

DOCUMENT CONTROL	
Doc No. PR32_PGH_Bringelly EMS_BMP_R4	
Reason for Revision: Conditions of Approval for SSD_5684 S16-18 Resubmission	
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Writer: M Travers	Reviewed: T West



Bringelly Brickworks Biodiversity Management Plan



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GLOSSARY AND ABBREVIATIONS

BMP	Biodiversity Management Plan
BOA	Biodiversity Offset Area
CoA	Conditions of Approval for SSD_5684
CPW	Cumberland Plain Woodland
CSR	CSR Limited
DP&E	Department of Planning & Environment
EIS	Bringelly Brickworks Quarry Extension Environmental Impact Statement (Hyder Consulting, 5 September 2013)
EMS	Environmental Management Strategy
ENV	Existing Native Vegetation
BC Act	<i>Biodiversity Conservation Act 2016</i>
EP&A Act	<i>Environmental Planning and Assessment Act 1979</i>
FM Act	<i>Fisheries Management Act 1994</i>
NPW Act	<i>National Parks and Wildlife Act 1974</i>
NV Act	<i>Native Vegetation Act 2003</i>
OEH	NSW Office of Environment & Heritage
PGH	PGH Bricks and Pavers Pty Ltd
PIRMP	Pollution Incident Response Management Plan
POEO Act	<i>Protection of the Environment Operations Act 1997</i>
RBM	Relevant biodiversity measures
RMP	Rehabilitation Management Plan
SAP	Sensitive Area Plan
Secretary	The Secretary of the DP&E
SSD	State Significant Development
SWGC	South West Growth Centre
TSC Act	<i>Threatened Species and Conservation Act 1995</i>
WMS	Work method statements

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Revision:

Number	Date	Document Name	Reason
1	Dec 2021	PGH_Bringelly_BMP-R4_F2	Initial Submission
2	28 June 2022	PGH_Bringelly_BMP_28062022	Revision based on DPIE feedback
3	06 Dec 2022	PGH_Bringelly_BMP_28062022	Revision based on DPIE feedback

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1 INTRODUCTION

1.1 Context

This Biodiversity Management Plan (BMP or Plan) forms part of the Environmental Management Strategy (EMS) for Bringelly Brickworks (the facility). The Plan has been prepared following the approval of the Bringelly Brickworks Extension Project (the project, SSD_5684-Mod 1) in October 2016.

This BMP has been prepared to address the requirements of the Conditions of Approval (CoA), the mitigation measures listed in the *Bringelly Brickworks Quarry Extension Environmental Impact Statement* (EIS) (Hyder Consulting, 5 September 2013) and applicable legislation identified in this Plan.

The focus of this BMP is the management of biodiversity values and the implementation of the Biodiversity Offset Strategy. The rehabilitation of quarrying areas is detailed in a separate Rehabilitation Management Plan (RMP).

PGH Bricks and Pavers Pty Ltd will implement all reasonable and feasible measures in their control to prevent and/or minimise any material harm to the environment relating to the operations at the Bringelly site.

1.2 Background

The project site is located in the South West Growth Centre (SWGC), with much of the quarry expansion assessed in the EIS being contained in certified areas under the biodiversity certification in *State Environmental Planning Policy (Sydney Regional Growth Centres) 2006* (Growth Centres SEPP). Vegetation at the project site and surrounds is highly modified and fragmented as a result of historical clearing due to agriculture and quarry activities.

As part of the EIS, an ecological assessment titled *Boral Bringelly Brickworks Ecological Assessment* (Hyder Consulting, September 2013) was prepared to address the assessment requirements for the project. The assessment requirements included:

- Measures taken to avoid, reduce or mitigate impacts on biodiversity;
- Accurate estimates of proposed vegetation clearing;
- A detailed assessment of potential impacts of the development on:
 - Terrestrial or aquatic threatened species or populations and their habitats, endangered ecological communities and groundwater dependent ecosystems;
 - Regionally significant remnant vegetation or vegetation corridors; and
 - Impacts on Existing Native Vegetation (ENV) identified under the Biodiversity Certification Order for the Sydney Region Growth Centres.
- A comprehensive offset strategy to ensure the development maintains or improves the terrestrial and aquatic biodiversity values of the region in the medium to long-term.

The ecological assessment included database searches, a literature review and evaluation of vegetation mapping, which informed the methodology for the field surveys. The field surveys were conducted in January 2013, and included random meanders, targeted searches, plot-based surveys, vegetation condition assessments, terrestrial fauna habitat assessment

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including hollow-bearing tree surveys and an assessment of aquatic habitat values. The ecological assessment findings are summarised in *Section 4*.

1.3 Environmental Management Document System

The environmental management document system is described in Section 2 of the EMS and this BMP forms part of that system.

The compliance management, review and improvement processes for this BMP are described in Sections 12 and 13.

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1.4 BMP Approval

The BMP is to be prepared in consultation with NSW Office of Environment & Heritage (OEH) and Camden Council.

This BMP must be endorsed by the Plant Manager and National Workplace Health, Safety and Environmental Manager prior to submission to the Secretary of the Department of Planning, Infrastructure & Environment (DPIE).

The BMP will be submitted to the Secretary of the DPIE for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise. No quarrying will commence until approval of this plan is received from DPIE.

1.5 Consultation

As outlined in the CoA (refer *EMS Appendix A*), this Plan has been prepared in consultation with the OEH and Camden Council. A version of this Plan was provided to the OEH and Camden Council on 23rd August 2016 for comment with responses summarised below.

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Table 1. Comments on Draft BMP

Authority	Date Submitted	Response	Comments/ Where addressed
OEH (Conservation Planning)	23/8/2016	<ul style="list-style-type: none"> p.2, Glossary and Abbreviations – Typo, replace ‘Plant’ in BMP abbreviation 	Document amended
		<ul style="list-style-type: none"> meaning with ‘Plan’ p.16 & 17, 4.2.1 Terrestrial Fauna Habitat, Woodland – Reference is made to a ‘nest box procedure would be prepared and implemented in woodland habitat ...’. It is unclear if this is referring to an action that will be implemented. If so, clarification is required on where and when it will be developed and how will it be incorporated within the BMP? 	Section 4.2.1.1 Nest Box Program has been appended to this plan.
		<ul style="list-style-type: none"> p.24, Measure B1 – Based on the description of the measure shouldn’t the ‘when to implement’ response be ‘prior to commencement of construction’? 	Table 10
		<ul style="list-style-type: none"> p.24, Measure B2 – How are ‘rain events’ defined? 	
		<ul style="list-style-type: none"> p.24, Measure B4 – The location of stockpiles and appropriateness of erosion and sediment controls should be in accordance with the required Surface Water Management Plan (although it is unclear how this relates to the Sensitive Area Plans). Alternatively, more objective measures could be included eg those in the relevant volume of the Managing Urban Stormwater best practice guidelines (Blue book). 	
		<ul style="list-style-type: none"> p.25, Measure B10 – Should be rewritten as a measure (i.e. not a recommendation). 	
<ul style="list-style-type: none"> p.25, Measure B11 – Should be rewritten as a measure (i.e. not optional – replace ‘should’ and ‘may’ with ‘will’) 			

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		<ul style="list-style-type: none"> • p.26, Measure B13 – Further to comment above for p.16 & 17, has a ‘nest boxprogram’ been developed? Is this the same as the ‘Nest Box Procedure’? Is the area with a ‘naturally occurring low abundance of hollows’ the proposed offset area? • p.26, Measure B14 – Is the area of ‘suitable nearby bushland’ the proposed offset area? Replace ‘should’ with ‘will’. • p.26, Measure B15 – Replace ‘should’ with ‘will’. • p.26, Measure B16 – Is the three (not two) stage process based on best practice guidelines? The logic and practicality of removing non hollow-bearing trees 48 hours before hollow-bearing trees is unclear. • p.27, Measure B20 – Replace ‘... BMP and Rehabilitation strategy’ with ‘Rehabilitation Management Plan’. 	
		<ul style="list-style-type: none"> • p.29 (note: pages not numbered from page 28), 8. Biodiversity Offset Strategy. <ul style="list-style-type: none"> ○ Recommend the 4th paragraph be amended as follows (insert red text, delete strikethrough text): The BOA will conserve CPW in a certified area to offset the clearing of ENV in a non-certified area in accordance with RMB 8 of the Biodiversity Conservation Order. and would maintain the minimum area of ENV to be retained and protected in the Growth Centre, as specified in RBM 6 of the Biodiversity Certification Order. ○ Recommend the 2nd last paragraph be amended as follows: BCB proposes to manage and enhance the biodiversity values of minimise impacts to the BOA through with the implementation of the environmental management measures cited in Table 7, 	Section 7 amended

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		<p>and manage and enhance the existing vegetation of the BOA in accordance with the guidelines for managing remnant CPW described in Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland (DEC, 2005) (refer Appendix C).</p>	
		<ul style="list-style-type: none"> pp.31-33, 8.1 Implementation measures, 8.2 Performance Criteria and 8.4 Completion Criteria – Suggest combining as one table using existing subheadings. 	Table amended
		<ul style="list-style-type: none"> p.31, 8.1.5 Retention or addition of habitat features, Medium and Long-term – Recommend replacing ‘... <i>clearing for mine development or approved thinning, ...</i>’ with ‘... <i>clearing for quarry expansion, ...</i>’. 	Section 7.1.5 amended
DPIE Water	23/8/2016	No comment on Biodiversity Management Plan	-
DRE- ESU	23/8/2016	No comment on the Biodiversity Management Plan	-
Bringelly Public School	23/8/2016	No comment received	-
Liverpool Council	23/8/2016	No comment received	-

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Authority	Date Submitted	Response	Comments/ Where addressed
Camden Council	23/8/2016	<ul style="list-style-type: none"> The Biodiversity Management Plan (BMP) must detail the volume of vegetative, soil and cultural heritage resources to be salvaged within the approved disturbance area for re-use in biodiversity or rehabilitation areas. 	<p>It is not practicable to details volumes of vegetation and soil until land clearing activities are undertaken.</p> <p>Vegetation and soil will be salvaged when works occurs in accordance with the approved MOP.</p> <p>Cultural heritage management is addressed in the approved heritage management plan.</p>
		<ul style="list-style-type: none"> The BMP must detail conservation measures over the next 3 years, which include: <ul style="list-style-type: none"> The location and type of fencing to be removed and installed; The location and type of access control; A survey of weeds, and the staged program and methodology for their removal; and The location of current areas of erosion and the measures to implement erosion control. 	<p>Section 7.1.1</p> <p>Section 7.1.4 Internal access only. All site visitors report to front gate.</p> <p>Section 7.1.2 and Weed Management Plan</p> <p>Erosion control measures described in Water Management Plan</p>

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Authority	Date Submitted	Response	Comments/ Where addressed
		<ul style="list-style-type: none"> The BMP must detail long term bushfire management of the site. 	<p>Section 7.1.3</p> <p>PGH bushfire policy does not permit staff to engage in firefighting activities or bushfire management.</p> <p>Hazard reduction based on RFS advice and not undertaken by PGH.</p> <p>PGH maintains fencing around the site to discourage trespassing and the risk of deliberately lit fires.</p> <p>Fire fighting undertaken by RFS</p>
		<ul style="list-style-type: none"> Pre-clearance fauna surveys must be undertaken. If fauna (particularly roosting and breeding fauna) are discovered, the proposed measures for their relocation must be identified within the BMP. 	<p>Table 10</p>
		<ul style="list-style-type: none"> Additional risks to the implementation of the BMP such as drought, heavy rainfall events causing erosion, and bushfires must be identified and assessed. Contingency plans and resources (including financial) must be provided to deal with identified risks. 	<p>Contingency plans are described in Section 9.</p> <p>Drought and bushfire are part of the natural cycle and remediation would be undertaken, as required, post event.</p> <p>The Resources Regulator holds a Security Bond for the rehabilitation of the site.</p>

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Authority	Date Submitted	Response	Comments/ Where addressed
		<ul style="list-style-type: none"> The inspection, monitoring, reviewing and implementation of the BMP must be undertaken by a qualified ecologist / bush regenerator(s) 	Inspection, monitoring, review and implementation of the BMP will be undertaken in consultation with a qualified ecologist, where appropriate, but not exclusively.
		<ul style="list-style-type: none"> The determination of the conservation bond for the Biodiversity Offset Site (BOS) must be undertaken by a qualified ecologist / bush regenerator. 	Determination of conservation bond will be determined by BAM accredited ecologist.
		<p><u>Additional Information Required</u></p> <p>Council requires revised management plans for further review that address each of the concerns listed above. A response to this letter with an explanation as to how each item is addressed must also be provided. Once Council staff has reviewed the revised management plans, further comments will be provided.</p>	The approved plan will be provided to Council for comment. Further communication indicated plan for records only after requested changes made.
RMS	23/8/2016	No comment received	-
EPA	23/8/2016	No comment received	-

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2 PURPOSE AND OBJECTIVES

2.1 Purpose

The purpose of this Plan is to describe how potential impacts on biodiversity values within the project site will be minimised, managed and the biodiversity offset strategy implemented.

2.2 Objectives

The key objective of the BMP is to ensure that impacts to biodiversity values are minimised, and unavoidable impacts offset in accordance with the biodiversity offset strategy. To achieve this, the following objectives have been set:

- Ensure measures are implemented to address the relevant CoA outlined in *Table 2*, and the management measures detailed in *Table 10*;
- Comply with all relevant legislation and other requirements as described in *Section 3*;
- Maximise the salvage of habitat resources within the approved disturbance area;
- Minimise potential impacts to fauna on-site;
- Control weeds and feral pests;
- Control erosion and sedimentation;
- Control access to areas of biodiversity value;
- Prevent bushfires associated with the facility;
- Ensure on-site biodiversity offset area is enhanced to establish an area of native woodland comprising species associated with Cumberland Plain Woodland; and
- Implement a mechanism to provide security in perpetuity to the on-site biodiversity offset area.

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3 ENVIRONMENTAL REQUIREMENTS

3.1 Relevant Legislation and Guidelines

3.1.1 Legislation

Legislation relevant to flora and fauna management includes:

- Environmental Planning and Assessment Act 1979 (EP&A Act);
- National Parks and Wildlife Act 1974 (NPW Act);
- Fisheries Management Act 1994 (FM Act);
- Biodiversity Certification Order for the Sydney Region Growth Centres;
- Biodiversity Conservation Act 2016 (Commonwealth) (BC Act).

3.1.2 Guidelines and References

Guidelines and reference documents relevant to this Plan include:

- Eco Logical Australia Pty Ltd 2013. *Local Biodiversity Strategy Camden Local Government Area*;
- Eco Logical Australia Pty Ltd. 2007 *Growth Centres Conservation Plan Exhibition Draft*;
- OEH 2019. *Translocation Operational Policy*;

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3.2 Minister's Conditions of Approval

The CoA relevant to this BMP are listed in *Table 1*. A cross reference is also included to indicate where the condition is addressed in this BMP or other environmental management documents.

Table 2. Table 1 Conditions of Approval Relevant to the BMP

CoA No.	Requirement	Reference						
Schedule 2 Condition 1,	In addition to meeting the specific performance criteria established under this consent, the Applicant must implement all reasonable and feasible measures to prevent and/or minimise any material harm to the environment that may result from the construction, operation, or rehabilitation of the development.							
Schedule 3, Condition 19 Biodiversity Offset Strategy	<p>The Applicant must implement the Biodiversity Offset Strategy described in the EIS, as summarised below in Table 7 and shown conceptually in Appendix 4, to the satisfaction of the Secretary:</p> <p>Table 7: Summary of the Biodiversity Offsets</p> <table border="1"> <thead> <tr> <th>Area</th> <th>Offset Criteria</th> <th>Size (Ha)</th> </tr> </thead> <tbody> <tr> <td>On-site offset</td> <td>Existing vegetation to be enhanced to establish an area of native woodland comprising species associated with Cumberland Plain Woodland.</td> <td>1.93</td> </tr> </tbody> </table>	Area	Offset Criteria	Size (Ha)	On-site offset	Existing vegetation to be enhanced to establish an area of native woodland comprising species associated with Cumberland Plain Woodland.	1.93	Section 7
Area	Offset Criteria	Size (Ha)						
On-site offset	Existing vegetation to be enhanced to establish an area of native woodland comprising species associated with Cumberland Plain Woodland.	1.93						
Schedule 3, Condition 20 Security of Offsets	<p>Within 2 years of notifying the Department of Commencement of the development (see condition 8 of Schedule2), unless otherwise agreed with the Secretary, the Applicant must make suitable arrangements to provide appropriate long-term security for the offset area, to the satisfaction of the Secretary.</p> <p><i>Note: Mechanisms to provide appropriate long-term security to the land within the Biodiversity Offset Strategy include a BioBanking Agreement, Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome. Any mechanism must remain on force in perpetuity.</i></p>	Section 11						
Schedule 3, Condition 21 Biodiversity Management Plan	<p>The Applicant must prepare and implement a Biodiversity Management Plan for the project to the satisfaction of the Secretary. This plan must:</p> <ol style="list-style-type: none"> be prepared in consultation with OEH and Camden Council; be submitted to the Secretary for approval prior to undertaking quarrying operations in the extension area, unless the Secretary agrees otherwise; Describe how the implementation of the biodiversity offset strategy would be integrated with the overall rehabilitation of the site; describe the short, medium, and long-term measures that would be implemented to: <ul style="list-style-type: none"> manage the remnant vegetation and habitat on the site and in the offset area and; 	<p>This Plan</p> <p>Section 1.5</p> <p>Section 1.4</p> <p>Section 1.1; Section 7</p> <p>Section 7.1</p>						

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CoA No.	Requirement	Reference
	<ul style="list-style-type: none"> implement the biodiversity offset strategy, including detailed performance and completion criteria; 	
	e) Include performance and completion criteria for evaluation the performance of the biodiversity offset strategy, and triggering remedial action (if necessary);	Section 8; Section 9
	f) Include a description of the measures that would be implemented over the next 3 years, including the procedures to be implemented for: <ul style="list-style-type: none"> maximising the salvage of resources within the approved disturbance area- including vegetative, soil and cultural heritage resources- for beneficial reuse in the enhancement of the biodiversity areas or rehabilitation area; minimising the impacts on fauna on-site, including pre-clearance surveys and minimising the potential exposure to tailings; controlling weeds and feral pests; controlling erosion; controlling access; and bushfire management. 	Section 6; Section 7
	g) identify the potential risks to the successful implementation of the biodiversity offset strategy, and include a description of the contingency measures that would be implemented to mitigate against these risks; and	Section 9
	h) include details of who would be responsible for monitoring, reviewing, and implementing the plan.	Section 12; Section 13
	The Applicant must implement the approved management Plan as approved from time to time by the Secretary.	
Schedule 3, Condition 22 Conservation Bond	Within 6 months of the approval of the Biodiversity Management Plan, the Applicant must lodge a conservation bond with the Department to ensure that the biodiversity offset strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Management Plan. The sum of the bond must be determined by: <ol style="list-style-type: none"> calculating the full cost of implementing the biodiversity offset strategy (other than land acquisition costs); and employing a suitably qualified quantity surveyor to verify the calculated costs, to the satisfaction of the Secretary. 	Section 10
Schedule 3, Condition 30 Bushfire Management	The Applicant must: <ol style="list-style-type: none"> ensure that the development is suitably equipped to respond to any fires on site; and assist the Rural Fire Service, emergency services and National Parks and Wildlife Service as much as practicable if there is a fire in the surrounding area. 	Section 7

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Schedule 5, Condition 2 Adaptive Management	<p>The Applicant must assess and manage development-related risks to ensure that there are no exceedances of the criteria and/or performance measures in schedule 3. Any exceedance of these criteria and/or performance measures constitutes a breach of this consent and may be subject to penalty or offence provisions under the EP&A Act or EP&A Regulation.</p> <p>Where any exceedance of these criteria and/or performance measures has occurred, the Applicant must, at the earliest opportunity:</p> <p>(a) take all reasonable and feasible measures to ensure that the exceedance ceases and does not recur;</p> <p>(b) consider all reasonable and feasible options for remediation (where relevant) and submit a report to the Department describing those options and any preferred remediation measures or other course of action; and</p> <p>c) implement remediation measures as directed by the Secretary; to the satisfaction of the Secretary.)</p>	Section 12
Schedule 5, Condition 3 Management Plan Requirements	<p>The Applicant must ensure that the Management Plans required under this consent are prepared in accordance with any relevant guidelines, and include:</p> <p>(a) detailed baseline data;</p> <p>(b) a description of:</p> <ul style="list-style-type: none"> - the relevant statutory requirements (including any relevant approval, licence or lease conditions); - any relevant limits or performance measures/criteria; and - the specific performance indicators that are proposed to be used to judge the performance of, or guide the implementation of, the development or any management measures; <p>c) a description of the measures that would be implemented to comply with the relevant statutory requirements, limits, or performance measures/criteria;</p> <p>d) a program to monitor and report on the:</p> <ul style="list-style-type: none"> - impacts and environmental performance of the development; and - effectiveness of any management measures (see (c) above); <p>e) a contingency plan to manage any unpredicted impacts and their consequences;</p> <p>f) a program to investigate and implement ways to improve the environmental performance of the development over time;</p> <p>g) a protocol for managing and reporting any:</p> <ul style="list-style-type: none"> - incidents; - complaints; - non-compliances with statutory requirements; and - exceedances of the impact assessment criteria and/or performance criteria; and <p>h) a protocol for periodic review of the plan.</p> <p>Note: The Secretary may waive some of these requirements if they are unnecessary or unwarranted for particular management plans.</p>	<p>a) Section 4</p> <p>b) Section 3, 6, 8</p> <p>c) Section 6,7,8 & 9</p> <p>d) Section 12 & 13</p> <p>e) Section 9, 12</p> <p>f) Section 12 &13</p> <p>g) Section 12 & 13</p> <p>h) Section 13</p>
Schedule 5, Condition 4 Annual Review	<p>By the end of September each year, the Applicant must submit a report to the Department reviewing the environmental performance of the development to the satisfaction of the Secretary. This review must:</p> <p>a) describe the development (including rehabilitation) that was carried out in the previous financial year, and the development that is proposed to be carried out over the current financial year;</p> <p>b) include a comprehensive review of the monitoring results and complaints records of the development over the previous financial year, which includes a comparison of these results against:</p>	Section 12

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	<ul style="list-style-type: none"> - the relevant statutory requirements, limits or performance measures/criteria; - the monitoring results of previous years; and - the relevant predictions in the documents in condition 2(a) of Schedule 2; c) identify any non-compliance over the last year, and describe what actions were (or are being) taken to ensure compliance; d) identify any trends in the monitoring data over the life of the development; e) identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies; and f) describe what measures will be implemented over the current financial year to improve the environmental performance of the development. 	
Schedule 5 Condition 5 Revision of Strategies, Plans and Programs	<p>Within 3 months of the submission of an:</p> <ul style="list-style-type: none"> (a) Annual Review under condition 4 above; (b) incident report under condition 7 below; (c) audit report under condition 9 below; and (d) any modifications to this consent, <p>the Applicant must review the strategies, plans and programs required under this consent, to the satisfaction of the Secretary. Where this review leads to revisions in any such document, then within 4 weeks of the review the revised document must be submitted for the approval of the Secretary.</p> <p>Note: The purpose of this condition is to ensure that strategies, plans and programs are regularly updated to incorporate any measures recommended to improve environmental performance of the development.</p>	Section 13
Schedule 5, Condition 7 Incident Reporting	The Applicant must immediately notify the Secretary and any other relevant agencies of any incident. Within 7 days of the date of the incident, the Applicant must provide the Secretary and any relevant agencies with a detailed report on the incident, and such further reports as may be requested.	Section 12
Schedule 5 Condition 8 Regular Reporting	The Applicant must provide regular reporting on the environmental performance of the development on its website, in accordance with the reporting arrangements in any plans or programs approved under the conditions of this consent.	Section 12
Schedule 5, Condition 9 Independent Environmental Audit	<p>Within a year of commencing development under this consent, and every 3 years thereafter, unless the Secretary directs otherwise, the Applicant must commission and pay the full cost of an Independent Environmental Audit of the development. This audit must:</p> <ul style="list-style-type: none"> (a) be conducted by suitably qualified, experienced and independent team of experts whose appointment has been endorsed by the Secretary; (b) include consultation with the relevant agencies; (c) assess the environmental performance of the development and whether it is complying with the relevant requirements in this consent and any relevant EPL and/or Water Licence (including any assessment, plan or program required under these approvals); (d) review the adequacy of any approved strategy, plan or program required under these approvals; (e) recommend measures or actions to improve the environmental performance of the development, and/or any assessment, plan or program required under these approvals; 	Section 12

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	and be conducted and reported to the satisfaction of the Secretary. <i>Note: This audit team must be led by a suitably qualified auditor and include experts in any fields specified by the Secretary.</i>	
Schedule 5, Condition 10 Independent Environmental Audit	Within 12 weeks of commencing this audit, unless the Secretary agrees otherwise, the Applicant must submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report. If the Applicant intends to defer the implementation of a recommendation, reasons must be documented. Within 7 days of commencing the audit, the Applicant must notify the Department in writing of the commencement of the audit.	Section 12
Schedule 5, Condition 11 Access to Information	Within 6 months of commencing development under this consent, the Applicant must: (a) make copies of the following publicly available on its website: the documents in condition 2(a) of Schedule 2; - current statutory approvals for the development; approved strategies, plans and programs required under the conditions of this consent; - a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs; - a complaints register, which is to be updated monthly; - minutes of CCC meetings; - the annual reviews of the development (for the last 5 years); - any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit; - any other matter required by the Secretary; and (b) keep this information up-to-date, to the satisfaction of the Secretary.	Section 12

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4 EXISTING ENVIRONMENT

The following sections summarise existing biodiversity values within and adjacent to the facility including species, communities, and habitats.

4.1 Flora

4.1.1 Vegetation communities

During the ecological assessment of the EIS, seven vegetation communities were identified within the ecological study area as illustrated in *Figure 1* and summarised in *Table 3*.

Table 3. Summary of Vegetation Communities within the EIS study area

Vegetation Community		Extent in Study Area
Native Vegetation	Moderate Condition Cumberland Plain Woodland	15.12
	Poor Condition Cumberland Plain Woodland	6.58
	Derived Grassland Cumberland Plain Woodland	0.97
	Poor Condition Riparian Woodland	8.22
Exotic Vegetation	Exotic Grassland	14.80
	Mixed Exotic/Planted Native	2.58
	Olive Dominant Woodland	9.02
Total		57.29

A description of the vegetation communities as described in the EIS is reproduced in the following sections.

4.1.1.1 Moderate Condition Cumberland Plain Woodland

Areas of Moderate Condition Cumberland Plain Woodland (CPW) had a canopy of regrowth *Eucalyptus moluccana* (Grey Box) and *E. tereticornis* (Forest Red Gum) to approximately 10 to 14 metres in height with an average diameter at breast height of 20 to 30 centimetres. The understorey in these areas consisted of patchy cover of *Olea europaea* subsp. *cuspidata* (African Olive) with other native shrubs such as *Acacia implexa* (Hickory Wattle), *Bursaria spinosa* (Blackthorn) and *Melaleuca styphelioides* (Prickly Paperbark) occasionally present. The ground layer varied from sparse native grasses and herbs with high leaf litter to dense native and exotic grasses, including *Themeda australis* (Kangaroo Grass), *Aristida ramosa* (Wiregrass), *Austrostipa scabra* (Speargrass), *Microlaena stipoides* (Weeping Grass) and *Eragrostis curvula* (African Lovegrass). Good cryptogam cover was observed in some of these areas. Understorey vegetation in the northeast section of Cell D was particularly weedy, containing exotic species such as *Eragrostis curvula*, *Bryophyllum delagoense* (Mother-of-millions) and *Chloris gayana* (Rhodes Grass). This area was not dominated by *Olea europaea* subsp. *cuspidata* in the understorey and therefore was not considered to constitute Poor Condition CPW.

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4.1.1.2 Poor Condition Cumberland Plain Woodland

Poor Condition CPW consisted of areas of remnant and regrowth *E. moluccana* and *E. tereticornis* over a dense midlayer of *Olea europaea* subsp. *cuspidata*. In most parts of this community, the *O. europaea* subsp. *cuspidata* is greater than 50 per cent cover and ground layer vegetation is absent, supports *Olea* seedlings and leaf litter or has been reduced to very sparse cover of native and exotic grasses. These areas only very loosely meet the criteria for CPW and are considered unlikely to be viable in the long term.

4.1.1.3 Derived Grassland Cumberland Plain Woodland

South of the existing quarry, the stands of tree-dominated vegetation were interspersed with patches of grassland. The grasslands were dominated by native species such as *Themeda australis*, *Microlaena stipoides*, *Aristida ramosa* and *Chloris truncata* (Windmill Grass), with the cosmopolitan native pasture grass *Cynodon dactylon* (Couch) and exotic species such as *Eragrostis curvula*, *Chloris gayana* (Rhodes Grass) and *Briza subaristata* also present and dominant in patches. Areas of derived grassland are included in the definition of CPW.

4.1.1.4 Poor Condition Riparian Woodland

Poor Condition Riparian Woodland occurred along Thompsons Creek to the east of the existing quarry. These areas supported scattered large trees of *Eucalyptus tereticornis* with an understorey of scattered *Olea europaea* subsp. *cuspidata* and *Bursaria spinosa* in the south and a denser midlayer of *Melaleuca styphelioides* and *Ligustrum sinense* (Small-leaved Privet) in the north. All areas of Poor Condition Riparian Woodland were in certified areas. This vegetation is in poor condition and loosely meets the criteria for the EEC River-flat Eucalypt Forest.

4.1.1.5 Olive Dominant Woodland

Areas of Olive dominant woodland support a canopy of *Olea europaea* subsp. *cuspidata* with only occasional eucalypt occurrence. The ground layer is generally absent or supports *Olea* seedlings and leaf litter, although there are small patches of native and exotic grasses where there are canopy gaps. These areas are not considered to meet the criteria for CPW.

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4.1.2 Priority Weeds

The legislative framework for managing noxious weeds in NSW has changed with the introduction of the *Biosecurity Act 2015* which came into effect on 1 July 2017 replacing the *Noxious Weeds Act 1993*. Under The Act the term “noxious weed” is no longer used and previous noxious weed classes have been abolished. These have been replaced with new term of “priority weeds”. Priority weeds in the Sydney region are specified in the *Greater Sydney Regional Strategic Weed Management Plan 2017 – 2022*. Priority weeds that are listed as “State Priority Weeds” and “Regional Priority Weeds” have specific measures for the control of individual weed species no matter of the land ownership or location meaning treatment is to be undertaken on both government and private lands. The relevant objectives of these State and Regional weeds found on site in the plan are summarised below.

- **State Priority Weed Objective – ASSET PROTECTION (Whole of State):** These weeds are widely distributed in some areas of the State. As Weeds of National Significance, their spread must be minimised to protect priority assets.
- **Regional Priority Weeds Objective – CONTAINMENT:** These weeds are widely distributed in the region. While broad scale elimination is not practicable, minimisation of the biosecurity risk posed by these weeds is reasonably practicable.
- **Other Weeds of Regional Concern-** species known to occur in the Greater Sydney region as well as species not currently known to occur but at risk of moving into the region in the future. The species may warrant resources for control or management programs, or occur in neighbouring regions and are a priority to keep out of the region.

Table 4. State Priority Weeds on Site

Scientific Name	Common Name	Biosecurity Act 2015 requirements & Strategic Response in the region
<i>Senecio madagascariensis</i>	Fireweed	<p>Mandatory Measure (Division 8, Clause 33, Biosecurity Regulation 2017):</p> <p>A person must not import into the State or sell.</p> <p>Regional Strategic Response:</p> <p>Identify priority assets for targeted management.</p>

Table 5. Regional Priority Weeds on Site

Scientific Name	Common Name	Land Description	Requirements to Demonstrate Compliance with GBD
<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive	Core Infestation	<p>Land managers prevent spread from their land where feasible.</p> <p>Land managers reduce the impact on priority assets.</p>

Table 6. Other Weeds of Regional Concern

Scientific Name	Common Name	Asset/ Value at Risk
<i>Ligustrum sinense</i>	Small-leaved Privet	Environment, Human Health

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Control of weeds on Site is undertaken in accordance with the Resource Regulator approved Weed Management Plan (2019) ^{Ref. 8}. In summary, the site has been divided into Management Units and the level of infestation of each unit has been assigned in order to prioritise control measures. The primary methods of control to be employed on the site include:

- Unmanned Aerial Vehicle (UAV) –Used to apply herbicides efficiently particularly over large and dense infestations, in areas that are not safe or practical to access on the ground (e.g. steep areas, aquatic area, dense infestations).
- High Volume Spraying – is generally a vehicle mounted spray unit with a large tank (400-600L) with hose reels. This technique is generally used to treat large weed populations which can be foliar sprayed. It is used in situations where the UAV can't access or is not economical to use. It is also suited to more scattered weed populations.
- Basal Bark Spraying – This technique is generally used on particularly woody stemmed weeds to chemically ring bark them. This method is best suited to specific species and application on isolated plants or plants that cannot be foliar sprayed with herbicide.
- Direct Application (Cut and Paint, Stem Injection) – This involves cutting woody weeds down at the base or drilling into or scraping the stem at the base and then applying high concentration herbicide. This technique may be used where the risk is too high or when foliar application may not be effective. This technique may be used in similar circumstances to basal bark spraying.
- Mechanical – involves the use of machinery such as slashers, scrub mulchers, dozers and the like, to remove the above ground biomass of the plant, and in some cases the roots as well. This is best used where there is a large monoculture of one species, such as African olive, to remove large sections of biomass as well as to create access through these areas for other weed control works.

In areas treated by mechanical means, follow up chemical control is generally required to treat regrowth. There is also a requirement to introduce other desirable vegetation to protect the soil and reduce the potential for erosion as well as invasion with other weed species.

All spraying of weeds will be undertaken by a licenced contractor and a report will be provided to PGH by the contractor summarising the works undertaken. Bi-Annual inspections will be undertaken to monitor the progress of weed control measures and the results of monitoring and management activities will be included in the annual review.

4.1.3 Threatened Flora Species

Native flora habitat in the ecological study area is poor, with stands of *Olea europaea* subsp. *cuspidata* shading out habitat across most of the ecological study area.

Based on database and literature review completed during the EIS, 20 plant species listed under the EPBC and/or TSC Acts are either recorded or have the potential to occur within 10 kilometres of the ecological study area (refer *Table 7*). No threatened flora species were recorded/identified during the detailed field surveys of the EIS. Most of the threatened plant species identified in the database searches during the EIS were considered to have a low likelihood of occurring in the ecological study area, based on potential habitat and the proximity and number of records of these species in the locality.

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Table 7. Threatened flora occurring within 10 kilometres of the ecological study area

Scientific name	Common name	EPBC Act status	TSC Act status
<i>Acacia pubescens</i>	Downy Wattle	Vulnerable	Vulnerable
<i>Allocasuarina glareicola</i>	-	Endangered	Endangered
<i>Cryptostylis hunteriana</i>	Leafless Tongue-orchid	Vulnerable	Vulnerable
<i>Cynanchum elegans</i>	White-flowered Wax Plant	Endangered	Endangered
<i>Dillwynia tenuifolia</i>	-	Vulnerable	Vulnerable
<i>Eucalyptus benthamii</i>	Camden White Gum	Vulnerable	Vulnerable
<i>Grevillea juniperina</i> subsp. <i>juniperina</i>	Juniper-leaved Grevillea	-	Vulnerable
<i>Grevillea parviflora</i> subsp. <i>parviflora</i>	Small-flower Grevillea	Vulnerable	Vulnerable
<i>Lepidium hyssopifolium</i>	Basalt Pepper-cress	Endangered	Endangered
<i>Marsdenia viridiflora</i> subsp. <i>viridiflora</i>	Marsdenia viridiflora R. Br. subsp. viridiflora population in the Bankstown, Blacktown, Camden, Campbelltown, Fairfield, Holroyd, Liverpool and Penrith LGAs	-	Endangered population
<i>Pelargonium</i> sp. <i>Striatellum</i> (G.W. Carr 10345)	Omeo Stork's-bill	Endangered	Endangered
<i>Persoonia nutans</i>	Nodding Geebung	Endangered	Endangered
<i>Pimelea curviflora</i> var. <i>curviflora</i>	-	Vulnerable	Vulnerable
<i>Pimelea spicata</i>	Spiked Rice-flower	Endangered	Endangered
<i>Pomaderris brunnea</i>	Rufous Pomaderris	Vulnerable	Vulnerable
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	Endangered	Endangered
<i>Pultenaea parviflora</i>	Sydney Bush-pea	Vulnerable	Endangered
<i>Streblus pendulinus</i>	Siah's Backbone	Endangered	-
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	Vulnerable	Endangered
<i>Thelymitra</i> sp. Kangaloon	Kangaloon Sun-orchid	Critically Endangered	Critically Endangered

4.1.4 Existing Native Vegetation

The Growth Centres SEPP, which establishes a broad framework for the development of current and future Growth Centres in the Sydney region, was gazetted in July 2006 and is effective until 30 June 2025.

In December 2007 an order conferring biodiversity certification under the Growth Centres SEPP was made by the Minister for the Environment. In July 2008, the Minister's biodiversity

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certification was validated by the *Threatened Species Conservation Amendment (Special Provisions) Act 2008*.

The relevant biodiversity measures (RBM's) applying to the certification have remained unaltered since gazettal of the original order. Under the RBM's of the Growth Centres SEPP biodiversity certification, clearing of any Existing Native Vegetation (ENV) in the non-certified areas must be offset elsewhere in the Growth Centres.

ENV is defined as areas of indigenous trees (including any sapling) that had 10 per cent or greater over-storey canopy cover present, were equal to or greater than 0.5 hectares in area, and were identified as "vegetation" on maps 4 and 5 of the draft Growth Centres Conservation Plan (Eco Logical Australia, February 2007) at the time the biodiversity certification order took effect. Vegetation communities to be cleared within areas of ENV in non-certified areas is summarised in *Table 8* and illustrated in *Figure 1*.

Table 8. Mapped vegetation communities to be cleared within areas of ENV in non-certified areas

Vegetation Community		ENV in non-certified areas within the approved disturbance area (Ha)
Native vegetation	Moderate Condition Cumberland Plain Woodland	0.00
	Poor Condition Cumberland Plain Woodland	0.26
	Derived Grassland Cumberland Plain Woodland	0.09
	Poor Condition Riparian Woodland	0.00
Exotic vegetation	Exotic Grassland	0.39
	Cleared land	0.39
	Olive Dominant Woodland	0.03
Total		1.16

4.1.5 Threatened Ecological Communities

CPW within the approved disturbance area does not meet the criteria for a Threatened Ecological Community under the BC Act.

4.1.6 Groundwater Dependent Ecosystems

The EIS did not identify any high priority Groundwater Dependent Ecosystems (GDE's), subterranean GDE's, river base flows, karst or cave ecosystems, or known springs that are fed by groundwater in the ecological study area and surrounds.

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4.2 Fauna

4.2.1 Terrestrial Fauna Habitat

During the ecological assessment of the EIS, three broad terrestrial fauna habitat types were identified in the ecological study area, namely: woodland, riparian and aquatic habitats and cleared/disturbed grassland. These habitats are illustrated in *Figure 2* and briefly summarised in the following sections.

4.2.1.1 Woodland

Woodland habitat occurs across most of the ecological study area, with the largest continuous patches occurring in the southern extent of the site on non-certified land. Woodland habitat varied in condition from a moderate structure and diversity of flora species to poor quality woodland and woodland dominated by *O. europaea* subsp. *cuspidata*.

Hollow-bearing trees were observed in woodland and were in highest concentration in Cell G at the south-eastern boundary of the quarry operations (refer to *Figure 1*). Hollow-bearing tree locations were recorded if they occurred within the areas proposed for vegetation clearance. Thirteen hollow-bearing trees as well as several potential hollow-bearing trees (with no visible hollows) were recorded. A nest box program has been prepared and implemented in woodland habitat in areas with a naturally occurring low abundance of hollows to mitigate impacts to hollow-dependent threatened species potentially occurring at the site. The program has identified the target quantities and nest types and provides a protocol for installation, maintenance and monitoring. It has been developed and implemented prior to clearing the identified hollow bearing trees as identified in the EIS. The Nest Box Program is given in Appendix C and updated as required.

4.2.1.2 Riparian and aquatic habitat values for terrestrial fauna

4.2.1.2.1 Dams

Four dams were recorded within the ecological study area that provide habitat for terrestrial fauna. Dams contained emergent vegetation and soft, muddy substrates, which would provide foraging and breeding habitat for frogs and wading birds. The dams also provide foraging opportunities for microchiropteran bats.

4.2.1.2.2 Thompsons Creek and Associated Dam

Thompsons Creek dam contained emergent vegetation, which would provide nesting habitat and shelter for waterbirds. The dam is also a foraging resource for waterbirds. The dam and Thompsons Creek also provide a freshwater resource for most local fauna including exotic species.

It was noted during the ecological assessment site survey that the southern section of Thompsons Creek became dry and void of aquatic vegetation as the creek progressed upstream from Thompsons Creek dam. Stagnant pools of water in this section of the creek would provide habitat for frogs. The northern section of Thompsons Creek (downstream of the dam) contained emergent vegetation, which would provide habitat for frogs and waterbirds. Gully erosion was common along the creek banks, particularly in the south and some vegetation overhangs the banks, which could provide shelter for fauna.

4.2.1.3 Cleared and Disturbed Grassland

Grassland at the site was mostly heavily grazed and disturbed by feral herbivores and farm animals (e.g. cattle). Rabbits (*Oryctolagus cuniculus*) and/or their scats and warrens were observed in every grassy habitat within the ecological study area. Native grasses occurred in

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some areas of the site and would provide a food source for native birds and macropods and shelter for reptiles. Other fauna resources within grasslands included fallen timber, loose rock and ant mounds, which would provide habitat and/or food for reptiles, birds and mammals.

4.2.2 Aquatic Fauna Habitat

During the EIS aquatic fauna habitat assessments were undertaken at four locations along Thompsons Creek, Thompsons Creek dam and four other dams within the property boundary (outside of the approved disturbance area). Thompsons Creek comprised intermittently wet channels and pools. The channel was narrow at times and undefined in some locations, particularly in the east. There was severe disturbance by cows trampling through the creek line on the east and severe bank erosion in the south west. Thompsons Creek is mapped as Key Fish Habitat by Department of Primary Industries (DPI) and would be considered Class 3 fish habitat using the Fairfull and Witheridge (2003) fish habitat classification system.

4.2.3 Threatened Fauna Species

Based on database and literature review completed during the EIS, 46 animal species listed under the BC and FM Acts are either known or have the potential to occur within 10 kilometres of the Study Area (refer *Table 9*).

No threatened fauna species were recorded/identified during the detailed field surveys of the EIS. The probability of each of the locally recorded threatened and migratory fauna species to occur within the ecological study area was assessed in the EIS using knowledge of each species' habitat and lifecycle requirements with regard to the habitat present within the ecological study area. It was concluded in the EIS that several threatened fauna species identified in the database searches were considered to have a moderate to high likelihood of occurring in the ecological study area based on potential habitat and the proximity and number of records of these species in the locality. This included waterbirds that could occur in Thompsons Creek dam, woodland birds that could utilise woodland habitats and native grassland and microbats that could forage at waterbodies and within woodland and utilise hollow-bearing trees for roosting.

Table 9. Threatened fauna potentially occurring within 10 kilometres of the ecological study area

Scientific name	Common name	Status under EPBC Act	Status under TSC Act	Status under FM Act
<i>Anthochaera phrygia</i>	Regent Honeyeater	Endangered, Migratory	Critically endangered	-
<i>Apus pacificus</i>	Fork-tailed Swift	Migratory		-
<i>Ardea alba</i>	Great Egret	Migratory		-
<i>Ardea ibis</i>	Cattle Egret	Migratory		-
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Endangered	Endangered	-
<i>Burhinus grallarius</i>	Bush Stone-curlew	-	Endangered	-
<i>Callocephalon fimbriatum</i>	Gang-gang Cockatoo	-	Vulnerable	-
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable	Vulnerable	-
<i>Chthonicola sagittata</i>	Speckled Warbler	-	Vulnerable	-

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Scientific name	Common name	Status under EPBC Act	Status under TSC Act	Status under FM Act
<i>Daphoenositta chrysoptera</i>	Varied Sittella	-	Vulnerable	-
<i>Dasyurus maculatus maculatus</i>	Spotted-tailed Quoll	Endangered	Endangered	-
<i>Ephippiorhynchus asiaticus</i>	Black-necked Stork	-	Endangered	-
<i>Erythrotriorchis radiatus</i>	Red Goshawk	Vulnerable		-
<i>Falsistrellus tasmaniensis</i>	Eastern False Pipistrelle	-	Vulnerable	-
<i>Gallinago hardwickii</i>	Latham's Snipe	Migratory		
<i>Glossopsitta pusilla</i>	Little Lorikeet	-	Vulnerable	-
<i>Haliaeetus leucogaster</i>	White-bellied Sea- Eagle	Migratory		-
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	Vulnerable	Vulnerable	-
<i>Hieraaetus morphnoides</i>	Little Eagle	-	Vulnerable	-
<i>Hirundapus caudacutus</i>	White-throated Needletail	Migratory		-
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	Vulnerable	Endangered	-
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Endangered	-
<i>Litoria aurea</i>	Green and Golden Bell Frog	Vulnerable	Endangered	-
<i>Litoria raniformis</i>	Growling Grass Frog	Vulnerable	Endangered	-
<i>Macquaria australasica</i>	Macquarie Perch	Endangered	-	Endangered
<i>Melanodryas cucullata cucullata</i>	Hooded Robin (south-eastern form)	-	Vulnerable	-
<i>Meridolum corneovirens</i>	Cumberland Plain Land Snail	-	Endangered	-
<i>Merops ornatus</i>	Rainbow Bee-eater	Migratory		-
<i>Miniopterus schreibersii oceanensis</i>	Eastern Bent-wing bat	-	Vulnerable	-
<i>Monarcha melanopsis</i>	Black-faced Monarch	Migratory		-
<i>Mormopterus norfolkensis</i>	Eastern Free-tail bat	-	Vulnerable	-
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Migratory		-
<i>Myotis macropus</i>	Southern Myotis	-	Vulnerable	-
<i>Ninox strenua</i>	Powerful Owl	-	Vulnerable	-
<i>Oxyura australis</i>	Blue-billed Duck	-	Vulnerable	
<i>Petrogale penicillata</i>	Brush-tailed Rock- wallaby	Vulnerable		-
<i>Petroica boodang</i>	Scarlet Robin	-	Vulnerable	-
<i>Petroica phoenicea</i>	Flame Robin	Marine	Vulnerable	-

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Scientific name	Common name	Status under EPBC Act	Status under TSC Act	Status under FM Act
<i>Phascolarctos cinereus</i>	Koala	Vulnerable (combined populations of QLD, NSW and the ACT)	Vulnerable	
<i>Potorous tridactylus tridactylus</i>	Long-nosed Potoroo (SE mainland)	Vulnerable		
<i>Prototroctes maraena</i>	Australian Grayling	Vulnerable		Protected
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	Vulnerable		
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Vulnerable	
<i>Rhipidura rufifrons</i>	Rufous Fantail	Migratory		
<i>Rostratula australis</i>	Australian Painted Snipe	Vulnerable, Migratory	Endangered	
<i>Scoteanax rueppellii</i>	Greater Broad-nosed Bat	-	Vulnerable	
<i>Stagonopleura guttata</i>	Diamond Firetail	-	Vulnerable	

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5 ENVIRONMENTAL ASPECTS AND IMPACTS

5.1 Facility Activities

Key aspects of the facility that could result in adverse impacts to biodiversity values include:

- Vegetation clearing and topsoil stripping;
- Mine development, mining and bulk earthworks;
- Vehicle/plant movements; and
- Drainage maintenance works.

5.2 Impacts

The following potential and known impacts on biodiversity values associated with the project, if not avoided, mitigated or offset, have been comprehensively assessed and documented in the EIS:

- Loss of Cumberland Plain Woodland;
- Loss of native vegetation;
- Loss of fauna habitat;
- Habitat fragmentation;
- Fauna mortality;
- Degradation of aquatic habitats;
- Edge effects and weed invasion; and
- Alteration in air quality and noise environments.

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6 ENVIRONMENTAL MANAGEMENT MEASURES

Specific biodiversity management measures identified in the EIS and CoA have been interpreted and generally reproduced in *Table 10*. The management measures identified in this table are to be implemented to mitigate or manage impacts identified in *Section 5.2*. Where additional resources will be required to implement a management measure, these have been identified in the last column.

Table 10. Environmental Management Measures

ID	Measure / Requirement	Source	When to implement	Responsibility	Additional Resources Needed
B1	Install appropriate drainage infrastructure (e.g. sediment basins, diversion drains), sediment and erosion controls prior to the commencement of construction.	EIS Section 7.2, Ecological Assessment	Prior to commencement of Construction	Plant Manager & Contractor	Water Management Plan
B2	Clearing of vegetation would not be undertaken during rain events greater than 50mm over a consecutive 5-day period.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Rehabilitation Management Plan
B3	Construction clearing activities to be constrained to approved disturbance areas only.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	Rehabilitation Management Plan Mine Operation Plan
B3	Locate stockpiles away from watercourses on flat land with appropriate erosion and sediment controls in accordance with the Water Management Plan.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	Rehabilitation Management Plan Water Management Plan
B4	Dust suppression would be undertaken where appropriate.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Air Quality Management Plan
B5	Stabilisation of disturbed areas, including revegetation where appropriate, would be undertaken as soon as practicable after disturbance.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Rehabilitation Management Plan Water Management Plan
B6	Undertake a pre-start check for sheltering native fauna in all infrastructure, plant and equipment.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	This Plan
B7	Equipment used for treating weed infestation will be cleaned prior to moving to a new area within the project site to minimise the likelihood of transferring any plant material and soil.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Rehabilitation Management Plan

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ID	Measure / Requirement	Source	When to implement	Responsibility	Additional Resources Needed
B8	Soil stripped from areas containing known weed infestations is to be stockpiled separately and not to be moved to or stockpile in areas free of weeds.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Rehabilitation Management Plan
B9	It is recommended that topsoil and plant material of Moderate Condition CPW which is to be cleared from the area to the north of the quarry (within SEPP certified areas), is salvaged for re-use in rehabilitation works. It is preferable that cleared topsoil be re-used immediately, however if not feasible it may be stored for later use if necessary.	EIS Section 7.2, Ecological Assessment	Operation	Plant Manager	Rehabilitation Management Plan
B10	The noise bund will be covered with a 100-150 mm deep layer of topsoil from cleared areas of Moderate Condition CPW (refer B11). This topsoil may then be covered with a layer of coarsely mulched native vegetation. Additional planting of fast-growing local native shrubs such as <i>Acacia</i> spp. and <i>Bursaria spinosa</i> may assist in slope stabilisation. The bund will be monitored during revegetation to ensure that <i>Olea europaea</i> subsp. <i>cuspidata</i> does not establish.	EIS Section 7.2, Ecological Assessment	Operation	Plant Manager	Rehabilitation Management Plan;
B11	Clearing of hollow bearing trees will occur between March and May to avoid mortalities and impacts to breeding cycles of threatened fauna that are hollow-dependent, namely microbat breeding times (November - February) and hibernation period (June – August) and the breeding season of Little Lorikeet (July - January). A pre-clearance survey will be undertaken by an ecologist. An ecologist will attend during clearing of hollow bearing trees to manage any fauna encountered.	EIS Section 7.2, Ecological Assessment	Operation	Plant Manager	This Plan
B12	Implement a nest box program in woodland habitat in the ecological study area with a naturally occurring low abundance of hollows within suitable areas on-site to prevent impacts to hollow-dependent threatened species potentially occurring at the site.	EIS Section 7.2, Ecological Assessment	Operation	Plant Manager	Nest box program has been appended to this plan
B13	Fauna microhabitat such as logs will be removed from areas to be cleared and relocated to suitable on-site bushland, which may include the Offset Area, in the presence of an ecologist in accordance with the Nest Box Program.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Nest Box Program has been appended to this plan.

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ID	Measure / Requirement	Source	When to implement	Responsibility	Additional Resources Needed
B14	Extent of clearing for construction will be fenced with highly visible temporary fencing to ensure that clearing does not extend beyond the area necessary.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	This Plan
B15	Undertake a three-stage approach to clearing: <ul style="list-style-type: none"> Remove non-hollow bearing trees at least 48 hours before hollow-bearing trees are removed to prevent fauna refuge after hollow bearing trees are felled, which increases the difficulty of post-felling capture. Hollow bearing trees are to be knocked to encourage fauna to evacuate the tree immediately prior to felling. Felled trees will be left for a short period of time on the ground to give any fauna trapped in the trees an opportunity to escape. 	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	This Plan
B16	Site inductions will include a briefing regarding the local fauna of the site and identification of protocols to be undertaken if fauna are encountered.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Induction procedures
B17	The extent of vegetation clearing is to be clearly identified on construction plans.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	Mine Operation Plan
B18	Any additional construction areas, such as site offices, construction stockpile locations and machinery/equipment laydown areas are to be located within existing cleared or disturbed areas.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	Mine Operation Plan
B19	Site rehabilitation will commence as soon as practicable. Management of land disturbed as a result of construction works will occur in accordance with the Mine Operation Plan.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	Mine Operation Plan
B20	A 5-metre-wide strip (approximately) of Moderate Condition CPW is to be retained between the noise bund and the extraction pit. This area includes mature trees with a predominantly native grass and shrub understorey.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	Mine Operation Plan

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ID	Measure / Requirement	Source	When to implement	Responsibility	Additional Resources Needed
B21	Emergency response protocols and procedures for implementation in the event of a contaminant spill or leak, is to be clearly articulated in the Environmental Management Plans.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Water Management Plan Pollution Incident Response Management Plan
B22	Spill kits will be readily available during construction activities to allow for timely response to uncontained spills. Site inductions will include a briefing on the use of spill kits and spill response.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	Environmental Management System
B23	Chemicals and fuels will be stored in bunded containers in site buildings.	EIS Section 7.2, Ecological Assessment	Construction and Operation	Plant Manager	Environmental Management System
B24	Directional lighting will be used where lighting is required in construction areas.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	This Plan
B25	Regular maintenance of construction machinery and plant will be undertaken to minimise unnecessary noise.	EIS Section 7.2, Ecological Assessment	Construction	Plant Manager & Contractor	Noise Management Plan
B26	Speed limits will be developed in new site areas so as to minimise the potential for fauna to be struck by a vehicle within the site.	EIS Section 7.2, Ecological Assessment	Operation	Plant Manager	Transport Management Plan
B27	If any animal is injured, a local wildlife rescue agency (e.g. WIRES) and/or veterinary surgery will be contacted immediately. Any advice provided by the rescue agency/veterinary surgery for care of the animal will be followed until the animal can be cared for by a suitably qualified animal handler.	EIS Section 7.2, Ecological Assessment	Operation	Plant Manager	tel:1300 094 737

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7 BIODIVERSITY OFFSET STRATEGY

Potential impacts on biodiversity, including ENV, within certified areas are offset through the Sydney Growth Centres SEPP and do not require additional offsets.

The project will however require the removal of a 1.16 hectare area mapped as ENV within the non-certified area (refer *Table 8* in *Section 4.1.3*). Although not all of this area currently supports vegetation meeting the criteria for ENV, it is intended to offset the entire 1.16 hectare area by conserving a 1.93 hectare strip of ENV as a Biodiversity Offset Area (BOA) within the certified area in the north-west of the ecological study area (refer *Figure 3*). The BOA comprises 1.16 hectares of Moderate Condition CPW and 0.81 hectares of Poor Condition CPW.

The Moderate Condition CPW in the BOA was identified during the EIS as some of the better condition native vegetation in the ecological study area. All vegetation in the BOA was mapped as ENV in the Growth Centres Conservation Plan (ELA 2007), and meets the criteria for ENV as defined in the Biodiversity Certification Order.

The BOA will conserve CPW in a certified area to offset the clearing of ENV in a non-certified area in accordance with RMB 8 of the Biodiversity Conservation Order.

Accordingly, the CoA require PGH to implement the Biodiversity Offset Strategy (BOS) described in the EIS, as summarised in *Table 11* and shown conceptually in *Figure 3*, to the satisfaction of the Secretary.

Table 11. Summary of the Biodiversity Offsets

Area	Offset Criteria	Size (Ha)
On-site offset	Existing vegetation to be enhanced to establish an area of native woodland comprising species associated with Cumberland Plain Woodland.	1.93

PGH proposes to minimise impacts to the BOA with the implementation of the environmental management measures cited in *Table 10*, and manage and enhance the existing vegetation of the BOA in accordance with the guidelines for managing remnant CPW described in *Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland* (DEC, 2005) ^{Ref. 3}.

This Plan is a working document, therefore the implementation measures and performance criteria proposed in the following sections will be subject to regular reviews and inputs by operational staff, government authorities, bush regenerators and ecologists, who will be involved throughout the lifetime of the BOS.

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7.1 Implementation Measures

PGH will implement the mitigation measures described below within three years of obtaining approval for this management plan.

7.1.1 Fencing

- Short-term (within 1 year of BOA being established): Review the existing fencing and consider replacing or upgrading fencing to ensure the BOA is secure, excludes grazing animals and restricts unauthorised human access. Remove any redundant internal fencing within the BOA to reduce the risk of injury to native fauna.
- Medium-term (within 3 years of BOA being established): All fencing to be installed and maintained and will be of a rural character i.e. post and wire, and located around the BOA as shown in Figure 3.
- Long-term (after 3 years): Fence line maintained and fit for purpose.

7.1.2 Weed and pest control

- Short-term (within 6 months of establishment of BOA): Undertake a baseline survey of weeds and pests to establish a baseline to monitor future improvement. Appoint a bush regeneration specialist to undertake targeted weed and pest control measures in the BOA.
- Medium and Long-term (12 months post BOA establishment and ongoing): Management to be undertaken in accordance with the Weed Management Plan as approved by DPIE and available on request.

7.1.3 Fire management

No prescribed burning activities are planned for the BOA.

PGH bushfire policy does not permit staff to engage in firefighting activities or bushfire management. All firefighting is undertaken by the RFS. Hazard reduction is based on RFS advice and not undertaken by PGH.

PGH maintains fencing around the site to discourage trespassing and the risk of deliberately lit fires. Procedures and training exist for PGH personnel and contractors, within site Emergency Response Procedures for minimising fire risk and dealing with fires.

PGH will ensure that the facility is suitably equipped and access available to fight fires on site.

Site management will liaise with RFS to minimise fire risk as advised and is responsible for managing fire risk within policy guidelines.

PGH commits to work with RFS on any reasonable request to improve property risk profile. The site has suitable access and ongoing dialogue with RFS will ensure that the facility is accessible for fighting fires. In addition, dams on site will be made available for RFS as required in the event of fire.

In the event of a fire, on site or in the surrounding area, PGH will work as much as practical in co-operation with RFS, emergency services and National Parks and Wildlife Service. The presence of a bushfire in the area will activate the PIRMP.

7.1.4 Management of human access and disturbance

- Short-term (within 1 year of BOA being established):: Restrict access (e.g. locked gates) to prevent unauthorised access to the BOA and reduce the risk of introducing or spreading weed and pest species. Install signage in prominent locations to advise unauthorised personnel not to enter.

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- Medium and Long-term (12 months post BOA establishment and ongoing): Maintain access restrictions and signage.

7.1.5 Retention or addition of habitat features

- Short-term (within 6 months of establishment of BOA): Retain all existing native vegetation within the BOA. No habitat features, such as fallen timber is to be removed from the BOA.
- Medium and Long-term (12 months post mine expansion) : Following clearing for mine expansion, habitat features e.g. logs and rocks will be transported and strategically placed within the BOA or in other rehabilitation areas, in consultation with a suitably qualified ecologist. Nest boxes are installed as appropriate.

7.1.6 Erosion control

Erosion control is to be undertaken as the need is identified during monthly environmental inspections, with a focus on areas of lower vegetation coverage, which present a higher erosion risk e.g. areas recently cleared of weeds and access tracks (as detailed in the Water Management Plan and summarised here). Erosion controls measures to be undertaken will include the following as relevant to type of erosion and land type:

- Extraction will occur within a pre-defined area to limit the area of disturbance;
- Materials will be transported only within the site for processing;
- Entry to land not directly involved in the extraction or rehabilitation process will be prohibited;
- Land disturbance will not occur more than 2 months prior to an active extraction campaign;
- Roads and tracks are limited to a width that are the minimum necessary to allow safe operation of heavy equipment;
- Sediment fencing, jute mesh or geofabric, temporary vegetative cover (oats or Japanese millet) and/or barrier mesh will be installed in areas identified in the monthly environmental inspections.

7.1.7 Salvage of Soil and Vegetative Resources

Within the approved disturbance area, all salvageable vegetation and soil resources will be retained for reuse on areas to be prepared for rehabilitation. Areas to be disturbed will be marked ahead of clearing to ensure that activities do not occur beyond the area necessary. Locations for reusable vegetation and soils will be identified prior to disturbance. Soils stripped from areas of known weed infestations will be stored separately and not moved to areas free of weeds.

Fauna microhabitat, such as previously fallen trees or logs, or suitable bush rock, if present, will be relocated to areas previously marked for rehabilitation or other suitable bushland as identified by a suitably qualified person.

The existing topsoil and overburden are suitable for rehabilitation but may require some amelioration with lime to increase the soil pH, depending on the vegetation species selected. Soil testing will be undertaken prior to permanent revegetation and advice from a suitably qualified specialist will be sought. Soil ameliorants will be added if recommended by soil testing results to provide a suitable soil medium for the growth of the targeted species and ecosystems.

Consideration of the erosion potential of the soils will be made in the storage of the soils and the re-use of the soils in rehabilitation. If overburden or topsoil is unable to be re-used ~~immediately on final faces, stockpiles will be created and stabilised with sterile vegetative cover~~ as soon as practicable, and not more than 12 months after relocation.

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Once final rehabilitation faces become available, they will be ripped using a dozer and the overburden material will be keyed into the surface. This will increase water retention and reduce erosion and slumping of the emplaced overburden. The organic topsoil layer will then be placed over the overburden in a similar manner up to a minimum depth of 5cm. Stored vegetative resources will then be placed over the topsoil. Rehabilitation procedures are detailed in the Rehabilitation Management Plan.

7.1.8 Minimising Impacts of Clearing on Fauna

Pre-clearance surveys will be undertaken by a suitably qualified person at least 1 week prior to clearing activities are scheduled to commence. These will identify and mark any potential habitat including ground logs or hollow-bearing trees. Clearing will not be undertaken in rain events, and hollow bearing trees will only be cleared between March and May. A suitably qualified person will be present during the felling of hollow bearing trees. These will be knocked prior to felling to encourage mobile fauna to evacuate. Felled trees will be inspected by a suitably qualified person for the presence of trapped fauna.

There are no tailings on the site as the mine is extracting clay/shale, not metalliferous or coal minerals, therefore fauna will not be impacted by tailings.

7.1.9 Cultural Heritage Management during Clearing

The Heritage Management Plan states the following management measures will be undertaken during site disturbance activities. These activities will be undertaken immediately as required by the various trigger events listed in the table below, with a key milestone being commencement of quarrying in the extension area, which is the location of any known areas of cultural heritage significance

Table 12. Cultural Heritage Management Measures

ID	Measure / Requirement	Source	When to implement	Responsibility
AB1	Ensure ongoing consultation with Aboriginal stakeholders in the conservation and management of any Aboriginal cultural heritage values on site.	Schedule 3, Condition 27 of SSD_5684	Construction and Operation	Plant Manager
AB2	If quarrying activities take place in the vicinity of the BB OS3, a high-visibility fence will be temporarily installed around the perimeter of BB OS3 (with a 5 metre buffer) to protect the site from potential harm and mitigate potential impacts. Additionally, consideration will be given to erosion and spoil movement near the site to avoid inadvertent impact.	Section 7.9.6 of the EIS Schedule 3, Condition 27 of SSD_5684	Construction and Operation	Plant Manager
AB3	If unexpected Aboriginal objects are located during construction or operations, works are to immediately cease and a qualified archaeologist is to be consulted. If a site inspection is necessary and it is determined that the find is an Aboriginal object, the archaeologist must record the site and submit a site card to the OEH AHIMS site register and advise on any further mitigation measures. The archaeologist must also assess the potential for further archaeological material in the surrounding area and provide recommendations regarding the need for further investigation, approvals and stakeholder consultation. Works may only recommence in the vicinity of the find, once all requirements for further investigation, approvals, recording and consultation have been fulfilled.	Section 7.9.6 of EIS Schedule 3, Condition 27 of SSD_5684	Construction and Operation	Plant Manager

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ID	Measure / Requirement	Source	When to implement	Responsibility
AB4	If suspected human skeletal remains are uncovered during works, all works must cease in the area. The remains must be left in place and protected from harm or damage. The NSW Police will be notified to provide details of the remains and their location. No recommencement of works in the vicinity of the skeletal remains can recommence until investigations by NSW Police have concluded.	Section 7.9.6 of the EIS Section 11.3 of the Aboriginal Archaeological Assessment, August 2013 (Appendix L of the EIS)	Construction and Operation	Plant Manager
AB5	All employees, subcontractors and agents undertaking construction or quarrying activities at the site will attend a heritage induction to ensure they understand and are aware of the nature of possible Aboriginal heritage finds, including burials. The induction would include a brief introduction to the legal obligations relating to Aboriginal heritage, and provide pictures of the most likely Aboriginal objects to occur within the project site. This would include pictures of different types of stone artefacts, reflecting the main raw materials and colour variations that occur within the region. The induction will include information on the unexpected finds procedure, including the necessity to stop work immediately and notify a site supervisor, foreman and the Brickworks Plant Manager. The induction could be included as part of the general site induction for all workers.	Section 7.9.6 of the EIS Schedule 3, Condition 27 of SSD_5684	Construction and Operation	Plant Manager
HH1	To minimise visual impacts on the unlisted Bringelly Road/Greendale Road Cultural Landscape, the proposed bund along part of the northern boundary will be grassed and then planted with a mixture of locally occurring native trees and shrubs, particularly those of the Cumberland Plain Woodland variety, and once established is likely to entirely obscure the built form of the noise bund. The noise bund will also completely obscure the built structures of the brickmaking facility from commuters along Greendale Road, which will result in a positive impact on the Bringelly Road/Greendale Road cultural landscape.	Section 7.10.4 of the EIS	Construction and Operation	Plant Manager
HH2	Incorporate the following instructions in the event that unexpected archaeological finds are encountered during works: 1. All works in the immediate vicinity of the identified material must stop; 2. The heritage Branch (OEH) must be notified; and 3. An archaeologist must be contacted to assess the significance of the material and recommend whether further action is required.	Section 7.10.4 of the EIS	Construction and Operation	Plant Manager

Further details are available in the Heritage Management Plan.

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8 PERFORMANCE AND COMPLETION CRITERIA

The following performance and completion criteria are adapted from the ESG3 Mine Operation Plan (MOP) Guidelines in order to allow better integration with the MOP and this Plan. The progression of the BOA (Domain J in ES3G) through the rehabilitation phases described in the ESG3 guideline is described in *Table 13* below.

Table 13. Performance and Completion Criteria

Decommissioning Phase					
Objective	Performance Indicator	Completion Criteria	Monitoring Methodology and Responsibility	Monitoring Frequency	Justification/Source
No activities within this domain are required during this phase.					

Landform Establishment Phase					
Objective	Performance Indicator	Completion Criteria	Monitoring Methodology and Responsibility	Monitoring Frequency	Justification/Source
No activities within this domain are required during this phase.					

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Ecosystem and Landuse Establishment Phase					
Objective	Performance Indicator	Completion Criteria	Monitoring Methodology and Responsibility	Monitoring Frequency	Justification/Source
Ensure that the Cumberland Plain Woodland vegetation community is enhanced and established.	Weeds not preventing revegetation from establishing or overtaking existing vegetation	Monitoring confirms that after 2 years the non-native/non-target species (weeds) represents less than 20% of projected foliage cover or equivalent to surrounding vegetation not disturbed by mining activities.	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved	EIS and Rehabilitation Management Plan Biodiversity Management Plan (to be developed)
	Grazing by native and domestic fauna not adversely impacting on ecosystem development/enhancement	Rural fences and gates installed around disturbed area to prevent grazing by domestic stock. Feral animal controls will be implemented if required. Monitoring reports indicate the level of native species grazing is appropriate.	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved	EIS and Rehabilitation Management Plan Biodiversity Management Plan (to be developed)

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Ecosystem and Landuse Sustainability Phase

Objective	Performance Indicator	Completion Criteria	Monitoring Methodology and Responsibility	Monitoring Frequency	Justification/Source
Conservation and Biodiversity offset area is established and self-sustaining	Vegetation self-sustaining.	Monitoring confirms: <ul style="list-style-type: none"> Evidence of new growth of endemic species. Evidence of successive generations of endemic species No further active weed control required (beyond that considered necessary at analogue sites). 	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved	EIS Biodiversity Management Plan.
	Native fauna is utilising the BOA.	Monitoring confirms: <ul style="list-style-type: none"> Nest boxes installed show evidence of occupation by native species. Evidence of native fauna occupation in other areas of the BOA. 	Monitoring including photography to be conducted by suitably qualified person and reported annually.	6 monthly until completion criteria achieved	EIS Biodiversity Management Plan.

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Relinquishment Phase					
Objective	Performance Indicator	Completion Criteria	Monitoring Methodology and Responsibility	Monitoring Frequency	Justification/Source
Relinquishment	Demonstrated compliance with all completion criteria	Outlined above	Relinquishment Report to be prepared by suitably qualified person describing compliance with all criteria	Prior to relinquishment	-

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9 RISKS AND TRIGGER ACTION RESPONSE PLAN

Potential risks to the successful implementation of the Biodiversity Offset Strategy are identified in the table below and actions to be implemented to mitigate the risk are outlined.

Table 14. Trigger Action Responses Plan

Risk	Potential Adverse Outcomes	Trigger Level	Actions to be Implemented
The Biodiversity Offset Area (BOA) is not protected from unwanted human interference.	Unauthorised access is causing damage to the BOA.	Fence breaks noted on inspection of the BOA.	Fence breaks to be repaired.
		Signage is noted as missing or damaged on inspection of the BOA.	Signage is replaced.
		Access roads or tracks are not maintained and accessible and vehicles are damaging vegetation adjacent to the roads.	Roads or tracks are regraded or repaired on order to keep vehicles off vegetation.
		Vandalism to fences, native vegetation, and erosion and sediment control structures is noted on inspection of the BOA.	Damage to BOA is repaired. This may include replacement of vegetation, stabilisation of soils, repairs to sediment and erosion controls.
		Rubbish is observed in the BOA.	<p>Inspection of dumped rubbish to determine if it contains hazardous materials such as asbestos.</p> <p>If hazardous materials are detected, specialised waste removal services are to be engaged and the appropriate authorities informed as per the PIRMP and emergency procedures.</p> <p>All other rubbish is to be removed to a licenced waste facility.</p>

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Risk	Potential Adverse Outcomes	Trigger Level	Actions to be Implemented
Native fauna are unable to access the BOA.	Biodiversity values are not increased due to absence of native fauna.	Native fauna is found caught in fencing. Native fauna is observed as being unable to move through the fencing.	Review of the fencing is to be undertaken to determine if a change to the fencing design is required.
The Biodiversity Offset Area (BOA) is not protected from weeds and pests.	Weeds or pests damage or prevent native vegetation establishment in the BOA.	Priority weeds are noted in the BOA. Evidence of pests are noted in the BOA.	Weed control is to be undertaken by licenced contractors in accordance with this plan and the Weed Management Plan. Pest control measures will be undertaken as advised by a suitably qualified specialist.
The Biodiversity Offset Area (BOA) is not protected from erosion.	Damage to native vegetation in the BOA.	Erosion is noted within the BOA.	Consultation with a suitably qualified erosion control specialist would be undertaken and implemented. Continued observation undertaken to ensure measures are satisfactory.

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10 CONSERVATION BOND

In compliance with the CoA, a conservation bond is to be lodged within 6 months of the approval of this Plan. The purpose of the conservation bond is to ensure that the BOS is implemented in accordance with the implementation measures, and performance and completion criteria outlined in *Section 8*.

The sum of the conservation bond shall be determined by calculating the full cost of implementing the BOS, and will address the implementation measures prescribed within this BMP and include staff costs, fencing, weed management, feral animal control, replanting/revegetation, monitoring, auditing and reporting.

Once the plan is approved and the offset strategy determined in conjunction with DPE, the suitably quantity surveyor will be engaged and DPE advised.

The suitably qualified quantity surveyor will be engaged to verify the calculated costs. Once the conservation bond has been calculated and lodged, the BMP will be updated as described in Section 13.2 to reflect these costs.

11 OFFSET SECURITY

Mechanisms to provide appropriate long-term security to the BOA are being investigated by PGH. It is noted that suitable mechanisms include a BioBanking Agreement, Voluntary Conservation Agreement or an alternative mechanism that provides for a similar conservation outcome and must remain in perpetuity. This Plan will be updated as described in Section 13.2 to reflect the final agreed security mechanism.

Until otherwise advised by DPE PGH will continue to implement the strategy for biodiversity offset as outlined in the EIS, wherever possible in the framework of current legislation.

12 COMPLIANCE MANAGEMENT

12.1 Inspections and Monitoring

The Plant Manager (or delegate) will undertake at least bi-annual inspections of the facility and BOA in accordance with Section 6.1 of the EMS.

These inspections across the site include:

- Spills & discharge
- Clearing
- Damage (physical or fire)
- Dumping
- Contamination and
- Biodiversity / Threatened species areas

During these inspections, the facility's condition and environmental controls, will be observed and recorded. More specifically, observations and inspections of the implementation measures of the BOS cited in *Section 7.1* and *Section 8* are to undertaken. Records will include details of any maintenance of controls required and an implementation priority. Site assessments of the BOA will continue until such time as the completion criteria in Section 8 have been achieved.

The monitoring will be undertaken by a suitably qualified person. This will be via consultation with qualified ecologists/bush regenerators where appropriate, but not exclusively.

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The monitoring requirements of the CoA are listed in section 5.4 of the EMS and addressed in the relevant management plans. Any exceedances of environmental criteria will be immediately reported to the Secretary in accordance with section 12.6 of this plan and section 8.1 EMS.

All environmental monitoring equipment shall be maintained and calibrated according to the manufacturer's specifications and appropriate records kept.

A summary of all monitoring results will be available on the website as available, tabled at CCC meetings, and provided in the Annual Review.

12.2 Training

Employees and contractors working on-site will undergo site induction training, which will cover biodiversity management, including:

- Location of the BOA;
- Access restrictions and disturbance limitations;
- Internal speed limits;
- Biodiversity management measures (BMP);
- Emergency and spill response procedures; and
- Aspects of this plan and legislation relevant to the task.

Further details regarding competence, training and environmental awareness are outlined in Section 7 of the EMS.

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12.3 Auditing and Reporting

Audits (both internal and external) and reporting will be undertaken to assess the effectiveness of biodiversity management measures, BOS performance criteria, compliance with CoA and other relevant approvals, licenses and guidelines. Audit requirements are detailed in Section 6.3 of the EMS. This includes internal and external audits. External audits will be in accordance with the consented conditions (every 3 years with reporting to DPIE)

Independent external auditing will be undertaken by an independent environment auditor in accordance with *ISO 19011:2003 - Guidelines for Quality and / or Environmental Management Systems Auditing*, as required by CoA Schedule 5, Condition 9. External auditing will be undertaken every three years, unless the Secretary directs otherwise, with the first audit being held within a year of commencing development under the SSD consent.

The audit will include consultation with the relevant agencies and will assess if all conditions of the consent are being met. It will also review adequacy of all management plans and form part of the program of improvement on the site.

Within 12 weeks of commencing the external audit, unless the Secretary agrees otherwise, PGH will submit a copy of the audit report to the Secretary, together with its response to any recommendations contained in the audit report, including a timetable for the implementation of any measures proposed to address the recommendations in the audit report.

If PGH intends to defer the implementation of a recommendation, reasons will be documented.

Within 7 days of commencing the audit, PGH will notify the Department in writing of the commencement of the audit.

12.4 Annual Review

An Annual Review of the Environmental Performance of the Site, including the BOS will be undertaken and submitted to the Department for review to the satisfaction of the Secretary. In addition, the mine lease conditions require and Annual Rehabilitation Review be undertaken and submitted to DPIE for approval.

By the end of September each year, management reviews are undertaken as part of the continual improvement process required by CoA Schedule 5, Condition 4.

The Annual Review will involve the executive management team. This review will be held every 12 months, will cover the financial year period, and will include a review of:

- The facility's activities (including rehabilitation) for the past year and consideration of the developments activities (including rehabilitation) planned for the next year;
- Descriptions of environmental management and mitigation measures, and their effectiveness;
- Consideration of monitoring, inspection and audit results;
- Comparison of results against statutory requirements, limits, performance measures, previous monitoring and relevant predictions;
- A summary of complaints and feedback, and the resulting actions undertaken;
- Identification of any non-compliances during the report period, and the resulting actions undertaken;

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- Identify any trends in the monitoring data over the life of the development;
- Identify any discrepancies between the predicted and actual impacts of the development, and analyse the potential cause of any significant discrepancies;
- Describe what measures will be implemented over the current financial year to improve the environmental performance of the development;
- Annual quarry production data using a standard DRE form;
- Organisation changes; and
- Effectiveness of training and inductions.

The Annual Review will be submitted to the DPIE (in accordance with CoA Schedule 5, Condition 4), the DRE (in accordance with Condition 3 of ML1731), the Community Consultation Committee, and any other stakeholder that requests a copy.

12.5 Contingency Plans

Should an exceedance of any consent condition occur, immediate actions will be put in to place to mitigate or prevent any material harm to the environment.

The key measure of concern here for Biodiversity Management is risk to key on site biodiversity.

Should exceedances or risks to biodiversity be discovered, they will be rectified immediately and corrective actions put in place to ensure that the risk of future transgressions are minimized.

12.6 Reporting of Non Compliance and Incidents

Non Conformances and incidents can be identified via monitoring, inspection, audit or complaints.

PGH will report and manage all incidents and non compliances in accordance with Section 8 of the EMS.

Depending on the nature of the incident or non compliance, appropriate reporting will be undertaken.

All breaches of consent conditions will be reported to DPIE immediately and a detailed report submitted within 7 days Schedule 5, Condition 7.

For non compliances / incidents relating to council, EPA or other authority reporting will be undertaken as required.

Where non compliances relate to a receiver or neighbour, these persons will be advised and informed in corrective actions to be undertaken,

Incidents and non compliances will be presented in the CCC meeting.

The site manager in conjunction with the National Environmental manager, is responsible for managing and reporting incidents.

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12.7 Complaints

Complaints will be managed as per Section 8.2 of the Environmental Management Strategy.

A 24hr phone line is available and any complaints received by the site will be displayed on the external website.

Complaints will be logged and reported on the PGH external website, to the CCC meetings and in the Annual Review. CCC meeting minutes will be available on the website.

12.8 Adaptive Management

Extensive risk assessment and management have been undertaken. In addition to the management of incidents, complaints, exceedances or non compliances outlined above, PGH will at the earliest opportunity take all and reasonable and feasible measures to ensure that the exceedance ceases and does not recur.

Further to the above when remediation is required, PGH will, where relevant, submit a report to the DPIE outlining reasonable and feasible options for rectifying the deviation.

All directions from DPIE regarding reasonable and feasible remediation measures will be implemented.

12.9 Communication

As per the EMS section 8, and specifically Section 8.5, any information, documents, monitoring, or reports pertaining to this SSD and environmental performance will be published on the PGH external website. It will be updated as changes occur or as new reports/data is available.

Included on the external website will be:

current statutory approvals for the development; approved strategies, plans and programs required under the conditions of this consent;

- a comprehensive summary of the monitoring results of the development, reported in accordance with the specifications in any conditions of this consent, or any approved plans and programs;
- a complaints register, which is to be updated monthly or when complaints are received or updated;
- minutes of CCC meetings;
- the annual reviews of the development (for the last 5 years);
- any independent environmental audit of the development, and the Applicant's response to the recommendations in any audit;
- any other matter required by the Secretary;

It is the site manager, with the National Environmental manager, that is responsible for keeping this site up to date to the satisfaction of the DPIE. This will be in place within 6 months of commencement.

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13 REVIEW AND IMPROVEMENT

13.1 Continuous Improvement

Continuous improvement of this BMP will be achieved in accordance with Section 10 of the EMS, through the ongoing evaluation of environmental management performance against environmental policies, objectives and targets. As outlined in the EMS, the site manager, in conjunction with national WHSE resources, are responsible for implementing the plan, monitoring progress, managing the continuous improvement process and the revision of management plans.

The continuous improvement process is designed to:

- identify areas of opportunity for improvement of environmental management and performance;
- determine the cause or causes of non-conformances and deficiencies;
- develop and implement a plan of corrective and preventative action to address any non-conformances and deficiencies;
- verify the effectiveness of the corrective and preventative actions;
- document any changes in procedures resulting from process improvement; and
- make comparisons with objectives and targets.
- Update the BMP in line with outcomes from above.

13.2 BMP Update and Amendment

The BMP will be updated to reflect the offset security mechanism and costs of the conservation bond once it has been calculated and lodged. The processes described in Sections 10 and 11 of the EMS may result in the need to update or revise this BMP. The approval of updates or revisions to the BMP will need to be considered in accordance with Section 10.2 of the EMS.

All strategies, plans and programs will be reviewed within 3 months of an:

- (a) Annual Review;
- (b) Incident report;
- (c) Audit report; and
- (d) Any modifications to the consent, licences or permits.

Where any review leads to revisions in any such document, then within 4 weeks of the review the revised document will be submitted for the approval of the Secretary, if required under clause 11.2 of the EMS.

Through this process of review, the assessment of changing performance in audits, regular site WHSE meetings, annual budgeting / planning cycles a program will be in place to maintain and improve environmental performance over time. It will drive a periodic review of plans.

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14 REFERENCES

- Ref. 1.** Ecological Australia (2013) – *Local Biodiversity Strategy Camden Local Government Area*
- Ref. 2.** Hyder Consulting - Bringelly Brickworks and Quarry Expansion ENVIRONMENTAL IMPACT STATEMENT Volumes 1 & 2 -5 September 2013.
- Ref. 3.** NSW Department of Environmental and Conservation (2005)- *Recovering Bushland on the Cumberland Plain*
- Ref. 4.** NSW LLS Greater Sydney- Greater Sydney Regional Strategic Weed Management Plan 2017- 2022- Revised September 2019.
- Ref. 5.** NSW OEH (2014) *NSW Biodiversity Offsets Policy for Major Projects*
- Ref. 6.** NSW OEH (2014) *NSW Biodiversity Offsets Policy for Major Projects- Fact Sheet: Managing offset sites- information for landowners*
- Ref. 7.** NSW Minister for Climate Change, Environment and Water (2006) *Sydney Region Growth Centres Order for Biodiversity Conservation*
- Ref. 8.** PGH Bricks and Pavers Pty Ltd (2019)- *PGH Bricks and Pavers, Bringelly- Weeds Management Plan 2018-2023.*

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Appendix A: Figures

Plan of:	Bringelly Brickworks Biodiversity Management Plan 2019 - Vegetation Communities in the Ecological Study Area	Location:	Bringelly Clay Mine Off Greendale Road, Bringelly, NSW	Source:	Hyder Consulting Pty Ltd - Bringelly Brickworks Ecological Assessment Figure 10, Boral LPI, OSH & Resmap - Image Date 02/09/2012	Our Ref:	8006_BR_BMP2019_C001_V0_F1.dxf	<p>The user may be viewing this plan via a web browser. It may not be printed or copied. Please refer to the user manual for more information. For more information on our products, please visit our website at www.vgt.com.au.</p>
Figure:	ONE	Council:	Camden Council	Survey:	N/A	Plan By:	TOUD	
Sheet:	1 of 1	Tenure:	ML 1731	Projection:	N/A	Project Manager:	TO	
Version/Date:	V0 07/11/2019	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	N/A	Office:	Thornton	

BRINGELLY BRICKWORKS ECOLOGICAL ASSESSMENT



LEGEND

- Moderate Condition CPW
- Poor Condition CPW
- Derived Grassland CPW
- Poor Condition Riparian Woodland
- Mixed Exotic/Planted Native
- Olive Dominant Woodland
- Exotic Grassland
- Study area
- Project site
- Property boundary
- Driveway realignment
- Raw materials storage
- Brick making facility
- Material storage facility
- Building extensions
- Water Storage Tanks
- Quarry cells
- Watercourses
- Dam
- Roads

Map scale: 1:8,000 at A4

DATA SOURCES:
Boral LPI, OSH
Nearmap Imagery - 2 September 2012

BORAL

HYDER CONSULTING PTY LTD
ABN 70 104 632 200
Level 2, 141 Walker St
North Sydney NSW 2060
Australia
P +61 (0) 2 9937 5000
F +61 (0) 2 9937 5001

Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gault
Signed: _____
Date: _____
Project Manager VGT: Tara O'Brien
Signed: _____
Date: _____

Figure 10: Vegetation communities of the study area

Plan of:	Bringelly Brickworks Biodiversity Management Plan 2019 - Fauna Habitats Within the Ecological Study Area	Location:	Bringelly Clay Mine Off Greendale Road, Bringelly, NSW	Source:	Hyder Consulting Pty Ltd - Bringelly Brickworks Ecological Assessment Figure 12, Boral LPI, OSH & Resmap - Image Date 02/09/2012	Our Ref:	8006_BR_BMP2019_C002_V0_F2.dxf	<p>The user may be viewing this plan via a web browser. It may not be printed or copied. Please refer to the user manual for more information. For more information on our products, please visit our website at www.vgt.com.au.</p>
Figure:	TWO	Council:	Camden Council	Survey:	N/A	Plan By:	TOUD	
Sheet:	1 of 1	Tenure:	ML 1731	Projection:	N/A	Project Manager:	TO	
Version/Date:	V0 07/11/2019	Client:	PGH Bricks & Pavers Pty Ltd	Contour Interval:	N/A	Office:	Thornton	

BRINGELLY BRICKWORKS ECOLOGICAL ASSESSMENT



LEGEND

- Hollow bearing tree
- Fauna habitats
- Cleared and disturbed grassland
- Remnant vegetation
- Riparian and aquatic habitats
- Study area
- Project site
- Driveway realignment
- Quarry cells
- Raw materials storage
- Brick making facility
- Material storage facility
- Building extensions
- Water Storage Tanks
- Roads
- Watercourses

Map scale: 1:8,000 at A4

DATA SOURCES:
Boral LPI, OSH
Nearmap Imagery - 2 September 2012

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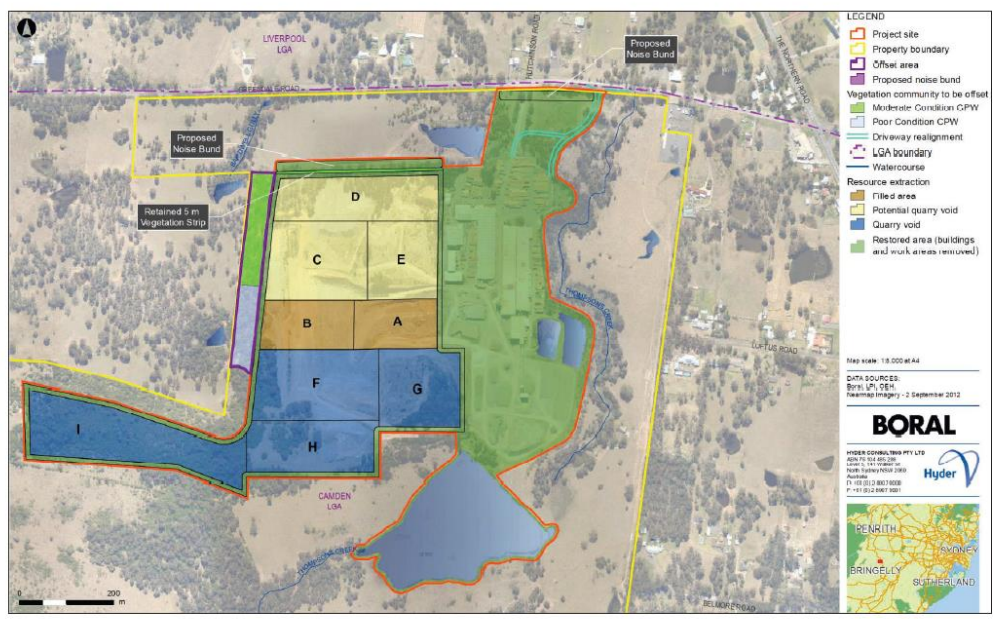
Manager/Authorisation Holder PGH Bricks & Pavers Pty Ltd: Joe Gault
Signed: _____
Date: _____
Project Manager VGT: Tara O'Brien
Signed: _____
Date: _____

Figure 12: Terrestrial fauna habitat features

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Plan of: Bringelly Brickworks Biodiversity Management Plan 2019 - Approved Biodiversity Offset Area	Location: Bringelly Clay Mine Off Greendale Road, Bringelly NSW	Source: NSW DPE Appendix 4, Hyder Consulting Pty Ltd Figure 10 Boral, LPI, CEH & re-map - Image Date 02/09/2012	Our Ref: S006_BR_BMP2019_C003_V01_F3.002	This Report may be reviewed and/or amended by the client. It is not to be used for any other purpose without the written approval of the client. The client is responsible for ensuring the accuracy of the data provided to us and for ensuring that the data is up to date and correct.
Figure: THREE	Council: Camden Council	Survey: N/A	Plan By: TOLD	
Sheet: 1 of 1	Tenure: ML 1731	Projection: N/A	Project Manager: TO	
Version/Date: V0 07/11/2019	Client: PGH Bricks & Pavers Pty Ltd	Contour Interval: N/A	Office: Thornton	

**APPENDIX 4
CONCEPTUAL FINAL LANDFORM AND BIODIVERSITY OFFSET STRATEGY**



NSW Government
Department of Planning and Environment

VGT Environmental Compliance Solutions Pty Ltd 4/30 Glenwood Drive, Thornton NSW 2322 PO Box 2335, Greenhills NSW 2323 ph: (02) 4028 6412 email: mail@vgt.com.au www.vgt.com.au ABN: 26 621 943 888

BRINGELLY BRICKWORKS EIS

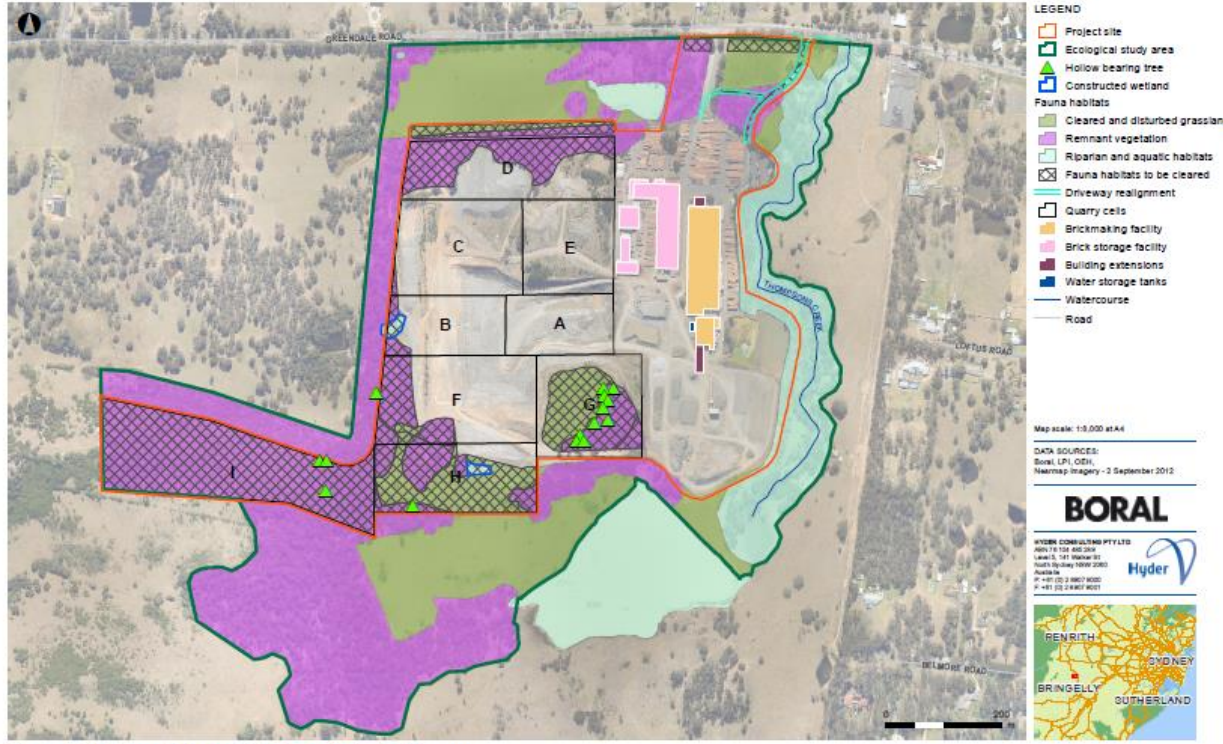


Figure 7-31: Fauna habitats within the ecological study area

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Appendix B: Consultation



Camden Council
 70 Central Avenue, Oran Park NSW 2570 DX 25807
 PO Box 183, Camden 2570 ABN: 31 117 341 764
 Telephone: 02 4654 7777 Fax: 02 4654 7829
 Email: mail@camden.nsw.gov.au

30 September 2016

Darren Green – Senior Environmental Consultant
 Element Environment
 PO Box 1563
 WARRIEWOOD NSW 2102

Dear Darren,

RE: Bringelly Brickworks Project (SSD_5684)

**SITE DESCRIPTION: 60 Greendale Road, Bringelly
 LOT: 100 DP: 1203966**

I refer to the above State Significant development application (DA) approved by the Department of Planning and Environment on 3 March 2015, and the associated draft management plans submitted to Camden Council for comment, which include:

- Transport Management Plan;
- Biodiversity Management Plan; and
- Rehabilitation Management Plan

It is understood several conditions of the approved consent require Boral CSR Bricks to consult with Camden Council in preparation of the final management plans.

Council officers have reviewed the draft management plans and submits that several issues require further information and consideration before the plans are finalised.

Transport Management Plan

The following comments are provided by Council's Traffic Engineer:

1. An analysis of the Greendale Road and The Northern Road intersection must be undertaken using computer analysis software by SIDRA Intersection. The Transport Management Plan (TMP) must be informed by this analysis and the accompanying data submitted as part of the TMP. The analysis must also consider potential traffic impacts from the proposed mobile concrete batching plant on the same site (proposed via DA 578/2016).



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2. The TMP must address how heavy vehicle movements will be mitigated during peak school pick up and drop off periods.
3. The TMP must include swept path analysis demonstrating the following:
 - The largest design vehicle turning left from Greendale Road to travel north along The Northern Road; and
 - The largest vehicle entering and exiting the site in a forward direction.
4. The TMP must address employee parking, and how this will be accommodated and managed on site.
5. The TMP must demonstrate compliance with relevant Australian standards for any external road upgrades.

Biodiversity Management Plan and Rehabilitation Management Plan

The following comments are provided by Council's Natural Resources Officer:

1. The Biodiversity Management Plan (BMP) must detail the volume of vegetative, soil and cultural heritage resources to be salvaged within the approved disturbance area for re-use in biodiversity or rehabilitation areas.
2. The BMP must detail conservation measures over the next 3 years, which include:
 - The location and type of fencing to be removed and installed;
 - The location and type of access control;
 - A survey of weeds, and the staged program and methodology for their removal; and
 - The location of current areas of erosion and the measures to implement erosion control.
3. The BMP must detail long term bushfire management of the site.
4. Pre-clearance fauna surveys must be undertaken. If fauna (particularly roosting and breeding fauna) are discovered, the proposed measures for their relocation must be identified within the BMP.
5. Additional risks to the implementation of the BMP such as drought, heavy rainfall events causing erosion, and bushfires must be identified and assessed.



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Contingency plans and resources (including financial) must be provided to deal with identified risks.

6. The inspection, monitoring, reviewing and implementation of the BMP must be undertaken by a qualified ecologist / bush regenerator(s).
7. The determination of the conservation bond for the Biodiversity Offset Site (BOS) must be undertaken by a qualified ecologist / bush regenerator.

Additional Information Required

Council requires revised management plans for further review that address each of the concerns listed above. A response to this letter with an explanation as to how each item is addressed must also be provided. Once Council staff has reviewed the revised management plans, further comments will be provided.

Should you have any enquiries in relation to this matter, please do not hesitate to contact Kate Drinan, Manager Statutory Planning on (02) 4654 7777.

Yours sincerely,



Kate Drinan
MANAGER STATUTORY PLANNING
(Planning and Environmental Services)



DOCUMENT CONTROL	
Doc No. PR32_PGH_Bringelly EMS_BMP_R4	
Reason for Revision: Conditions of Approval for SSD_5684 S16-18 Resubmission	
Issue Date: 06/12/2022	Review Date: 06/12/2025
Writer: M Travers	Reviewed: T West



OUT16/34013

Mr Darren Green
Element Environment Pty Ltd
PO Box 1563
WARRIEWOOD NSW 2102

Dear Darren

Bringelly Brickworks (SSD_5684) – Draft Rehabilitation Management Plan Preparation and Consultation

I refer to your letter dated 23 August 2016 and attached draft "Bringelly Brickworks Rehabilitation Management Plan", Version 0.

The Department of Industry, Division of Resources and Energy (DRE) Environmental Sustainability Unit has reviewed the draft Bringelly Brickworks Rehabilitation Management Plan (RMP).

DRE notes that the RMP will be reviewed and updated, if necessary, following any update of the Final Land Use Options Plan (FLUOP). DRE considers this is essential and the current lack of a FLUOP makes the RMP a very general and conceptual document only at this stage.

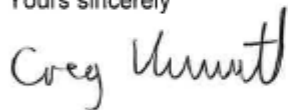
The retention of a final void is not confirmed as the most appropriate post mining landform and the specific design of any final void will require a much greater level of detail in a future version of the RMP and any other applicable rehabilitation documents. This will include the DRE approved Mining Operations Plan or equivalent document.

The following specific comment on the draft RMP is provided:

Section 7.1.2 – Monitoring
DRE considers the 'Safety' and 'Landform Stability' visual inspection frequency of 6 months to be too long. A greater frequency should be proposed.

If you require further information on this issue please contact me directly on (02) 4222 8304.

Yours sincerely



Greg Kininmonth
Manager & Principal Inspector Environment (Southern)
Environmental Sustainability Unit
19 September 2016

Copy to – Joe Gauci, Boral CSR Bricks Pty Ltd (via email)
Chris Schultz, Department of Planning and Environment (via email)

DOCUMENT CONTROL	
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Issue Date: 06/12/2022	Review Date: 06/12/2025
Writer: M Travers	Reviewed: T West

From: [Cook, Debbie](#)
To: [Lisa Thomson](#)
Subject: FW: Bringelly Brickworks (SSD_5684): Management Plan Consultation
Date: Monday, 9 September 2019 1:09:17 PM
Attachments: [image002.png](#)

Consultation OEH- biodiversity, rehabilitation and heritage plan

From: Darren Green <darren@elementenvironment.com.au>
Sent: Tuesday, 6 September 2016 1:26 PM
To: Cook, Debbie <DECOOK@pghbricks.com.au>
Cc: Neville Hattingh <neville@elementenvironment.com.au>; PR32 <SMO-PR32@elementenvironment.com.au>
Subject: FW: Bringelly Brickworks (SSD_5684): Management Plan Consultation

Debbie,

Comments from OEH regarding the Biodiversity, Rehabilitation and Heritage Management Plans. There's nothing in the comments which is substantial. We possibly need to just clarify the nest box procedure/program matter. Other than that it's another good outcome.

Darren Green
Senior Environmental Consultant



m 0418 969 624
e darren@elementenvironment.com.au
w www.elementenvironment.com.au

PO Box 1563, Warriewood, NSW, 2102

From: Richard Bonner [<mailto:Richard.Bonner@environment.nsw.gov.au>]
Sent: Tuesday, 6 September 2016 1:07 PM
To: Darren Green <darren@elementenvironment.com.au>
Cc: Elle.Donnelley@planning.nsw.gov.au
Subject: RE: Bringelly Brickworks (SSD_5684): Management Plan Consultation

Hello Darren,

Further to your recent conversation with Marnie Stewart, OEH provides the following comments on the draft Biodiversity Management Plan and draft Heritage Management Plan . OEH has no comments to make on the draft Rehabilitation Management Plan.

Draft Biodiversity Management Plan

- p.2, Glossary and Abbreviations – Typo, replace '*Plant*' in BMP abbreviation meaning with '*Plan*'

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p.16 & 17, 4.2.1 Terrestrial Fauna Habitat, Woodland – Reference is made to a *'nest box procedure would be prepared and implemented in woodland habitat ...'*. It is unclear if this is referring to an action that will be implemented. If so, clarification is required on where and when it will be developed and how will it be incorporated within the BMP?

- p.24, Measure B1 – Based on the description of the measure shouldn't the *'when to implement'* response be *'prior to commencement of construction'*?
- p.24, Measure B2 – How are *'rain events'* defined?
- p.24, Measure B4 – The location of stockpiles and appropriateness of erosion and sediment controls should be in accordance with the required Surface Water Management Plan (although it is unclear how this relates to the Sensitive Area Plans). Alternatively, more objective measures could be included eg those in the relevant volume of the Managing Urban Stormwater best practice guidelines (Blue book).
- p.25, Measure B10 – Should be rewritten as a measure (i.e. not a recommendation).
- p.25, Measure B11 – Should be rewritten as a measure (i.e. not optional – replace *'should'* and *'may'* with *'will'*)
- p.26, Measure B13 – Further to comment above for p.16 & 17, has a *'nest box program'* been developed? Is this the same as the *'Nest Box Procedure'*? Is the area with a *'naturally occurring low abundance of hollows'* the proposed offset area?
- p.26, Measure B14 – Is the area of *'suitable nearby bushland'* the proposed offset area? Replace *'should'* with *'will'*.
- p.26, Measure B15 – Replace *'should'* with *'will'*.
- p.26, Measure B16 – Is the three (not two) stage process based on best practice guidelines? The logic and practicality of removing non hollow-bearing trees 48 hours before hollow-bearing trees is unclear.
- p.27, Measure B20 – Replace *'... BMP and Rehabilitation strategy'* with *'Rehabilitation Management Plan'*.
- p.29 (note: pages not numbered from page 28), 8. Biodiversity Offset Strategy.
 - Recommend the 4th paragraph be amended as follows (insert red text, delete strikethrough text): *The BOA will conserve CPW in a certified area to offset the clearing of ENV in a non-certified area in accordance with RMB 8 of the Biodiversity Conservation Order. and would maintain the minimum area of ENV to be retained and protected in the Growth Centre, as specified in RMB 6 of the Biodiversity Certification Order.*
 - Recommend the 2nd last paragraph be amended as follows: *BCB proposes to manage and enhance the biodiversity values of minimise impacts to the BOA through with the implementation of the environmental management measures cited in Table 7, and manage and enhance the existing vegetation of the BOA in accordance with the guidelines for managing remnant CPW described in Recovering Bushland on the Cumberland Plain: Best practice guidelines for the management and restoration of bushland (DEC, 2005) (refer Appendix C).*
- pp.31-33, 8.1 Implementation measures, 8.2 Performance Criteria and 8.4 Completion Criteria – Suggest combining as one table using existing sub-headings.
- p.31, 8.1.5 Retention or addition of habitat features, Medium and Long-term – Recommend replacing *'... clearing for mine development or approved thinning, ...'* with *'... clearing for quarry expansion, ...'*.

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Heritage Management Plan

- p.11, 5.1.1 Confirmed Aboriginal Site Records, Table 2 Summary of Survey Findings – Recommend this include the findings of the test excavation to reflect the assessment as a whole not just the initial survey. It should also be noted that the significance of BB OS2 was determined by the test excavation.
- p.15, 6.2.3 Discovery of suspected human remains - This section contains inappropriate instructions. Any reference to salvage, recording and reburial of human remains should be removed. It is recommended the text in this section be replaced with the following: *If any human remains are discovered the following actions must be taken:*
 - a. *immediately cease all work at the particular location;*
 - b. *secure the area so as to avoid further harm;*
 - c. *notify the local police and OEHS Environment Line on 131 555 as soon as practicable and provide any available details of the remains and their location, and*
 - d. *work cannot recommence at the particular location unless authorised by OEHS in writing.*

Regards

Richard Bonner

Conservation Planning Officer
Greater Sydney Region
Regional Operations Group
Office of Environment and Heritage
T: 02 9995 6917

----- Original Message -----

From: Darren Green [darren@elementenvironment.com.au]
Sent: 23/08/2016 17:02
To: info@environment.nsw.gov.au
Cc: smo-pr32@elementenvironment.com.au
Subject: Bringelly Brickworks (SSD_5684): Management Plan Consultation

To whom it may concern,

Following the commencement of a State Significant Development application (SSD_5684) in December 2012 for a proposed expansion to Bringelly Brickworks at 60 Greendale Road, Bringelly, Development Consent was issued on 3 March 2015 by the Department of Planning and Environment (DP&E).

In accordance with this Development Consent, several conditions require Boral CSR Bricks, the owner of Bringelly Brickworks, to consult with OEHS in the preparation of several of the development's management plans. More specifically, Conditions 21, 26 and 27 of Schedule 3 of the Development Consent requires Boral CSR Bricks to prepare a Biodiversity Management Plan, Rehabilitation Management Plan and Heritage Management Plan in consultation with OEHS.

Therefore on behalf of Boral CSR Bricks, please find attached a covering letter and several draft management plans for review.

If you have any questions please don't hesitate to give me a call.

Regards,

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Issue Date: 06/12/2022	Review Date: 06/12/2025
Writer: M Travers	Reviewed: T West

Darren Green
Senior Environmental Consultant

[Inline image name : image001.png]

m 0418 969 624
e darren@elementenvironment.com.au
w www.elementenvironment.com.au

PO Box 1563, Warriewood, NSW, 2102

This email is intended for the addressee(s) named and may contain confidential and/or privileged information.

If you are not the intended recipient, please notify the sender and then delete it immediately.

Any views expressed in this email are those of the individual sender except where the sender expressly and with authority states them to be the views of the NSW Office of Environment and Heritage.

PLEASE CONSIDER THE ENVIRONMENT BEFORE PRINTING THIS EMAIL

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Issue Date: 06/12/2022	Review Date: 06/12/2025
Writer: M Travers	Reviewed: T West

From: [Cook, Debbie](#)
To: [Lisa Thomson](#)
Subject: FW: Bringelly Management Plans Update
Date: Monday, 9 September 2019 2:28:21 PM
Attachments: [image002.png](#)

FYI

From: Darren Green <darren@elementenvironment.com.au>
Sent: Monday, 19 September 2016 1:38 PM
To: Cook, Debbie <DECOOK@pghbricks.com.au>
Cc: PR32 <SMO-PR32@elementenvironment.com.au>; Neville Hattingh <neville@elementenvironment.com.au>
Subject: Bringelly Management Plans Update

Hi Debbie,

As you may be aware, the consultation period for the draft management plans concluded on 7 September. During this period we received responses from Office of Environment & Heritage and DPI: Water. Today we received a response from DPI: DRE. We have not received comments from: Bringelly Public School, Liverpool and Camden Council, RMS and EPA. EPA did acknowledge receipt of notification and I've followed up to confirm whether they actually intend on submitting comments or not.

The comments have been minor and do not necessitate significant amendments.

Because the consultation period has concluded we are in a position to commence with finalising the plans and preparing them for submission to DP&E. I'm aware of some correspondence between DP&E and Boral CSR Bricks regarding Bringelly's Conditions of Approval. Are you OK with us commencing the finalisation of these plans?

Regards,

Darren Green
Senior Environmental Consultant



m 0418 969 624
e darren@elementenvironment.com.au
w www.elementenvironment.com.au

PO Box 1563, Warriewood, NSW, 2102

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Contact John Galea
Phone 02 8838 7520
Fax 02 8838 7554
Email john.galea@dpi.nsw.gov.au

Our ref V15/3875-2#1; INT16/107531
Your ref

Darren Green
Senior Environmental Consultant
Phone: 0418 969 624
PO Box 1563,
Warriewood, NSW, 2102

Email: darren@elementenvironment.com.au

Dear Mr Green

BRINGELLY BRICKWORKS (SSD_5684)
Comment on the Environmental Management Plan Preparation and Consultation

I refer to your emailed letter dated 23 August 2016 to the Department of Primary Industries – Water (DPI Water) in respect to the above matter.

DPI Water makes the following recommendations:

- The property description in Section 1.2 Background; should be amended to correctly reflect the current cadastre of the property which is Lot 100 DP 1203966.
- It is suggested that all areas that are not impacted through construction activities are clearly indicated on all plans and signposted to prevent any damage through construction activities.

For further information please contact John Galea, Acting Senior Water Regulation Officer, Parramatta, 8838 7520, john.galea@dpi.nsw.gov.au

Yours sincerely

Richard Nevill
Acting Regional Manager – Metro
Water Regulation Operations
2 September 2016

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Writer: M Travers	Reviewed: T West

24 January 2020

Attn: Kate Drinan
Manager Statutory Planning
Camden City Council

PO Box 183
Camden
NSW 2570



PO Box 1563
Warriewood
NSW 2012

ABN 45 162 835 083

Dear Kate

Bringelly Brickworks (SSD 5684): management plan consultation

In August 2016, Element Environment Pty Ltd (Element) on behalf of PGH Bricks, sought comment for the transport, biodiversity and rehabilitation management plans for Bringelly Brickworks as required by SSD 5684.

Camden Council (CC) forwarded comments on 30 September 2016. At the time of receiving comments from CC, PGH Bricks were not able to take up SSD 5684 and therefore no immediate response was provided to CC.

A period has passed and Element, on behalf of PGH Bricks, wishes to notify CC that PGH Bricks are now able to take up SSD 5684 and wish to commence works approved therein.

The management plans have been updated accordingly to address CC comments and PGH Bricks has submitted these plans to the Department of Planning, Industry and Environment for approval.

The updated management plans are available upon request should CC wish to review the latest versions.

We trust the above provides clarification around the matter and the delay in responding to previous correspondence. Should you have any queries on the above, please don't hesitate to contact me.

Kind regards,

A handwritten signature in black ink, appearing to read 'Darren Green'.

Darren Green
Associate

0418 969 624
darren@elementenvironment.com.au

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Writer: M Travers	Reviewed: T West

RE: Bringelly Brickworks (SSD 5684): management plan consultation - Message (HTML) Search

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RE: Bringelly Brickworks (SSD 5684): management plan consultation



Mathew Rawson <Mathew.Rawson@camden.nsw.gov.au>
To: Darren Green

Hi Darren,

Thanks for your email. Could you please provide these updated Management Plans for our records.

Please give me a call if you like to discuss further.

Regards,

Mathew Rawson

Team Leader DA Assessments West



70 Central Avenue, Oran Park, 2570
(02) 4654 7980
www.camden.nsw.gov.au

PO Box 183, Camden NSW 2570
Mathew.Rawson@camden.nsw.gov.au



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Writer: M Travers	Reviewed: T West

24 January 2020

Attn: Greg Kininmonth
Manager & Principal Inspector Environment (South)
Environmental Sustainability Unit

PO Box 674
Wollongong
NSW 2500



PO Box 1563
Warriewood
NSW 2012

ABN 45 162 835 083

Dear Greg

Bringelly Brickworks (SSD 5684): management plan consultation

In August 2016, Element Environment Pty Ltd (Element) on behalf of PGH Bricks, sought comment for the rehabilitation management plan for Bringelly Brickworks as required by SSD 5684.

Department of Planning, Industry and Environment – Resources Regulator (Resources Regulator) forwarded comments on 19 September 2016. At the time of receiving comments from the Resources Regulator, PGH Bricks were not able to take up SSD 5684 and therefore no immediate response was provided.

A period has passed and Element, on behalf of PGH Bricks, wishes to notify the Resources Regulator that PGH Bricks are now able to take up SSD 5684 and wish to commence works approved therein.

The rehabilitation management plan has been updated accordingly to address the Resources Regulator comments and PGH Bricks has submitted the plan to the Department of Planning, Industry and Environment for approval.

The updated management plan is available upon request should the Resources Regulator wish to review the latest version.

We trust the above provides clarification around the matter and the delay in responding to previous correspondence. Should you have any queries on the above, please don't hesitate to contact me.

Kind regards,

A handwritten signature in black ink, appearing to read 'Darren Green'.

Darren Green
Associate






0418 969 624
darren@elementenvironment.com.au

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Writer: M Travers	Reviewed: T West



AREQ0006123 | Bringelly Brickworks (SSD 5684): management plan consultation

 Resources Regulator <nswresourcesregulator@service-now.com>
 To:  darren@elementenvironment.com.au
 Cc:  greg.kininmonth@planning.nsw.gov.au

  Reply  Reply All  Forward  ...
 Wed 29/01/2020 4:50 PM

Dear Darren

I refer to your email and letter "Bringelly Brickworks (SSD 5684): Management Plan Consultation", both dated 24 January 2020.

I note that the Rehabilitation Management Plan for Bringelly Clay Mine has been updated, incorporating Resources Regulator comments, and has been submitted to the Department of Planning, Industry and Environment for approval.

The current Mining Operations Plan for Mining Lease ML 1731 – Bringelly Clay Mine is dated November 2019 and was approved on 25 November 2019 (Our Reference: MAAG0004972) and remains in force.

It is our general preference that the Mining Operations Plan required by Mining Title Conditions and the Rehabilitation Management Plan (RMP) required by Development Consent Conditions should be addressed by a single document, reducing duplication.

If the Rehabilitation Management Plan is approved by the Secretary of DPIE, and is prepared as a separate document to the Mining Operations Plan (MOP), then a subsequent revision to the Bringelly Clay Mine MOP may be required to ensure consistency.

The Resources Regulator will assess in detail any submitted new or amended Mining Operations Plan for ML1731 – Bringelly Clay Mine.

Can you please submit a copy of the updated Rehabilitation Management Plan to the Resources Regulator for our information. Please submit this via email to nswresourcesregulator@service-now.com at your earliest convenience and preferably include "Bringelly Clay Mine - ML1731 - Rehabilitation Management Plan (for information)" in the subject heading.

Feel free to contact me by phone or return email if you require further information regarding this issue.

Regards,

Greg Kininmonth
 Manager Environmental Operations
 Regulatory Compliance - Team 1 | Resources Regulator
 T 02 42767428 M 0429 168 021

resourcesregulator.nsw.gov.au



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Appendix B: Nest Box Protocol

Protocol for Nest Box Installation

A suitably qualified ecologist was engaged to design and install nest boxes for the fauna species identified in the EIS. The ecologist reviewed the EIS and visited the site, then recommended the type and number of nest boxes to be provided and where to locate on the site.

On 30th May 2022 the boxes detailed below were installed at the locations shown on *Figure One*.

Table 1. *Type and Location of Nest Boxes*

Tree number	Box number	Easting	Northing	Box Type	Height (Meters)	Side of trunk or branch	Tree species	Nest box notes
1	MB1	289640	6241526	Microbat	6.3	NE	Red gum	Hardwood multi chambered (4 chambers)
1	MB2	289640	6241526	Microbat	6.6	S	Red gum	Hardwood multi chambered (4 chambers)
2	MB3	289602	6241520	Microbat	6.1	NE	Red gum	Hardwood multi chambered (4 chambers)
2	MB4	289602	6241520	Microbat	7.2	NW	Red gum	Hardwood multi chambered (4 chambers)
3	MB5	289518	6241501	Microbat	4.5	W	Red gum	Hardwood multi chambered (4 chambers)
3	MB6	289518	6241501	Microbat	5	E	Red gum	Hardwood multi chambered (4 chambers)
4	MB7	289460	6241516	Microbat	5.5	WNW	Red gum	Hardwood multi chambered (4 chambers)
4	MB8	289460	6241516	Microbat	5.9	SE	Red gum	Hardwood multi chambered (4 chambers)
5	MB9	289399	6241499	Microbat	5.4	S	Red gum	Hardwood multi chambered (4 chambers)
5	MB10	289399	6241499	Microbat	5.7	NE	Red gum	Hardwood multi chambered (4 chambers)
6	SP1	289658	6241523	Small Parrot/Sugar glider	6.5	North	Red gum	Hardwood, Front entry hole
7	SP2	289675	6241490	Small Parrot/Sugar glider	6	ENE	Red gum	Hardwood, Front entry hole
2	SP3	289602	6241520	Small Parrot/Sugar glider	6.4	SE	Red gum	Hardwood, Front entry hole

Tree number	Box number	Easting	Northing	Box Type	Height (Meters)	Side of trunk or branch	Tree species	Nest box notes
8	SP4	289551	6241492	Small Parrot/Sugar glider	6	NE	Red gum	Hardwood, Front entry hole
9	SP5	289530	6241514	Small Parrot/Sugar glider	7	SE	Red gum	Hardwood, Front entry hole
10	SP6	289488	6241506	Small Parrot/Sugar glider	8	S	Grey Box	Hardwood, Front entry hole
11	SP7	289444	6241472	Small Parrot/Sugar glider	7.5	N	Red gum	Hardwood, Front entry hole
12	SP8	289390	6241475	Small Parrot/Sugar glider	9	S	Red gum	Hardwood, Front entry hole
13	SP9	289523	6241499	Small Parrot/Sugar glider	6	S	Red gum	Hardwood, Front entry hole
14	SP10	289425	6241463	Small Parrot/Sugar glider	7	S	Red gum	Hardwood, Front entry hole

DOCUMENT CONTROL

Doc No. PR32_PGH_Bringelly EMS_BMP_R4

Reason for Revision: Conditions of Approval for SSD_5684 S16-18 Resubmission

Issue Date: 06/12/2022

Review Date: 06/12/2025

Writer: M Travers

Reviewed: T West

