversity Offset Area will form part of the Offset Monitoring requirements.</p> <p>The following will be recorded on a standard recording sheet:</p> <ul style="list-style-type: none"> • general health of vegetation; • evidence of natural regeneration; • occurrence and abundance of weed species; • signs of disturbance, either by stock or humans; • evidence of feral animals; and • any observable impacts of the operations, such as the effectiveness of sediment and erosion control structures. <p>At each vegetation plot, species diversity and structural composition of the vegetation will be recorded. This will allow a comparison of flora species and abundance over time.</p> <p>Photo monitoring will also be taken from established photo monitoring points at each monitoring site.</p> <p>Fauna will also be monitored at these sites. Details of fauna surveys are included in the Lynwood Quarry Rehabilitation and Landscape Management Plan (Umwelt 2011b).</p>	3 yearly.

Table 5.1 – Monitoring Program (cont.)

Focus	Monitoring	Frequency
Revegetation areas	<p>Following revegetation works, monitoring will be undertaken to assess the progress of the revegetation program with the aim of monitoring plant health and the need for implementation of management works or replacement planting or seeding.</p> <p>The Biodiversity Offset Area will be included in the existing monitoring schedule for revegetation areas. Specifically, the monitoring inspections will assess:</p> <ul style="list-style-type: none"> • the extent of the vegetative cover and species diversity, and any requirement for additional revegetation works to be undertaken; • the general health of the vegetation; • any occurrences of weed species in the revegetation area and any requirements for weed control activities; • feral animals and the need for control; • erosion and the need for repair of eroded areas; • fire management; • any signs of disturbance, either by animals or humans; and • the success of any management programs implemented following previous monitoring inspections. <p>In addition to annual monitoring, the Environmental Officer will inspect the Biodiversity Offset Area revegetated areas every three months for the first three years after the completion of rehabilitation works. This inspection will include:</p> <ul style="list-style-type: none"> • the general health of the vegetation and the need for fertilisation; • the growth of the vegetation and the need to replace any dead plants; • any erosion and the need for sediment and erosion controls to be implemented; • any occurrences of weed species in the revegetation area and any requirements for weed control activities; and • signs of disturbance and the need to access controls. 	<p>Three monthly for first three years following completion of rehabilitation works.</p> <p>Annually thereafter.</p>
Box gum woodland	<p>Ecological monitoring of retained box gum woodland patches will be undertaken annually against benchmark sites for a period of 5 years with the monitoring frequency to be reassessed after that time. This monitoring will assess the condition and recovery of box gum woodland at the site and provide data to drive the adaptive management of these areas to aid recovery.</p> <p>To allow for comparison between monitoring events, permanent plots and photographic monitoring points will be established. The purpose of the permanent monitoring plots will be to target natural regeneration and determine ground layer vegetation changes. Success of planting and other management actions will be monitored by estimation of growth and survival rates across a representative sample of the relevant areas.</p>	<p>Annually for years 0-5 following establishment of Biodiversity Offset Area.</p> <p>Biannually for years 5-11 (or for 6 years following successful implementation of rehabilitation).</p>

5.2 Risks to the Implementation of the BGWMP

A risk based approach to the implementation of this BGWMP has been considered such that risks to the establishment and management of the Biodiversity Offset Area are identified and a strategy developed to avoid or minimise the potential for them to occur. **Table 5.2** summarises the risks identified and sections of this BGWMP where they are discussed.

Table 5.2 – Risk Assessment for Implementation of BGWMP

		CONSEQUENCE (C)				
		Insignificant (F)	Minor (I)	Moderate (D)	Major (J)	Significant (S)
LIKELIHOOD (L)	Remote (R)	Negligible (N)	Negligible (N)	Very Low (L)	Low (W)	Medium (M)
	Unlikely (U)	Negligible (N)	Very Low (L)	Low (W)	Medium (M)	High (H)
	Possible (P)	Very Low (L)	Low (W)	Medium (M)	High (H)	Very High (V)
	Likely (L)	Low (W)	Medium (M)	High (H)	Very High (V)	Extreme (E)
	Almost Certain (C)	Medium (M)	High (H)	Very High (V)	Extreme (E)	Extreme (E)

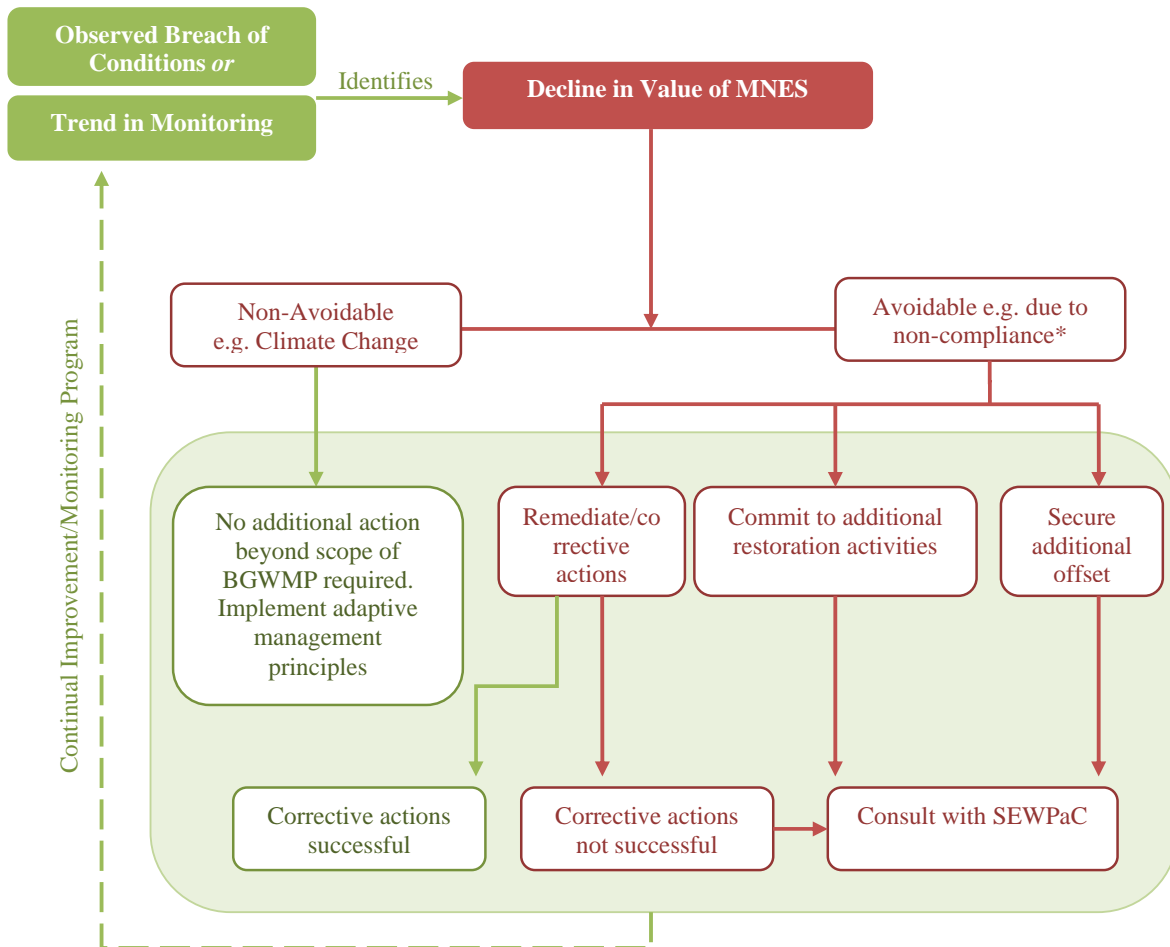
Risk	L	C	Rating	Addressed?
Inadequate resourcing to implement the management strategy	P	J	H	Section 4.4
Inadequate resourcing to meet the monitoring and reporting requirements	P	J	H	Section 4.4
Weed infestation within Biodiversity Offset Area leading to degradation of biodiversity values	P	D	M	Section 4 and 5
Pest and feral fauna species within Biodiversity Offset Area leading to degradation of biodiversity values	P	D	M	Section 4 and 5
Failure to meet revegetation targets within Biodiversity Offset Area	P	D	M	Section 4.3 and 5.3
Unauthorised/uncontrolled access to Biodiversity Offset Area leading to damage	L	D	H	Section 4.4
Biomass management impacting on offset values (e.g. grazing, stocking rates etc)	P	I	W	Section 4.4

5.3 Corrective Actions

As identified in the preceding section, there are a range of uncertainties associated with implementation of the BGWMP. In order to ensure delivery of the stated outcomes, and compliance with the approval conditions, a range of further actions are to be undertaken in the event it becomes apparent that performance indicators are not being met. Examples where this may occur include:

- habitat improvement targets are not achieved;
- habitat values as determined by regular monitoring and reporting identifies a declining trend; and
- populations of MNES decline.

The results of monitoring will feed into the adaptive management process (**Section 4.3**). The Environmental Officer will utilise the results of the monitoring activities to identify any corrective actions required to meet the objectives and targets specified in **Section 3.0**. An example of this is shown in **Figure 5.1** below.



* note: non-compliance with any conditions of approval must be reported to SEWPaC within 2 business days of becoming aware of the issue (EPBC Approval Condition no. 8).

Figure 5.1 – Identifying the Need for Corrective Actions

The following indicative triggers and corrective actions have been identified however would be subject to review based on the adaptive management process.

Table 5.3 – Corrective Action Measures⁸

Issue Identified by Monitoring	Potential Corrective Actions
Species Composition/Weed Infestation	
No regeneration of plants, or indicator species missing	<ul style="list-style-type: none"> • fence site and exclude grazing • use fire or smoke-water to stimulate germination • control exotic weeds to reduce competition • plant seedlings grown from quality seed
Low species diversity	<ul style="list-style-type: none"> • revegetate with high diversity patches
Exotic annual grasses dominate	<ul style="list-style-type: none"> • herbicide control of grasses • strategic burning • strategic grazing • nutrient removal by harvesting, scalping or carbohydrate addition • revegetate with native perennial grasses • 'no kill' cropping • dense tree revegetation to shade out weeds, followed by thinning
Exotic broadleaf weeds abundant or dominant	<ul style="list-style-type: none"> • use broadleaf herbicides • hand weed or chip • use bush regeneration principles to manage
Patches of perennial grass weeds occurring	<ul style="list-style-type: none"> • spot spray or dig out small clumps • crash graze periodically • manage grazing to stimulate native pasture • spring burn • monitor and maintain control
Patches of annual grass weeds	<ul style="list-style-type: none"> • crash graze or burn patches in spring to stop seed set of annual grasses • light grazing in autumn and winter to maintain native grass vigour • apply carbohydrate and sow <i>Themeda</i> • monitor and maintain control
Structure and Habitat	
Dense tree or shrub regeneration	<ul style="list-style-type: none"> • assess whether thinning is necessary • leave if patches are small and plants are native • thin with fire • thin manually
Low habitat value for wildlife	<ul style="list-style-type: none"> • add logs or branches • increase the number of vegetation layers in the patch • place nesting boxes for target species • control feral predators

⁸ Rawlings, K., Freudenberger, D. and Carr, D. (2010) *A guide to managing box gum grassy woodlands*, Department of the Environment, Water, Heritage and the Arts, Canberra (2010).

Table 5.3 – Corrective Action Measures⁹ (cont.)

Issue Identified by Monitoring	Potential Corrective Actions
Damage from Pest Species, Livestock etc	
Grazing and browsing damage to plants	<ul style="list-style-type: none"> • fence to exclude domestic, feral and native animals as necessary • change grazing regimes • control feral species
Soil disturbance from animals	<ul style="list-style-type: none"> • control feral species • reduce total grazing pressure to maintain groundcover
Feral predators killing or competing with wildlife	<ul style="list-style-type: none"> • control feral species at a landscape scale • remove exotic berry bushes providing habitat (hawthorn, pyracantha, cotoneaster, etc.)
Tree dieback from insect pressure, herbicide drift, water stress	<ul style="list-style-type: none"> • prevent stock camping beneath trees • scalp soil beneath tree canopy to remove nutrients; sow with natives such as red grass or <i>poa</i> • fence to prevent bark browsing • increase patch size through revegetation • re-vegetate with dense shrubs to increase diversity and insectivorous birds • do not fertilise and prevent fertiliser drift • avoid using defoliant near woodlands when windy

Note: Refer to Rawlings *et al*, 2010 for appropriate application of controls.

⁹ Rawlings, K., Freudenberger, D. and Carr, D. (2010) *A guide to managing box gum grassy woodlands*, Department of the Environment, Water, Heritage and the Arts, Canberra (2010).

6.0 Reporting Requirements

6.1 *Record Keeping*

As per EPBC Approval Condition no. 7, Holcim Australia will maintain accurate records substantiating all activities associated with or relevant to the conditions of approval, including measures taken to implement the Biodiversity Offset Area and the BGWMP.

These records may be subject to audit by SEWPaC or an independent auditor, as described in **Section 6.3**.

6.2 *Annual Report*

Within three months of every 12 month anniversary of the commencement of the action, Holcim Australia will publish an annual report on its website. Documentary evidence providing proof of date of publication must also be provided to SEWPaC at the time of publishing (EPBC Approval Condition no. 8).

The annual report will contain the following information:

- compliance with each of the conditions of approval;
- description of implementation of the BGWMP as specified in the conditions of approval;
- rehabilitation and management activities undertaken within the reporting period, including estimated costs;
- results of monitoring events for the reporting period; and
- required amendments to the management or monitoring processes as identified by the adaptive management mechanism.

Utilising the adaptive management mechanism outlined in **Section 4.3**, the results of monitoring and management works undertaken will be utilised to inform updates to the management controls to be undertaken in the Biodiversity Offset Area.

Annual reporting and monitoring will continue for six years after the successful implementation of rehabilitation, i.e. all the targets in **Section 3.2** are met consistently for 6 consecutive years. Reporting thereafter will be in accordance with the commitments identified in **Section 8.0**.

6.3 *Independent Audit*

If directed by the Minister, Holcim Australia must ensure that an independent audit of compliance with the conditions of approval is conducted, and a report submitted to the Minister. The auditor must be approved by the Minister prior to the commencement of the audit (EPBC Approval Condition no. 9).

7.0 Review of Management Plan

This BGWMP will be reviewed internally every 3 years. The BGWMP may be updated in between this period if:

- updated management techniques are identified; or
- the adaptive management framework identifies that current management methods are not effective and require amendment.

Amendments to the BGWMP in response to adaptive management and continual improvement requirements that are not inconsistent with the conditions of approval (EPBC 2012/6560) do not need to be submitted to SEWPaC for approval. Notwithstanding this, if Holcim Australia wish to undertake any activities other than in accordance with the BGWMP as specified in the conditions of approval, a revised version of the BGWMP must be submitted to SEWPaC for the Minister's written approval (EPBC Approval Condition no. 10).

The Minister may also request specific revisions be made to the BGWMP if they believe that it is necessary or convenient for the better protection of the listed ecological community. This revised BGWMP must be submitted to SEWPaC for the Minister's written approval (EPBC Approval Condition no. 11).

8.0 Summary of Commitments

The following **Table 8.1** summarises the commitments made in this BGWMP.

Table 8.1 – Summary of Commitments

Action	Commitment
Publically publish the BGWMP	This BGWMP will be published on Holcim Australia's website within one month of approval by SEWPaC (unless agreed otherwise by the Minister).
Long term conservation of the Biodiversity Offset Area	Establishment of a conservation agreement under Section 69 the NSW <i>National Parks and Wildlife Act 1974</i> which would then be listed on the title of the land to ensure it is transferred with any future land sale. Evidence that the conservation agreement application form has been lodged with OEH must be provided to SEWPaC prior to commencement of action.
Direct land offset of 27.2 hectares of box gum woodland	Set aside and fence Biodiversity Offset Area and commence management activities in first year of offset establishment.
Rehabilitation of 22 hectares of native pasture to box gum woodland	Focus on re-establishment of a canopy and removal of weed species with a secondary objective of enhancing understorey diversity. Commence rehabilitation works including reseeding/tube stock planting, and active weed management in first year of offset establishment.
Direct actions to benefit land offsets	Undertake regeneration activities, management and monitoring as per the Offset Management Program in Section 4.4 .
Enhancement of connectivity between patches of EPBC box gum woodland through management of non-EPBC vegetation	Re-establish continuous canopy connectivity between the eastern and western ends of the Biodiversity Offset Area through habitat management and rehabilitation activities.
Monitoring of Biodiversity Offset Area	0-5 years after establishment. Annual monitoring and reporting to determine success of rehabilitation and general condition including weed and pest animal presence, presence of hoary sunray and other MNES. 5-11 years (or for 6 years following successful implementation of rehabilitation). Biennial monitoring of condition and performance of rehabilitation. 12 years+. Monitoring and reporting as per the Rehabilitation and Landscape Management Plan (Umwelt 2011b).
Adaptive management	Implement an adaptive management element into ongoing management of Biodiversity Offset Area.
Annual Reporting	Annual report published on website, and evidence of proof of publication to SEWPaC within 3 months of the anniversary of commencement of the action.
Reporting non-compliances	All non-compliances with the conditions of approval must be reported to SEWPaC within 2 business days.
Record keeping	Holcim Australia will maintain records of all activities undertaken in relation to the Biodiversity Offset Area and BGWMP.
Independent audit	If requested by the Minister, Holcim Australia must ensure that an independent audit of compliance with the conditions of approval is conducted.
Update of BGWMP	Every three years or as required based on adaptive management program. For any activity not consistent with the conditions of approval, a revised BGWMP must be provided to SEWPaC for review and approval.
Resourcing	Holcim Australia to commit to provide funding for ongoing resources to ensure compliance with BGWMP.

9.0 References

- Australian Government 2006a. *Species List for the EPBC Act Policy Statement - White Box – Yellow Box – Blakely’s Red Gum Grassy Woodlands and Derived Native Grasslands*, Department of the Environment and Heritage, Canberra (May 2006).
- Australian Government 2006b. *White Box – Yellow Box – Blakely’s Red Gum Grassy Woodlands and Derived Native Grasslands Listing Advice*, Department of the Environment and Heritage, Canberra (2006).
- Australian Government 2012. *A Guide to Undertaking Strategic Assessments: Environment Protection and Biodiversity Conservation Act 1999*, Department of Sustainability, Environment, Water, Population and Communities (November 2012).
- Department of Environment, Climate Change and Water NSW 2011. *National Recovery Plan for White Box - Yellow Box - Blakely’s Red Gum Grassy Woodland and Derived Native Grassland*, Department of Environment, Climate Change and Water NSW, Sydney (May 2011).
- Department of Sustainability, Environment, Water, Population and Communities 2012. *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*, (October 2012).
- Rawlings, K., Freudenberger, D. and Carr, D. 2010. *A guide to managing box gum grassy woodlands*, Department of the Environment, Water, Heritage and the Arts, Canberra.
- Umwelt (Australia) Pty Limited 2011a. *Caring for Country Lynwood Quarry, Marulan Aboriginal Heritage Management Plan Revision 2*, Report prepared for Holcim (Australia) Pty Limited.
- Umwelt (Australia) Pty Limited 2011b. *Lynwood Quarry Rehabilitation and Landscape Management Plan Revision 2*, Report prepared for Holcim (Australia) Pty Limited.

Appendix 2



Australian Government

Department of Sustainability, Environment, Water, Population and Communities

Approval

Lynwood Quarry, Marulan NSW (EPBC 2012/6560)

This decision is made under sections 130(1) and 133 of the *Environment Protection and Biodiversity Conservation Act 1999*.

Proposed action

person to whom the approval is granted Holcim (Australia) Pty Ltd

proponent's ACN 099 732 297

proposed action To establish and operate a quarry pit, construct internal haul roads, and a rail spur and loading facility at Marulan, NSW (see EPBC Act referral 2012/6560).

DECISION to approve:

Approval decision

Controlling Provision	Decision
Listed threatened species and communities (sections 18 & 18A)	Approve
Listed migratory species (sections 20 & 20A)	Approve

conditions of approval

This approval is subject to the conditions specified below.

expiry date of approval

This approval has effect until 1 January 2038

Decision-maker

name and position

James Tregurtha
Assistant Secretary
South-Eastern Australia Environment Assessments

Signature

date of decision

13 September 2013

Proposed Conditions of Approval:

1. The person taking the action must not clear more than 7.9 hectares of the ecological community *White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland*.
2. To assist in mitigating the impacts of the proposal on *White Box-Yellow Box-Blakely's Red Gum Grassy 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 Minister's written approval prior to commencement of the action. The 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 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.

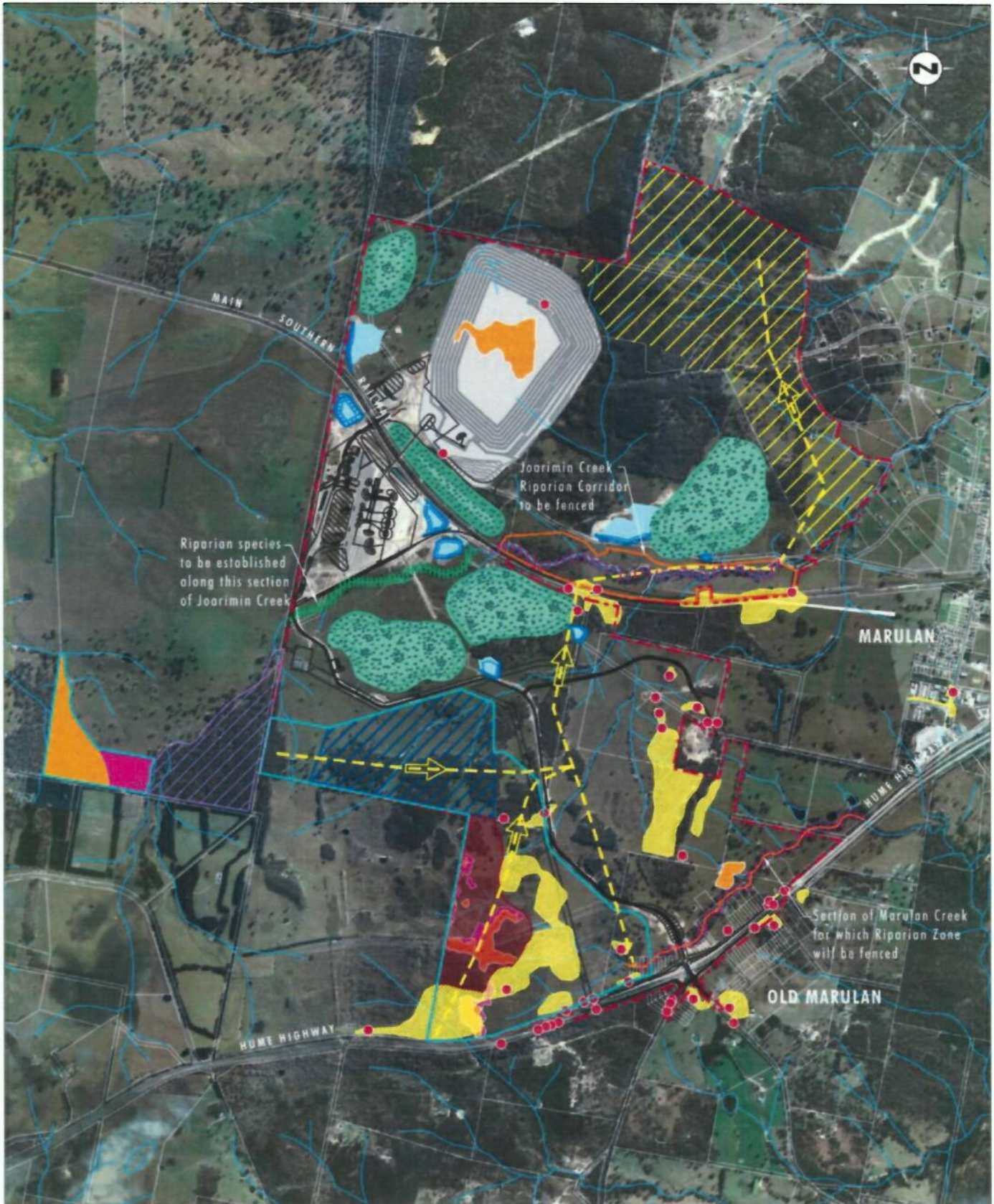
3. To compensate for the loss of 7.9 hectares of box gum woodland the person taking the action must secure the lands identified as the '*Proposed Biodiversity Offset Area*' in the Map at Schedule 1 of this notice as a biodiversity offset and protect the lands for the duration of the action's impact through a conservation agreement under section 69 of the NSW *National Parks and Wildlife Act 1974*. The conservation agreement must state; '*This agreement must not be terminated without the written consent of 'The Minister Administering the Commonwealth Environment Protection and Biodiversity Conservation Act 1999'*'.
4. Prior to the commencement of the action the person taking the action must provide evidence to the Department of;
 - a. Their ownership of the offset lands described in Condition 3 along with offset attributes, shapefiles and textual descriptions and maps to clearly define the location and boundaries of the offset sites.
 - b. Lodgement of the section 69 conservation agreement application form with the NSW Office of Environment & Heritage.
5. If the person taking the action is unable to comply with Conditions 3 and 4 above they must propose an alternative offset strategy for box gum woodland that meets the current Commonwealth EPBC Act Environmental Offsets Policy. The proposed action must not commence until the alternative proposed offset has been approved in writing by the Minister.

6. Within 30 days after the commencement of the action, the person taking the action must advise the Department in writing of the actual date of commencement.
7. The person taking the action must maintain accurate records substantiating all activities associated with or relevant to these conditions of approval, including measures taken to implement the offset and BGWMP, and make them available upon request to the Department. Such records may be subject to audit by the Department or an independent auditor in accordance with section 458 of the EPBC Act, or used to verify compliance with the conditions of approval. Summaries of audits will be posted on the Department's website. The results of audits may also be publicised through the general media.
8. Within three months of every 12 month anniversary of the commencement of the action, the person taking the action must publish a report on their website addressing compliance with each of the conditions of this approval, including implementation of the BGWMP as specified in the conditions. Documentary evidence providing proof of the date of publication must be provided to the Department at the same time as the compliance report is published. Non-compliance with any of the conditions of this approval must be reported to the Department within 2 business days of becoming aware of the non-compliance.
9. Upon the direction of the Minister, the person taking the action must ensure that an independent audit of compliance with the conditions of approval is conducted and a report submitted to the Minister. The independent auditor must be approved by the Minister prior to the commencement of the audit. Audit criteria must be agreed to by the Minister and the audit report must address the criteria to the satisfaction of the Minister.
10. If the person taking the action wishes to carry out any activity otherwise than in accordance with the Plan as specified in the conditions, the person taking the action must submit to the Department for the Minister's written approval a revised version of that Plan. The varied activity shall not commence until the Minister has approved the varied Plan in writing. The Minister will not approve a varied Plan unless the revised Plan would result in an equivalent or improved environmental outcome over time. If the Minister approves the revised Plan, that Plan must be implemented in place of the Plan originally approved.
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 person taking the action make specified revisions to the Plan specified in the conditions and submit the revised Plan for the Minister's written approval. The person taking the action must comply with any such request. The revised approved Plan must be implemented. Unless the Minister has approved the revised Plan then the person taking the action must continue to implement the Plan originally approved.
12. If, at any time after 5 years from the date of this approval, the person taking the action has not substantially commenced the action, then the person taking the action must not substantially commence the action without the written agreement of the Minister.
13. Unless otherwise agreed to in writing by the Minister, the person taking the action must publish the Plan and Program referred to in these conditions of approval on their website. The Plan and Program must be published on the website within 1 month of being approved.

Definitions

- a) **Department**, the Australian Government Department administering the *Environment Protection and Biodiversity Conservation Act 1999*.
- b) **Minister**, the Minister administering the *Environment Protection and Biodiversity Conservation Act 1999* and includes a delegate of the Minister.
- c) **Commencement**, means the earthworks, vegetation removal or construction of any infrastructure, excluding fences and signage, associated with the proposed action.
- d) **Offset attributes**, mean an '.xls' file capturing relevant attributes of the Offset Area, including the EPBC reference ID number, the physical address of the offset site, coordinates of the boundary points in decimal degrees, the EPBC protected matters that the offset compensates for, any additional EPBC protected matters that are benefiting from the offset, and the size of the offset in hectares.
- e) **Shapefiles**, means an ESRI Shapefile containing '.shp', '.shx' and '.dbf' files and other files capturing attributes of the Offset Area, including the shape, EPBC reference ID number and EPBC protected matters present at the relevant site. Attributes should also be captured in '.xls' format.

Schedule 1



Source: LPI 2010, Holcim Australia (Aerial Photo May 2012), Google Earth (2011)

0 0.5 1 1.5 km
1:30 000

Legend

- Project Area
- Existing Approved Habitat Management Area
- Existing Approved Core Riparian Corridor
- Existing Approved Cultural Heritage Management Zone
- Stepping-Stone Corridor
- Box Gum Woodland Derived Native Grassland (CEEC)
- Box Gum Woodland (CEEC)
- Heary Sunray Habitat
- Location of Heary Sunray
- Proposed Biodiversity Offset Area
- Proposed Box Gum Woodland CEEC Regeneration
- Proposed Habitat Management Area
- Drainage

FIGURE 3.2

Proposed Biodiversity Offset Area and Habitat Management Features

Appendix 3

RETURN FORM TO:

Conservation Partnerships Delivery,
 Department of Environment, Climate Change and Water,
 PO Box A290, Sydney South NSW 1232



Environment,
 Climate Change
 & Water

**CONSERVATION PARTNERS PROGRAM
 APPLICATION/PROPOSAL FOR
 CONSERVATION AGREEMENT (s.69A-AK, National Parks & Wildlife Act 1974)
 or WILDLIFE REFUGE (s.68, National Parks & Wildlife Act 1974)**

1) Property and Applicant Details

PROPERTY NAME Biodiversity Offset Area of Lynwood Quarry

LANDHOLDER DETAILS (Landholder can be the owner, leasee or tenant of the land)

FULL NAME(S)	Rachel Heath, on behalf of Holcim Australia Pty Ltd			
POSTAL ADDRESS (ES)	Level 8, 799 Pacific Highway, Chatswood NSW 2067			
Telephone:	(H)	E-mail:	rheath@holcim.com.au	
	(W) 02 9412 6600		FAX	02 9412 6601
	(mob)			

I/We as landholder(s) (owners/leasees/tenants) desire to have this property assessed for either a **WILDLIFE REFUGE** or **CONSERVATION AGREEMENT** (circle your status and your preference).

DATE 15/11/13

Name (print) <u>Rachel Heath</u>	Signature
Name (print) _____	Signature _____
Name (print) _____	Signature _____
Name (print) _____	Signature _____

PROPERTY DETAILS

LGA	Goulburn Mulwaree	Catchment-CMA	Hawkesbury - Nepean
Property Address	Hume Highway, Marulan; Stoney Creek Road, Marulan; and Carrick Road, Carrick		
Property Location	27 kilometres north of Goulburn and approximately one kilometre west of the township of Marulan.		

Distance & direction from nearest landmark (e.g. 5km west of Bathurst)


Lot or Portion Number:	D.P. Number	Parish and County:	Area (Ha)	Freehold or Leasehold
(Part of) Lot 3	DP1074107	Marulan Parish, Argyle County	89.4	Freehold
(Part of) Lot 2	DP1116876	Marulan Parish, Argyle County	70	Freehold
(Part of) Lot 3	DP1107232	Billyrambija Parish, Argyle County	17.2	Freehold
(Part of) Lot 294	DP750029	Marulan Parish, Argyle County	7.8	Freehold

2) Habitat Description

(including restored habitat)

HABITAT TYPE See list on Page 6	AREA How much of each habitat/landuse is there?	CONDITION: Is the area in its natural conditions or has it been altered eg grazing; level of weed invasion, cleared in the past; tree hollows, regeneration occurring, feral animals	PLANT SPECIES What are the dominant plant species – include trees shrubs and groundlayer plants.	GRAZING Is any of the habitat fenced from stock? If so what percentage? If grazed, what type of regime (never, occasional, cell grazing)	WATER SUPPLY and NAME (if known) eg permanent, 2 dams	(If CA) – indicate habitats to be included
Woodland (Tableland Low Woodland)	44.6	Moderate quality, high abundance of tree hollows and hollow dependent fauna, as well as woodland bird habitat. Regeneration was observed in 2012 following cessation of grazing.	Trees: Western scrubby gum (Eucalyptus rossi), Red stringybark (E. macrohyncha), blue-leaved gum (E. globulus), Yellow gum (E. melliodora), Blue gum (E. globulus), Blue gum (E. globulus), Black sheoak (Allocasuarina illinoensis), Erectocone casuarinas, narrow leaved podocarpus (Persea linearis), Libertia abusefolia, peach heath (Lissanthe strigosa) and um heath (Melichrus urceolatus) Understorey: nodding blue-lily (Stypanora glauca) and dominant, together with rest-anthair wallaby grass (Joycia pallidus).	Historically grazed, but not currently. Area to be fenced to exclude future grazing.	1 farm dam	Woodland habitat for a range of common and listed birds, reptiles, amphibians and mammals to terrestrial, arboreal and flying mammals.
Woodland (Tableland Grassy Box - Gum Woodland)	30.8 (18.9 EPBC Listed)	Moderate quality condition. 18.9 hectares are consistent with the EPBC listed community. Tree hollows and hollow dependent fauna present, as well as woodland bird habitat. Regeneration was observed in 2012 following cessation of grazing.	Trees: Red stringybark (Eucalyptus macrohyncha) and Blakely's red gum (E. blakelyi) Shrubs: Peach heath (Lissanthe strigosa), um heath (Melichrus urceolatus), nodding blue lily (Stypanora glauca). Understorey: Speargrass (Austrostipa scabra), Austrostipa densiflora, wheatgrass (Elymus scaber), kangaroo grass (Themeda australis), snow grass (Poa sieberiana) and wallaby grass (Rytidosperma racemosum).	Historically grazed, but not currently. Area to be fenced to exclude future grazing.	-	as above
Woodland (Riparian Gum - Box - Apple Woodland)	0.7	Poor - moderate condition, with a relatively high proportion of introduced understorey species, and blackberry infestations. Supports tree hollows and some habitat for woodland birds, in addition to foraging habitat for bats.	Trees: Yellow box (Eucalyptus melliodora) Shrubs: Black wattle (Acacia decurrens), flaky-barked tea-tree (Leptospermum tinervium) Understorey: Couch (Cynodon dactylon), three-awn wire grass (Aristida ramosa), Rytidosperma laeve, Rytidosperma racemosum, corkscrew grass (Austrostipa scabra), Cyperus laevis, Juncus sarothorus, Juncus usitatus and Gonocarpus tetragynus.	Historically grazed, but not currently. Area to be fenced to exclude future grazing.	-	as above
Derived grassland with regeneration	100	Moderate quality. Area has been altered by grazing. Significant abundance of weeds. However some regenerating eucalypts and shrubs, 22 hectares of pasture in good condition to be rehabilitated to box gum woodland.	Understorey: squirrel tail fescue (Vulpia bromoides), sorrel (Acetosella vulgaris), dead nettle (Lamium amplexicaule), fireweed (Senecio madagascariensis), call's ear (Hypochaeris radicata), soft brome (Bromus molliformis), white clover (Trifolium repens), spear thistle (Cirsium vulgare), corkscrew grass (Austrostipa scabra), phalaris (Phalaris aquatica), sheep burr (Acaena novae-zeelandiae), and wallaby grasses (Rytidosperma racemosum and R. laeve).	Historically grazed, but not currently. Area to be fenced to exclude future grazing.	7 farm dams	Grassland providing habitat for a range of common and listed birds and reptiles, in addition to uncommon and listed mammals. Dams providing habitat for common amphibian, birds and reptiles. +
Derived grassland	8.5	Moderate quality, consistent with the EPBC Act definition of the listed critically endangered community box gum woodland, however has no canopy stratum as a result of past land uses.	Understorey: Speargrass (Austrostipa scabra), Austrostipa densiflora, wheatgrass (Elymus scaber), kangaroo grass (Themeda australis), snow grass (Poa sieberiana) and wallaby grass (Rytidosperma racemosum).	Historically grazed, but not currently. Area to be fenced to exclude future grazing.	-	as above

3) Flora, Fauna, Habitats and Cultural sites on your property

<p>a) Previous surveys</p>	<p>Please list these if available, include both natural and cultural surveys</p>	<p>Umwelt (Australia) Pty Limited: Ecological Assessment, 2003 - 2004 Umwelt (Australia) Pty Limited: Ecological Assessment, October - December 2011 Umwelt (Australia) Pty Limited: Ecological Assessment, December 2012 Umwelt (Australia) Pty Limited: Non-Indigenous Archaeology Assessment, May 2005 Umwelt (Australia) Pty Limited: Aboriginal Archaeological Assessment, May 2005</p>
<p>b) Plant Species</p>	<p>Do you know any of the plant species found on your property?</p>	<p>Attach a list</p>
<p>c) Native animals seen on your property</p> 	<p>Do you know the types of native animals (birds, mammals, reptiles etc.) that you have seen on the property.</p> <p>Do you know of any unusual feature or animal sightings in your district?</p>	<p>Attach a list. Write: C for commonly seen ones. U for uncommon and R for rarely seen ones If you are unsure of what they are, give an approximate indication of the type of animal. ?</p> <p>A number of the species listed in Attachment 2 are protected under either Commonwealth or NSW threatened species legislation.</p>
<p>d) Wetlands/Rivers</p>	<p>How many are fenced (indicate completely and partially) ?</p> <p>How many have islands?</p> <p>What river frontage do you have? How many kilometres?</p> <p>Has the vegetation along the banks of the river been cleared?</p>	<p>Please show dams/lakes on property map on (p.4)</p> <p>0</p> <p>0</p> <p>N/A</p> <p>N/A</p>
<p>e) Cultural Heritage</p>	<p>Briefly describe any historical or Aboriginal sites or objects and list reports.</p>	<p>N/A</p> <p>N/A</p> <p>A number of previous Aboriginal archaeological surveys and assessments undertaken within the Quarry area have identified 94 Aboriginal archaeological sites. The Biodiversity Offset Area includes an existing cultural heritage management zone, which contains upwards of 20 Aboriginal archaeological sites. The cultural heritage management zone is managed in accordance with the Lynwood Quarry Aboriginal Heritage Management Plan (Umwelt, 2011).</p>

4) Regional Context and Connection with other bushland areas

Adjacent landuses surrounding property	Lynwood Quarry to the north; quarry access road to east; Hume Highway to south; rural land use including grazing surrounding site.
Distance to the nearest areas of bushland	Approximately 8km west of Bungonia State Conservation Area
Nearest National Park/Nature Reserve/State Forest	Morton NP / Tarlo River NP / Wingello SCA / Cookbundoon NR / Wingello SF
General Topography	Gently undulating

5) Achievements and Aims of Property Management

<p>Current Landuses . (grazing, tourism, farm forestry, conservation) Is there a residence currently or planned on the property?</p>	<p>The area has historically been used for grazing. The Biodiversity Offset Area is currently not being utilised and is within Holcim's holdings for the Lynwood Quarry.</p>
<p>Objectives Of Management (i.e., what will you hope to achieve through managing your property with conservation in mind.)</p>	<p>The objective of the long term management of the site is for use as a biodiversity offset under the EPBC Act. The management of the site is aimed at protecting the biodiversity in perpetuity, and improving the quality and resilience of the critically endangered box gum woodland community present. Part of the site is also to be protected to conserve its significant Aboriginal cultural heritage values.</p>
<p>Future Uses and Planned Habitat Restoration. Activities planned for habitat restoration. (including regeneration, planting and other activities eg woodlots, shelterbelts, fencing for regeneration, constructing or modifying dams.)</p>	<p>Fencing of entire site, exclusion of grazing, revegetation using direct seeding and tubestock, weed control and pest animal management.</p>
<p>Management issues. (fire, weeds, feral animals, works required.)</p>	<p>Weed density is considered to be low to moderate within the Biodiversity Offset Area. The area will be subject to six monthly weed assessments by Holcim's Environmental Officer. Outbreaks of weeds, in particular noxious weeds will be controlled using suitable control measures such as spraying, slashing or manual removal. Feral animals to be monitored during six monthly inspections.</p>

7) Other

Are you involved in other programs eg Landcare, Farm Forestry etc?	N/A
Are you in touch with other organisations regarding covenants and financial assistance (eg your Catchment Management Authority), Stewardship Programs, Nature Conservation Trust, ?	N/A
How did you find out about the conservation agreements and wildlife refuges?	NSW Government
Why do you want to have your property considered for one of the above options?	The conditions of approval for use of this site as a biodiversity offset under the EPBC Act require in perpetuity protection of the site. By placing a conservation agreement on the land title, the land would have future protection under both EPBC and NSW legislative requirements. Holcim has also previously committed to the NSW government that the Aboriginal cultural heritage values of part of the site (part of the area is designated as an Aboriginal Cultural Heritage Management Zone) would be subject to protection and conservation.
Other concerns / Issues for consideration:	N/A

BROAD VEGETATION TYPES

1. **RAINFOREST (CLOSED FOREST)**

Dense cover of non-eucalypts. Ferns, vines, buttress trunks, orchids, elkhorns and staghorns growing on trees and rocks. Coast and coastal mountains.

2. **WET SCLEROPHYLL FOREST**

Tall eucalypts – tops usually touching. Soft-leafed shrubs with ferns. Coast and gullies

3. **DRY SCLEROPHYLL FOREST**

Tall eucalypts, tops touching or nearly so. Hard-leafed shrubs such as banksia and bottlebrushes underneath trees. Coast, Tablelands and Blue Mountains.

4. **WOODLAND**

Scattered trees small to medium height, with shrubs and grasses in between. Western slopes, tablelands and plains. Do not include areas where natural vegetation has been cleared and sown to pasture or cultivated, and where only isolated shade trees are left.

5. **MALLEE**

Small eucalypts with many stems rising from a swollen base. Crowns frequently interlaced. Shrubs not continuous. Semi-arid/sandy soils.

6. **SHRUBLANDS**

Shrubs generally less than 3 metres high. Semi-arid plains (Includes scrub)

7. **HEATHLAND**

Coastal heathlands; small shrubs; species include Banksia, Hakea, Tea Trees, Acacias, Grevilleas.

8. **GRASSLANDS**

Treeless. Areas dominated by native grass species. Tablelands and some western areas.

9. **WETLANDS**

Freshwater and saltwater swamps, lagoons and wetlands. River gums, sedges, rushes.

10. **MANGROVES**

11. **OTHER**

Semi-natural or natural areas of rock outcrops, caves etc.

12. **RECONSTRUCTED OR OTHER HABITAT**

Revegetated areas; woodlots; shelterbelts; dams

13. **MODIFIED LANDSCAPES**

Native vegetation removed eg cropping, improved pastures

6) Maps

Please provide us with a “Mud Map” of your property?

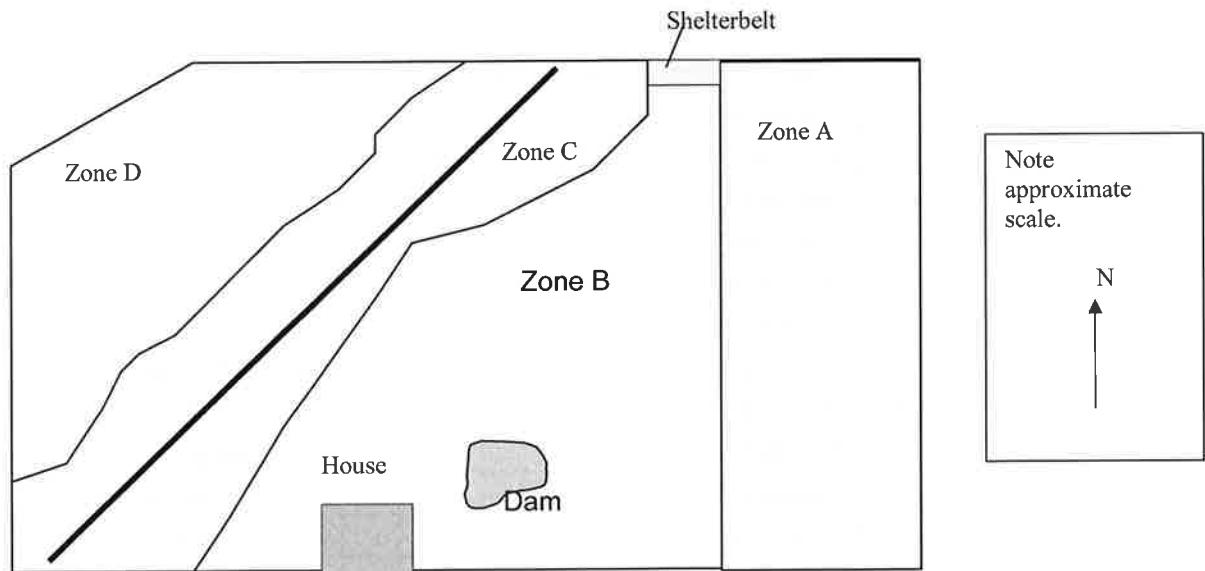
You can use a “Mud Map” or use an accurate property map to provide a map as per the example given below:

Note: the area may cover a range of habitats/landuses.

- VCA: You may indicate the area which you are interested in having a VCA over, but you can include other uses on the property
- Wildlife Refuge: The refuge may cover the whole or part of the property. As such a range of landuses/habitats may be included.

Provide a rough map to give an indication of the land uses on the property and the types of vegetation and habitats.

- Mark in location of house; buildings; dams; creeks.
- Mark approximate areas of different vegetation types and landuses, and label – see example below



Label the Zones by referring to the habitat description in the table on Page 2:

Try and simplify the zones to include all area where the landuse or vegetation is similar.

LOCATION MAP

Attach a map showing the location of your property, and the easiest way to get to your property from the nearest town or major road so that an inspection can be undertaken. – this could be a parish map which can be obtained from Department of Lands. Please list aerial photographic run(s) and number(s) for your property if you know them.

PHOTOS

Please attach photos of wildlife habitats and other significant features on the property.

Attachment 1: Flora List

Family	Scientific Name	Common Name
FILICOPSIDA (Ferns)		
Adiantaceae	<i>Cheilanthes sieberi</i> subsp. <i>sieberi</i>	poison rock fern
MAGNOLIOPSIDA (Flowering Plants) - Lillidae (Monocots)		
Anthericaceae	<i>Dichopogon fimbriatus</i>	nodding chocolate lily
	<i>Laxmannia gracilis</i>	slender wire lily
Anthericaceae	<i>Tricoryne elatior</i>	yellow autumn-lily
Cyperaceae	<i>Fimbristylis dichotoma</i>	common fridge-sedge
	<i>Lepidosperma gunnii</i>	
	<i>Lepidosperma urophorum</i>	
	<i>Schoenus apogon</i>	fluke bogrush
Hypoxidaceae	<i>Hypoxis hygrometrica</i> var. <i>hygrometrica</i>	golden weather grass
Iridaceae	* <i>Romulea rosea</i>	onion grass
Juncaceae	<i>Juncus filicaulis</i>	
Lomandraceae	<i>Lomandra filiformis</i> subsp. <i>coriacea</i>	wattle mat-rush
	<i>Lomandra longifolia</i>	spiny-headed mat-rush
	<i>Lomandra multiflora</i> subsp. <i>multiflora</i>	many-flowered mat-rush
Orchidaceae	<i>Microtis</i> sp.	onion orchid
Phormiaceae	<i>Dianella longifolia</i>	blue flax-lily
	<i>Dianella revoluta</i> var. <i>revoluta</i>	blue flax-lily
	<i>Stypandra glauca</i>	nodding blue lily
Poaceae	* <i>Aira caryophyllea</i>	silvery hairgrass
	* <i>Anthoxanthum odoratum</i>	sweet vernal grass
	<i>Aristida ramosa</i>	purple wiregrass
	<i>Austrodanthonia caespitosa</i>	ringed wallaby grass
	<i>Austrodanthonia monticola</i>	wallaby grass
	<i>Austrodanthonia racemosa</i> var. <i>racemosa</i>	wallaby grass
	<i>Austrodanthonia tenuior</i>	wallaby grass
	<i>Austrostipa densiflora</i>	speargrass
	<i>Austrostipa mollis</i>	speargrass
	<i>Austrostipa rudis</i>	speargrass
	<i>Austrostipa scabra</i> subsp. <i>falcata</i>	speargrass
	* <i>Briza maxima</i>	quaking grass
	* <i>Briza minor</i>	shivery grass
	<i>Cynodon dactylon</i>	common couch
	<i>Dichelachne micrantha</i>	shorthair plumegrass
	<i>Echinopogon caespitosus</i> var. <i>caespitosus</i>	tufted hedgehog grass
	<i>Entolasia stricta</i>	wiry panic
	<i>Eragrostis leptostachya</i>	paddock lovegrass
	* <i>Lolium perenne</i>	perennial ryegrass

Family	Scientific Name	Common Name
	<i>Microlaena stipoides</i>	weeping grass
	* <i>Nassella trichotoma</i>	serrated tussock
	<i>Panicum effusum</i>	hairy panic
	<i>Panicum simile</i>	two-colour panic
	<i>Poa sieberiana</i>	snowgrass
	<i>Themeda australis</i>	kangaroo grass
	* <i>Vulpia bromoides</i>	squirrel tail fesque
MAGNOLIOPSIDA (Flowering Plants) - Magnoliidae (Dicots)		
Apiaceae	<i>Hydrocotyle laxiflora</i>	stinking pennywort
Asteraceae	<i>Cassinia aculeata</i>	dolly bush
	<i>Cassinia arcuata</i>	sifton bush
	<i>Chrysocephalum apiculatum</i>	common everlasting
	* <i>Cirsium vulgare</i>	spear thistle
	* <i>Conyza</i> sp.	fleabane
	<i>Cotula australis</i>	common cotula
	<i>Cymbonotus lawsonianus</i>	bears-ear
	<i>Euchiton gymnocephalus</i>	creeping cudweed
	<i>Euchiton involucratus</i>	star cudweed
	* <i>Gamochaeta purpurea</i>	purple cudweed
	* <i>Hypochaeris radicata</i>	catsear
	<i>Leucochrysum albicans</i> subsp. <i>albicans</i> var. <i>tricolor</i>	hoary sunray
	<i>Ozothamnus diosmifolius</i>	white dogwood
	* <i>Senecio madagascariensis</i>	fireweed
	<i>Senecio quadridentatus</i>	cotton fireweed
	<i>Solenogyne bellioides</i>	
	<i>Solenogyne dominii</i>	
	* <i>Sonchus oleraceus</i>	common sowthistle
	* <i>Tolpis barbata</i>	yellow hawkweed
	<i>Triptilodiscus pygmaeus</i>	common sunray
<i>Vittadinia gracilis</i>		
<i>Vittadinia muelleri</i>		
<i>Vittadinia</i> sp.		
Brassicaceae	* <i>Lepidium africanum</i>	
Campanulaceae	<i>Wahlenbergia gracilis</i>	sprawling bluebell
	<i>Wahlenbergia multicaulis</i>	Tadgell's bluebell
	<i>Wahlenbergia</i> sp.	bluebell
Caryophyllaceae	* <i>Paronychia brasiliiana</i>	Chilean whitlow wort
	* <i>Petrorhagia nanteuillii</i>	
	* <i>Silene gallica</i>	

Family	Scientific Name	Common Name
	<i>*Spergularia rubra</i>	sandspurry
Casuarinaceae	<i>Allocasuarina littoralis</i>	black sheoak
Chenopodiaceae	<i>Einadia nutans</i> subsp. <i>nutans</i>	climbing saltbush
Clusiaceae	<i>Hypericum gramineum</i>	small St John's wort
Convolvulaceae	<i>Dichondra repens</i>	kidney weed
Dilleniaceae	<i>Hibbertia incana</i>	
	<i>Hibbertia obtusifolia</i>	hoary guinea flower
Ericaceae (Styphelioideae)	<i>Astroloma humifusum</i>	native cranberry
	<i>Brachyloma daphnoides</i>	daphne heath
	<i>Lissanthe strigosa</i>	peach heath
	<i>Melichrus urceolatus</i>	urn heath
Euphorbiaceae	<i>Chamaesyce drummondii</i>	caustic weed
Fabaceae (Faboideae)	<i>Bossiaea prostrata</i>	
	<i>Daviesia acicularis</i>	
	<i>Hardenbergia violacea</i>	false sarsaparilla
	<i>Indigofera australis</i>	Australian indigo
	<i>Jacksonia scoparia</i>	dogwood
	<i>*Trifolium arvense</i>	haresfoot clover
	<i>*Trifolium campestre</i>	hop clover
Fabaceae (Mimosoideae)	<i>Acacia brownii</i>	heath wattle
	<i>Acacia decurrens</i>	black wattle
	<i>Acacia mearnsii</i>	black wattle
Gentianaceae	<i>*Centaurium erythraea</i>	common centauray
	<i>*Centaurium tenuiflorum</i>	
	<i>Schenkia spicata</i>	spike centauray
Geraniaceae	<i>Geranium</i> sp.	
Goodeniaceae	<i>Goodenia hederacea</i> subsp. <i>hederacea</i>	forest goodenia
	<i>Goodenia paniculata</i>	branched goodenia
Haloragaceae	<i>Gonocarpus tetragynus</i>	
	<i>Haloragis heterophylla</i>	rough raspwort
Malvaceae	<i>*Modiola caroliniana</i>	red-flowered mallow
	<i>Calytrix tetragona</i>	common fringe-myrtle
	<i>Eucalyptus</i> prob. <i>blakelyi</i>	Blakely's red gum
	<i>Eucalyptus</i> poss. <i>blakelyi</i>	Blakely's red gum
	<i>Eucalyptus goniocalyx</i>	bundy
	<i>Eucalyptus macrorhyncha</i>	red stringybark
	<i>Eucalyptus melliodora</i>	yellow box
	<i>Eucalyptus</i> poss. <i>tereticornis</i>	Forest red gum
	<i>Kunzea parvifolia</i>	violet kunzea
<i>Leptospermum</i> sp.	slender tea-tree	

Family	Scientific Name	Common Name
Oxalidaceae	<i>Oxalis exilis</i>	
	<i>Oxalis perennans</i>	
Phyllanthaceae	<i>Poranthera microphylla</i>	
Plantaginaceae	* <i>Plantago lanceolata</i>	lamb's tongues
Polygonaceae	* <i>Acetosella vulgaris</i>	sheep sorrel
	* <i>Polygonum aviculare</i>	wireweed
Primulaceae	* <i>Anagallis arvensis</i>	scarlet/blue pimpernel
Rubiaceae	<i>Opercularia diphylla</i>	
	<i>Pomax umbellata</i>	
	* <i>Richardia stellaris</i>	
Scrophulariaceae	* <i>Verbascum virgatum</i>	twiggy mullein
	<i>Veronica plebeia</i>	trailing speedwell
Solanaceae	* <i>Solanum nigrum</i>	black-berry nightshade
Thymelaeaceae	<i>Pimelea curviflora</i> var. <i>sericea</i>	
	<i>Pimelea linifolia</i> subsp. <i>linifolia</i>	slender rice-flower

* Species not indigenous to Study Area

Attachment 2: Fauna List

C= Common
 U = Uncommon
 R = Rarely seen

Scientific Name	Common Name	Conservation Status		Survey Period		Occurrence
		TSC Act	EPBC Act	2003/04	December 2012	
AMPHIBIANS						
Myobatrachidae						
<i>Crinia parinsignifera</i>	eastern sign-bearing froglet			X	X	C
<i>Crinia signifera</i>	common eastern froglet			X	X	C
<i>Limnodynastes tasmaniensis</i>	spotted marsh frog			X	X	C
<i>Uperoleia laevis</i>	smooth toadlet			X	X	C
Hyllidae						
<i>Litoria fallax</i>	green reed frog, dwarf tree frog			X		U
<i>Litoria peronii</i>	Peron's tree frog			X	X	C
REPTILES						
Cheloniidae						
<i>Chelodina longicollis</i>	snake-necked turtle			X	X	C
Agamidae						
<i>Pogona barbata</i>	eastern bearded dragon			X		U
Scincidae						
Unidentified skink					X	-
<i>Ctenotus taeniolatus</i>	copper-tailed skink			X		U
<i>Egernia major</i>	land mullet			X		U
<i>Egernia whitii</i>	White's skink			X		U
<i>Lampropholis delicata</i>	grass skink			X		U
<i>Lampropholis guichenoti</i>	garden skink			X		U
<i>Tiliqua scincoides</i>	eastern blue-tongued lizard			X		U

Scientific Name	Common Name	Conservation Status		Survey Period		Occurrence
		TSC Act	EPBC Act	2003/04	December 2012	
Elapidae						
<i>Pseudechis porphyriacus</i>	red-bellied black snake			X	X	C
BIRDS						
Phasianidae						
<i>Coturnix pectoralis</i>	stubble quail				X	U
Anatidae						
<i>Chenonetta jubata</i>	Australian wood duck			X	X	C
<i>Anas superciliosa</i>	Pacific black duck			X	X	C
<i>Anas gracilis</i>	grey teal			X	X	C
Podicipedidae						
<i>Tachybaptus novaehollandiae</i>	Australasian grebe			X	X	C
<i>Poliiocephalus poliocephalus</i>	hoary-headed grebe				X	U
Pelecanidae						
<i>Pelecanus conspicillatus</i>	Australian pelican				X	U
Ardeidae						
<i>Egretta novaehollandiae</i>	white-faced heron			X	X	C
Threskiornithidae						
<i>Threskiornis spinicollis</i>	straw-necked ibis			X		U
Accipitridae						
<i>Accipiter fasciatus</i>	brown goshawk			X	X	C
<i>Aquila audax</i>	wedge-tailed eagle			X	X	C
Falconidae						
<i>Falco longipennis</i>	Australian hobby			X		U
<i>Falco cenchroides</i>	nankeen kestrel			X	X	C
Charadriidae						
<i>Eiseyornis melanops</i>	black-fronted dotterel				X	U
<i>Vanellus tricolor</i>	banded lapwing				X	U
Columbidae						

Scientific Name	Common Name	Conservation Status		Survey Period		Occurrence
		TSC Act	EPBC Act	2003/04	December 2012	
<i>Phaps chalcoptera</i>	common bronzewing			X		U
<i>Ocyphaps lophotes</i>	crested pigeon			X	X	C
Cacatuidae						
<i>Calyptorhynchus funereus</i>	yellow-tailed black-cockatoo			X		U
<i>Cacatua roseicapilla</i>	galah			X		U
<i>Cacatua tenuirostris</i>	long-billed corella			X		U
Psittacidae						
<i>Platyercus elegans</i>	crimson rosella			X	X	C
<i>Platyercus eximius</i>	eastern rosella			X	X	C
<i>Psephotus haematotus</i>	red-rumped parrot			X	X	C
<i>Psephotus varius</i>	mulga parrot			X		U
Cuculidae						
<i>Chrysococcyx basalis</i>	Horsfield's bronze-cuckoo			X		U
Strigidae						
<i>Ninox novaeseelandiae</i>	southern boobook			X		U
Aegothelidae						
<i>Aegothales cristatus</i>	Australian owl-nightjar			X		U
Halcyonidae						
<i>Dacelo novaeguineae</i>	laughing kookaburra			X		U
Climacteridae						
<i>Corombates leucophaeus</i>	white-throated treecreeper			X	X	C
Maluridae						
<i>Malurus cyaneus</i>	superb fairy-wren			X	X	C
Pardalotidae						
<i>Pardalotus striatus</i>	striated pardalote			X		U
<i>Chthonicola sagittata</i>	speckled warbler	V		X	X	C
<i>Gerygone albogularis</i>	white-throated gerygone			X	X	C
<i>Acanthiza pusilla</i>	brown thornbill			X		U

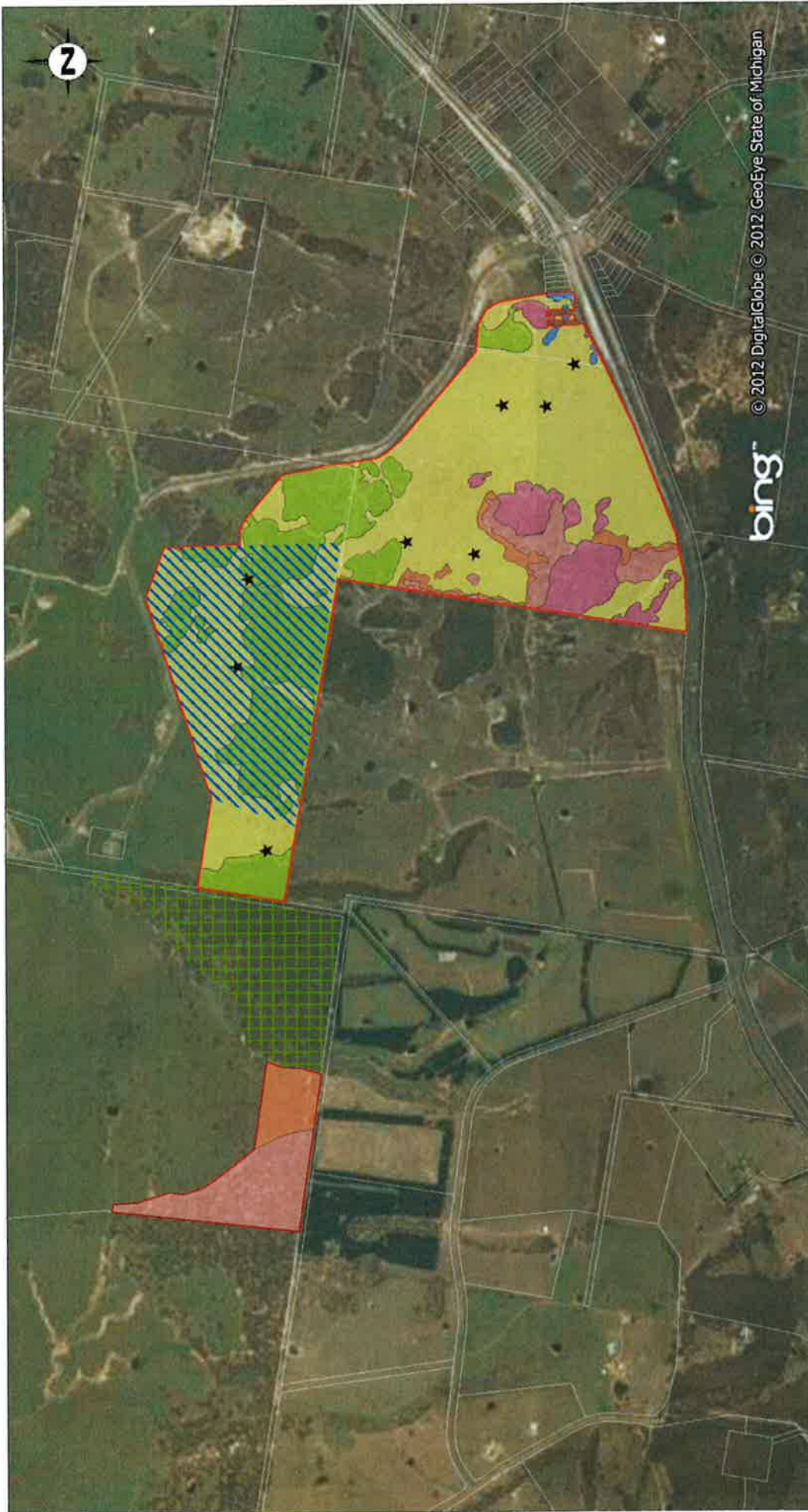
Scientific Name	Common Name	Conservation Status		Survey Period		Occurrence
		TSC Act	EPBC Act	2003/04	December 2012	
<i>Acanthiza reguloides</i>	buff-rumped thornbill			X	X	C
<i>Acanthiza chrysorrhoa</i>	yellow-rumped thornbill			X	X	C
<i>Acanthiza nana</i>	yellow thornbill			X		U
<i>Acanthiza lineata</i>	striated thornbill			X	X	C
Meliphagidae						
<i>Anthochaera carunculata</i>	red wattlebird			X	X	C
<i>Anthochaera chrysoptera</i>	little wattlebird			X		U
<i>Philemon corniculatus</i>	noisy friarbird			X	X	C
<i>Manorina melanocephala</i>	noisy miner			X	X	C
<i>Lichenostomus chrysops</i>	yellow-faced honeyeater			X		U
<i>Lichenostomus leucotis</i>	white-eared honeyeater			X		U
<i>Melithreptus brevirostris</i>	brown-headed honeyeater			X		U
<i>Melithreptus lunatus</i>	white-naped honeyeater			X		U
<i>Acanthorhynchus tenuirostris</i>	eastern spinebill			X		U
Petroicidae						
<i>Petroica boodang</i>	scarlet robin		V	X	X	C
<i>Petroica rosea</i>	rose robin			X		U
Neosittidae						
<i>Daphoenositta chrysoptera</i>	varied sittella		V	X	X	C
Campephagidae						
<i>Coracina novaehollandiae</i>	black-faced cuckoo-shrike			X	X	C
<i>Lalage sueurii</i>	white-winged triller			X	X	C
Pachycephalidae						
<i>Pachycephala pectoralis</i>	golden whistler			X		U
<i>Pachycephala rufiventris</i>	rufous whistler				X	U
<i>Colluricincla harmonica</i>	grey shrike-thrush			X	X	C
Artamidae						
<i>Artamus cyanopterus</i>	dusky woodswallow			X	X	C

Scientific Name	Common Name	Conservation Status		Survey Period		Occurrence
		TSC Act	EPBC Act	2003/04	December 2012	
<i>Cracticus torquatus</i>	grey butcherbird				X	U
<i>Cracticus nigrogularis</i>	pie'd butcherbird			X		U
<i>Gymnorhina tibicen</i>	Australian magpie			X	X	C
<i>Strepera graculina</i>	pie'd currawong			X	X	C
<i>Strepera versicolor</i>	grey currawong			X		U
Rhipiduridae						
<i>Rhipidura fuliginosa</i>	Grey fantail			X	X	C
<i>Rhipidura leucophrys</i>	willie wagtail			X	X	C
Corvidae						
<i>Corvus coronoides</i>	Australian raven			X	X	C
Monarchidae						
<i>Myiagra rubecula</i>	leaden flycatcher			X	X	C
<i>Grallina cyanoleuca</i>	magpie-lark			X	X	C
Corcoracidae						
<i>Corcorax melanorhamphos</i>	white-winged chough			X	X	C
Alaudidae						
<i>Alauda arvensis</i> *	skylark			X		U
Motacilidae						
<i>Anthus novaeseelandiae</i>	Australasian pipit			X	X	C
Passeridae						
<i>Neochmia temporalis</i>	red-browed finch			X		U
Hirundinidae						
<i>Hirundo neoxena</i>	welcome swallow			X	X	C
<i>Hirundo ariel</i>	fairy martin			X		U
Zosteropidae						
<i>Zosterops lateralis</i>	silveryeye			X		U
Sturnidae						
<i>Sturnus vulgaris</i> *	common starling			X	X	C

Scientific Name	Common Name	Conservation Status		Survey Period		Occurrence
		TSC Act	EPBC Act	2003/04	December 2012	
<i>Acridotheres tristis</i> *	common myna			X	X	C
MAMMALS						
Tachyglossidae						
<i>Tachyglossus aculeatus</i>	short-beaked echidna			X		U
Dasyuridae						
<i>Antechinus flavipes</i>	yellow-footed antechinus			X		U
<i>Antechinus stuartii</i>	brown antechinus			X		U
Vombatidae						
<i>Vombatus ursinus</i>	common wombat			X	X	C
Petauridae						
<i>Petaurus breviceps</i>	sugar glider			X	X	C
<i>Petaurus norfolcensis</i>	squirrel glider	V		X		U
Pseudocheiridae						
<i>Pseudocheirus peregrinus</i>	common ringtail possum			X	X	C
Phalangeridae						
<i>Trichosurus vulpecula</i>	common brushtail possum			X	X	C
Macropodidae						
<i>Macropus giganteus</i>	eastern grey kangaroo			X	X	C
<i>Macropus robustus</i>	common wallaroo			X	X	C
<i>Wallabia bicolor</i>	swamp wallaby			X	X	C
Emballonuridae						
<i>Saccolaimus flaviventris</i>	yellow-bellied sheath-tail-bat	V			X	U
Molossidae						
<i>Mormopterus norfolkensis</i>	eastern freetail-bat	V		X		U
<i>Nyctinomus australis</i>	white-striped freetail-bat				X	U
<i>Mormopterus</i> "Species 2"	eastern freetail-bat				X	U
<i>Mormopterus</i> "Species 4"	southern freetail-bat				X	U
Vespertilionidae						

Scientific Name	Common Name	Conservation Status		Survey Period		Occurrence
		TSC Act	EPBC Act	2003/04	December 2012	
<i>Miniopterus schreibersii oceanensis</i>	eastern bentwing-bat	V		X	X	C
<i>Nyctophilus</i> sp.	unidentified long-eared bat				X	U
<i>Chalinolobus dwyeri</i>	large-eared pied bat	V	V		X	U
<i>Chalinolobus gouldii</i>	Gould's wattled bat			X	X	C
<i>Chalinolobus morio</i>	chocolate wattled bat			X	X	C
<i>Falsistrellus tasmaniensis</i>	eastern false pipistrelle	V		X		U
<i>Scotorepens orion</i>	eastern broad-nosed bat			X		U
<i>Vespadelus darlingtoni</i>	large forest bat			X	X	C
<i>Vespadelus regulus</i>	southern forest bat			X	X	C
<i>Vespadelus vulturnus</i>	little forest bat			X	X	C
Muridae						
<i>Rattus rattus</i> *	black rat			X		U
Canidae						
<i>Canis lupus dingo</i> *	dingo			X		U
<i>Vulpes vulpes</i> *	fox			X	X	C
Felidae						
<i>Felis catus</i> *	cat			X		U
Bovidae						
<i>Bos taurus</i> *	cow			X		U
Leporidae						
<i>Oryctolagus cuniculus</i> *	rabbit			X	X	C
<i>Lepus capensis</i> *	brown hare			X		U

* Species not indigenous to Study Area



Source: Bing Aerial (2012)

Legend

- Biodiversity Offset Area
- Cultural Heritage Management Zone
- Existing Habitat Management Area (not part of offset)
- Derived Pasture
- Riparian Gum - Box - Apple Woodland
- Tableland Grassy Box - Gum Woodland
- Tableland Grassy Box - Gum Woodland (EPBC CEEC)
- Tableland Grassy Box - Gum Woodland (EPBC Derived Native Grassland)
- Tableland Low Woodland
- Water Points

Attachment 4: Site Photograph

