# MINING OPERATIONS (BLOOMFIELD)

## **Biodiversity Offset Management Plan**

Ver	Date	Description	By	Chk	Арр
1	18/10/11	Draft	GL	SG, JH	
2	20/10/11	Final	GL	SG	SG
3	25/7/17	Final – Revised and Updated	GL		SG
4	16/11/17	Revised Final – incorporating DPE consultation	GL		SG

 $BLOOMFIELD\ GROUP-INTEGRATED\ MANAGEMENT\ SYSTEMS$ 

### **Biodiversity Offset Management Plan**

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INTRODUCTION	This Biodiversity Offset Management Plan (BOMP) has been prepared in response Project Approval (Approval) 07_0087 granted under section 75J of the Environmen Planning and Assessment Act (EP&A) and Modifications to the Approval granted accordance with Section 75W of the Environmental Planning and Assessment A 1979. Condition 29B of Schedule 3 states:		

Requirement		<b>BOMP Reference</b>
By December 31 2011, th	ne Proponent shall prepare and implement a Biodiversity	
Offset Management Plan	to the satisfaction of the Director-General. This plan must:	
(a) be generally consolidered offset areas in NS	sistent with OEH's "Principles for the use of biodiversity SW";	Scope & Objectives Appendix A
(b) include:		
a descrip	tion of the short, medium and long term measures that	Short, Medium and
would be under	rtaken to implement the Biodiversity Offset Strategy;	Long-term
		Measures
detailed [	performance and completion criteria for the Biodiversity	Performance and
Offset St	trategy; and	Completion Criteria
a detailed	d description of the measures that would be implemented	Management
within th	e Biodiversity Offset Area for:	Measures
o r	revegetation and regeneration, including (where relevant)	
establish	ment of canopy, sub-canopy, understorey and ground	
cover;		
o a	appropriate protection, conservation and management of	
native ve	egetation and faunal habitat;	
	controlling weeds and feral pests;	
o r	management of public access; and	
o t	oushfire management.	

#### **Biodiversity Offset Management Plan**

The purpose of the BOMP is to ensure the relevant conditions of the Approval are SCOPE AND addressed and commitments made within the Modification (MOD 1) to the Approval **OBJECTIVES** granted in accordance with Section 75W are met. The primary objectives of the offset are to secure the tenure of the offset area for longterm conservation purposes and enhance the existing native flora and fauna habitat within the offset area. The Biodiversity Offset Area for the Bloomfield Colliery is a portion of land that has been sub-divided from Lot 237 DP1017683 (now known as Lot 2371 DP 1170348) located at the western end of Thursbys Road, off Congewai Road in the Cessnock Local Government Area (Figure 1). The land is 40 ha in area and the western boundary abuts the Watagan State Forest on the eastern side of the Corrabare Range. This plan is generally consistent with OEH's "Principles for the use of biodiversity offset areas in NSW". An assessment against the general principles used by OEH is provided in Appendix A.

PROJECT<br/>APPROVALTable 1 provides a summary of the relevant conditions of the Approval in relation to<br/>the Biodiversity Offset Area.CONDITIONSTable 1 provides a summary of the relevant conditions of the Approval in relation to<br/>the Biodiversity Offset Area.

#### Table 1 RELEVANT PROJECT APPROVAL CONDITIONS

Schedule 3	Condition Requirement
29A	By December 31 2011, the Proponent shall make suitable arrangements to provide appropriate long-term security for the Biodiversity Offset Area to the satisfaction of the Director-General.
29B	<ul> <li>By December 31 2011, the Proponent shall prepare and implement a Biodiversity Offset Management Plan to the satisfaction of the Director-General. This plan must: <ul> <li>a) be generally consistent with OEH's "Principles for the use of biodiversity offset areas in NSW";</li> <li>b) include:</li> </ul> </li> </ul>
	• a description of the short, medium and long term measures that would be undertaken to implement the Biodiversity Offset Strategy;
	<ul> <li>detailed performance and completion criteria for the Biodiversity Offset Strategy; and</li> <li>a detailed description of the measures that would be implemented within the Biodiversity Offset Area for:</li> </ul>
	<ul> <li>revegetation and regeneration, including (where relevant) establishment of canopy, sub-canopy, understorey and ground cover;</li> <li>appropriate protection, conservation and management of native vegetation and faunal habitat;</li> <li>controlling weeds and feral pests;</li> </ul>
	<ul> <li>controlling weeds and feral pests;</li> <li>management of public access; and</li> <li>bushfire management.</li> </ul>
29C	<ul> <li>Within 6 months of the approval of the Biodiversity Offset Management Plan, the Applicant shall lodge a conservation bond with the Department to ensure that the Biodiversity Offset Strategy is implemented in accordance with the performance and completion criteria of the Biodiversity Offset Management Plan. The sum of the bond shall be determined by: <ul> <li>a) calculating the full remaining cost of implementing the offset strategy; and</li> <li>b) employing a suitably qualified quantity surveyor to verify these costs, to the satisfaction of the Director-General.</li> </ul> </li> </ul>
	If the Biodiversity Offset Strategy is completed to the satisfaction of the Director-General, the Director-General will release the conservation bond. If the Biodiversity Offset Strategy is not completed to the satisfaction of the Director-General, the Director-General will call in all or part of the conservation bond, and arrange for the satisfactory completion of the relevant works.

### **Biodiversity Offset Management Plan**

**ROLES AND RESPONSIBILITIES** The company directors are responsible for the overall environmental performance of Bloomfield Colliery. Senior operational managers have direct responsibility for their areas of control while the environmental officer provides direction and advice to ensure that environmental conformance is maintained. The principal environmental and operational managers responsible for the Biodiversity Offset Area are shown in Table 2.

#### Table 2 OPERATIONAL SITE MANAGEMENT TEAM

Position	Name
Managing Director	John Richards
Manager Technical Services	Simon Grassby
Environmental Officer	Greg Lamb

Existing Environment	A detailed ecological assessment was made of the offset site by Hunter Eco in March 2011. This assessment was conducted as part of the Section 75W Modification (MOD 1) to the Approval 07_0087 granted in accordance with the Environmental Planning and Assessment Act 1979.
	The purpose of the survey was to classify and map the vegetation communities on the site and assess the suitability of the site for an offset area. In the process of doing this a site-wide floristic list was compiled and all birds and mammals observed were recorded. A record was also made of the location and species of all trees having potential habitat hollows.
	During the assessment it was noted that for a site that had evidence of past timber harvesting there is a surprising number of old growth trees. The site consists of continuous native forest which is in good condition and no weeds were found. The habitat is regenerating from past timber harvesting as indicted by an average 43% regrowth of canopy species. There is an abundance of trees with potential fauna habitat hollows.
Geology and Soils	The subject site is located entirely in Permian age geology of the Sydney Basin Newcastle sequence, Maitland/Branxton formation (DMR 1999). There is a linear belt of Fenestella shale running north-south through the centre. Soils are of the Awaba soil landscape (Kovac & Lawrie 1991) which consists of Brown Podzolics on the upper slopes and Yellow Podzolics on the lower slopes; this was confirmed in the field survey at the floristic plot sampling sites.
Topography	The land is 40 ha in area and roughly rectangular in shape with the long axis aligned north-south. The western boundary abuts a part of Watagan State Forest on the eastern side of the Corrabare Range with the subject site being located on the footslopes of that range. The topography consists of a number of ridges and gullies running from west to east with elevation from 160 m to 220 m. Slope varies from flat to $25^{\circ}$ with 35% of the area being $4^{\circ} - 8^{\circ}$ and 45% being $>8^{\circ} - 15^{\circ}$ (Figure 2 & 3).

#### **Biodiversity Offset Management Plan**

VegetationThe vegetation communities mapped across the site are summarised in Table 3 and are<br/>shown on Figure 2. The MU17 Lower Hunter Spotted Gum – Ironbark Forest<br/>community is listed in the schedules of the NSW Threatened Species Conservation Act<br/>1955 as an Endangered Ecological Community (EEC). This endangered community<br/>represents almost 50% of the site.

#### Table 3 MAPPED VEGETATION COMMUNITIES

Community	Area (ha)	Biometric Veg Type	Vegetation Class	Vegetation Formation
MU10 Sandstone	0.3	HU650 Turpentine - Grey	North Coast	Wet Sclerophyll
Grey Myrtle		Myrtle forest of sheltered	Wet Sclerophyll	Forests (Shrubby sub
Sheltered Forest		sandstone gullies of the Central	Forests	formation)
		Coast hinterland, Sydney Basin		
MU15 Coastal	19.5	HU631 Spotted Gum - Grey	Hunter-Macleay	Dry sclerophyll forests
Foothills Spotted		Ironbark open forest on the	Dry Sclerophyll	(shrub/grass sub-
Gum – Ironbark		foothills of the Central Coast,	Forests	formation)
Forest		Sydney Basin		
MU15 Coastal	0.8	HU631 Spotted Gum - Grey	Hunter-Macleay	Dry sclerophyll forests
Foothills Spotted		Ironbark open forest on the	Dry Sclerophyll	(shrub/grass sub-
Gum – Ironbark		foothills of the Central Coast,	Forests	formation)
Forest - moist		Sydney Basin		
MU17 Lower	19.4	HU629 Spotted Gum - Broad-	Hunter-Macleay	Dry Sclerophyll
Hunter Spotted		leaved Ironbark grassy open	Dry Sclerophyll	Forests (Shrub/grass
Gum – Ironbark		forest of dry hills of the lower	Forests	sub formation)
Forest		Hunter Valley, Sydney Basin		

#### Habitat Trees

154 trees having potential habitat hollows were mapped across the subject site (Figure 3). For a site that had evidence of a large amount of past timber harvesting there is a surprising number of old growth trees, particularly *Corymbia maculata*, *Eucalyptus fibrosa* and *Eucalyptus punctata*. These old trees are in various stages of senescence with abundant hollows from very small to very large.

### **Biodiversity Offset Management Plan**

SHORT, MEDIUM AND LONG-TERM MEASURES	Management measures will generally focus on sustaining and increasing ecological health and diversity within the remnant habitat. This section provides a description of the short, medium and long-term measures that will be implemented within the offset area.
Short-Term Measures	<ul> <li>Short-term measures will include:</li> <li>Fencing to provide security and prevent uncontrolled entry of livestock and other grazing pressures;</li> <li>Signage denoting private conservation reserve on access gates and perimeter fencing to minimise the potential for accidental entry or disturbance;</li> <li>Fire management preventative measures to include inspections to identify areas requiring bushfire control measures including assessment of fuel loads and fuel management (e.g. hazard reduction burns) in consultation with the NSW Rural Fire Service.</li> </ul>
	<ul> <li>Weed management measures to include inspection for invasive weed species;</li> <li>Feral pest control measures to include inspection for evidence of feral animals;</li> <li>Report progress and successfulness of the measures within each relevant AEMR.</li> </ul>
Medium-Term Measures	<ul> <li>Medium-term measures will include:</li> <li>Secure land tenure as private conservation reserve;</li> <li>Monitoring to ensure boundary integrity;</li> <li>Fire management preventative measures to include inspections to identify areas requiring bushfire control measures including assessment of fuel loads and fuel management (e.g. hazard reduction burns) in consultation with the NSW Rural Fire Service.</li> <li>Weed management measures to include monitoring for invasive weed species and conduct weed spraying if necessary;</li> <li>Feral pest control measures to include monitoring for evidence of feral animals and conduct eradication program if necessary;</li> <li>Report progress and successfulness of the measures within each relevant AEMR.</li> </ul>

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Long-Term	Long-term measures will include:	
Measures	• Monitoring to ensure boundary integrity;	
	• Fire management preventative measures to include inspections to identify areas requiring bushfire control measures including assessment of fuel loads and fuel management (e.g. hazard reduction burns) in consultation with the NSW Rural Fire Service.	
	• Weed management measures to include monitoring for invasive weed species and conduct weed spraying if necessary;	
	• Feral pest control measures to include monitoring for evidence of feral animals and conduct eradication program if necessary;	
	• Report progress and successfulness of the measures within each relevant AEMR.	
Monitoring Performance	Project Approval (07_0087) Condition 7 of Schedule 5 requires that every three years Bloomfield Colliery must commission an Independent Environmental Audit to assess the environmental performance of the project and assess whether it is complying with the requirements of the project approval and any relevant management plan.	
	The Independent Environmental Audit will be used to monitor the performance of the offset and to assess progress towards the completion criteria. The IEA will determine when the offset area has met the completion criteria.	
Management Measures	The primary objectives of the offset are to secure the tenure of the offset area for long- term conservation purposes and protect the existing flora and fauna habitats within the offset area. This section provides a detailed description of the measures that would be implemented within the Biodiversity Offset Area.	
Regeneration	A detailed ecological assessment was made of the offset site by Hunter Eco in March 2011. During the assessment it was noted that for a site that had evidence of past timber harvesting there is a surprising number of old growth trees. The site consists of continuous native forest which is in good condition and no weeds were found. The habitat is regenerating from past timber harvesting as indicted by an average 43% regrowth of canopy species. There is an abundance of trees with potential fauna habitat hollows.	
	The management measures implemented on the site will be to protect and conserve the existing native vegetation communities through natural regeneration. As the site consists of continuous native forest which is in good condition and is regenerating, no revegetation measures such as planting or seeding are considered necessary for the site.	

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Protection, Conservation and Management	Long-term protection of the Biodiversity Offset Area will be protected by an enduring covenant or restriction on the use of the land under Part 4, Division 12 of the <i>National Parks and Wildlife Act 1974</i> or similar arrangement, to the satisfaction of the NSW Department of Planning and Infrastructure.
	Bloomfield Colliery is currently in consultation with OEH to prepare a conservation agreement over the offset area. Bloomfield has provided relevant documentation for review and OEH will soon be providing advice on the next steps required to complete the process.
	The site will be fenced with restricted access and no activities will be conducted on the site that may impact on existing native vegetation and fauna habitat.
Weeds and Feral Pests	A detailed ecological assessment was made of the offset site by Hunter Eco in March 2011. During the assessment it was determined the site consists of continuous native forest which is in good condition and no weeds were found. No immediate weed management measures are required, however annual inspections of the offset area will include an assessment of the presence of weeds species and determine the requirement for weed control measures. In addition, in recognising that weeds can be brought into the offset area on vehicles and/or personnel, vehicle access to the offset area will be restricted to authorised personnel.
	The detailed ecological assessment was made of the offset site by Hunter Eco in March 2011 did not identify feral animal pests. Feral animals are not currently considered a problem in the offset area, however annual inspections of the offset area will include an assessment of the presence of feral animal species and determine the requirement for feral animal control measures. Feral pest control measures will be implemented in consultation with the appropriate government agency or controlling authority as required.
Public Access	In order to minimise unnecessary disturbance to the Biodiversity Offset Area, unauthorised access will be strictly prohibited. This will be achieved by appropriate fencing of the site and signage at all likely access points, identifying the sensitivity of the area and prohibited access by unauthorised personnel.
Bushfire	Bushfire preventative measures will include:
Management	• Periodic inspections, in conjunction with NSW Rural Fire Service, to identify areas requiring bushfire control measures including assessment of fuel loads; and
	• Fuel management (e.g. hazard reduction burns) in consultation with the NSW Rural Fire Service.
	In addition, vehicle access to the offset area will be restricted to authorised personnel due to potential for exhaust systems to lead to ignition of combustible plant material.

#### **Biodiversity Offset Management Plan**

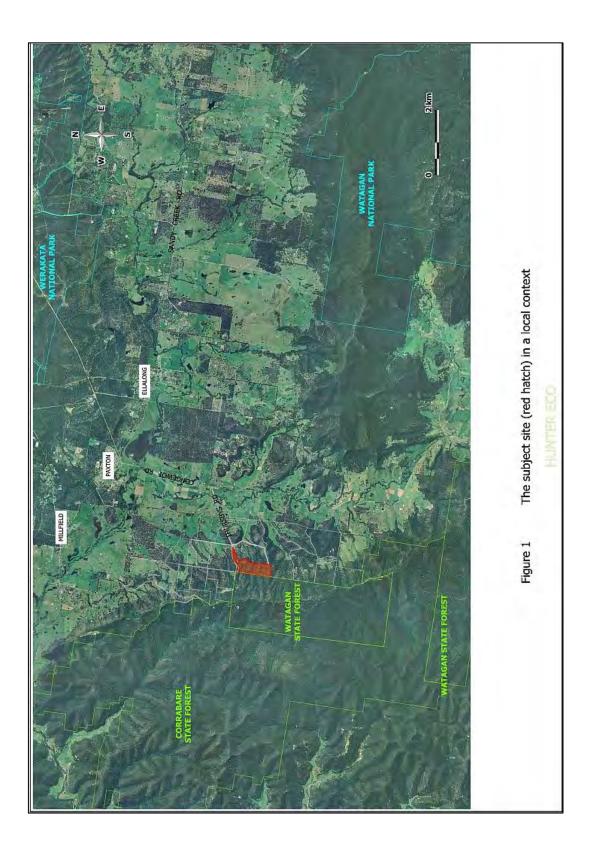
PERFORMANCE<br/>AND COMPLETIONThe performance of the offset will be monitored against the following performance and<br/>completion criteria listed in Table 4 which are developed to meet the objectives for the<br/>offset.CRITERIAoffset.

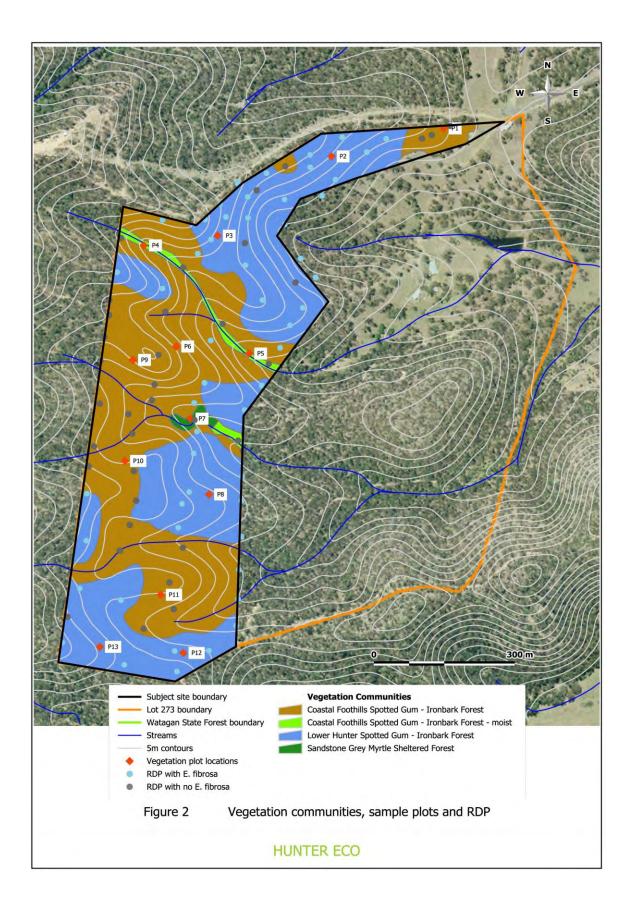
#### Table 4 PERFORMANCE AND COMPLETION CRITERIA

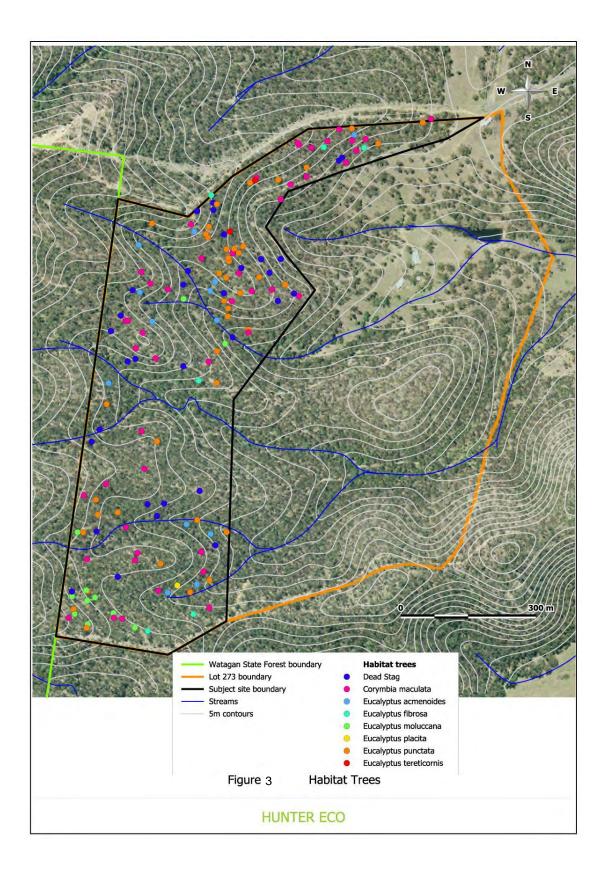
Action	Performance	Completion Criteria
Inspect and, if required, repair existing boundary fences restricting unauthorised access and controlling stock movements.	Complete inspections of existing fences and repair areas identified in need of maintenance.	Inspection and repairs completed and fences in functional condition.
Install new fencing along boundary with Lot 2372 DP 1170348 and Thursbys Road.	New boundary fencing installed between Lot 2372 DP 1170348 and Thursbys Road.	New boundary fences installed.
Inspections of fences every six months to identify condition.	Inspections every six months and repairs carried out if required.	All fences in functional condition.
Information signage on access gates and perimeter fencing to minimise accidental entry or disturbance.	Install signage on access gates and perimeter fencing.	Signage installed and maintained.
Complete feral animal inspections annually to identify existence of feral pests and develop control actions (if required).	Inspections completed annually followed by implementation of required control method, as required.	Offset area inspected for feral animals annually. Control measures implemented in response to inspections.
Complete weed inspections annually to identify existence of noxious weeds and develop control actions (if required).	Inspections completed annually followed by implementation of required control method, as required.	Offset area inspected for weeds annually. Control measures implemented in response to inspections. There are no significant weed infestations.
Complete fire management inspections bi-annually to identify control measures to protect lives, infrastructure and biodiversity vales.	Fire management inspections conducted and control measures implemented in response to inspections, if required.	Fire management inspections completed. Control measures implemented in response to inspections.
Long-term protection of the area by an enduring covenant or restriction on the use of the land under the <i>NPWS Act 1974</i> .	In consultation with OEH long- term protection of the area sought by way of an enduring covenant or restriction on the use of the land under the <i>NPWS Act 1974</i> .	Long-term protection of the area implemented by an enduring covenant or restriction on the use of the land under the <i>NPWS</i> <i>Act 1974</i> .

### **Biodiversity Offset Management Plan**

### **FIGURES**







**Biodiversity Offset Management Plan** 

### **APPENDIX** A

### ASSESSMENT AGAINST OEH OFFSET PRINCIPLES

#### ASSESSMENT OF PROPOSED OFFSET AGAINST DECCW'S PRINCIPLES FOR THE USE OF BIODIVERSITY OFFSETS IN NSW

The following provides an assessment of Bloomfield Colliery's proposed offset to allow for the clearing of native vegetation. The site is the final stages of subdivision from Lot 237 DP 1017683 at Thursbys Road in the Cessnock LGA (Subdivision Plan No 14/2008/552/1).

#### 1. Impacts must be avoided by first using prevention and mitigation measures

The area to be cleared has been kept to the smallest area possible in order to minimise the impacts.

#### 2. All regulatory requirements have been met

The regulatory requirements associated with the proposed clearing are addressed in the Bloomfield Colliery Section 75W Modification Report (Business Environment 2010) and supplementary information prepared by Hunter Eco (2010). These include an assessment on threatened species and endangered communities in accordance with the state and commonwealth legislative requirements.

#### 3. Offsets must never reward ongoing poor performance

The proposed offset is designed to permanently protect a parcel of land containing native vegetation. The intent is to place a restrictive covenant on the land so that permanent protection is provided.

#### 4. Offsets will complement other government programs

Given the site borders Watagan State Forest it is well positioned to complement any future initiatives that the government may have in relation to the development and protection of nature reserves and regional parks.

#### 5. Offsets must be underpinned by sound ecological principles

The site chosen will result in a number of significant conservation outcomes as evidenced by the ecological assessment. In developing an appropriate set of offset measures a number of guiding principles were taken into account including the area of impact, type of communities affected, connectivity with adjoining habitat and corridors, overall condition of the site, security and the level of conservation value.

#### 6. Offsets should aim to result in a net improvement in biodiversity over time

In comparing the value of the offset site with the area to be cleared, it can be shown that the preservation of the offset will result in a number of significant conservation outcomes. Table 1 provides a summary of the applicable multipliers and shows that a greater than like-for-like conservation outcome would result.

Description	Offset	Area to be cleared	Multiplier
Total habitat	40 Ha	11 Ha	4:1
Lower Hunter Spotted Gum Ironbark EEC	19.6 Ha	7 Ha	3:1
Potential Habitat Trees	154	31	5:1

#### Table 1 Summary of Offset Measures

As detailed in the ecology report, a conservative approach was taken in mapping the boundaries of the LHSGIF EEC. The study found that the site contains at least 19.6 hectares of LHSGIF EEC although this could in fact be up to 20% higher. It is also important to note that site is the western known limit of the LHSGIF EEC. Permanent protection of this area would limit the potential for a reduction in the overall extent of the LHSGIF EEC. As it adjoins the Watagan State Forest, the site will also be protected from becoming isolated or fragmented and should also help improve the long term viability and functionality of the site.

The ecological assessment found that although the site has been logged it is in a good condition with few weeds. It contains an abundance of habitat trees (154 in total) and an abundance of *Allocasuarina torulosa* which is an important resource for the threatened Glossy Black-Cockatoo.

### 7. Offsets must be enduring and they must offset the impact of the development for the period that the impact occurs

To ensure that the offset is permanent it is anticipated that upon approval of the section 75W modification, a restrictive covenant would be placed on the parcel of land. The proximity to Watagan State Forest will also prevent the site from becoming isolated or fragmented thereby helping to ensure the long term viability and functionality of the site.

#### 8. Offsets should be agreed prior to the impact occurring

The offset strategy will be agreed by all parties prior to the impact occurring.

#### 9. Offsets must be quantifiable and the impacts and benefits must be reliably estimated

The assessment shows that a greater than like-for-like conservation outcome would result thereby satisfying the principles applied by DECCW for the use of biodiversity offsets in NSW. The full ecological assessment "*The ecology of Lot 2371 DP 1017683 Thursbys Road Congewai*" (Hunter Eco 2011) has been prepared by a qualified ecologist and should be referred to for details. The survey methodology used was developed for the Department of Environment and Climate Change by Bell and Driscoll as outlined in "Vegetation of the Cessnock-Kurri Region, Survey, Classification & Mapping, Cessnock LGA, New South Wales" (DECC 2008).

Despite having been logged in the past, the site was found to be in good condition offering numerous (154) habitat trees. An abundance of *Allocasuarina torulosa* which is an important resource for the threatened Glossy Black-Cockatoo was found and a presence of Red Cedar (*Toona Ciliata*) including one large specimen and several small individuals scattered along the drainage lines were also recorded.

The direct linkage with the Watagan State Forest will help ensure that the area does not become isolated or fragmented from other vegetation. It will assist in protecting the boundary of a large expanse of native vegetation.

#### 10. Offsets must be targeted

A site containing LHSGIB EEC was targeted in recognition of the proposed clearance of 7 hectares of this community. The site contains at least 19.6 hectares of LHSGIF EEC although this could in fact be up to 20% higher. In addition, the site is also located on the western known limit of the LHSGIF EEC and is directly linked to the Watagan State Forest.

The assessment found that a greater than like-for-like conservation outcome would result. The applicable multipliers include:

- Total Habitat 4:1
- LHSGIF EEC 3:1
- Habitat Trees 5:1

#### 11. Offsets must be located appropriately

The site contains similar ecological characteristics including the presence of at least 19.6 hectares of LHSGIB EEC. It is located in the Cessnock LGA and within the Hunter-Central Rivers Catchment area.

#### 12. Offsets must be supplementary

The site is privately owned and is not funded or protected by another conservation scheme or included in a public reserve. It borders the Watagan State Forest which is publicly owned land and could be included in any future reserves or national parks that may be created to conserve native vegetation.

13. Offsets and their actions must be enforceable through development consent conditions. Licence conditions, conservation agreements for a contract.

It is anticipated that that a protective covenant will be placed on the parcel of land following the approval of the application to modify the Project Approval.