



Biodiversity Offset Plan

Prepared for: **BHP Billiton Mitsui Coal Pty Ltd**

**Poitrel Coal Mine Project - EPBC Variation of
Approval 2004/1770**

26th August 2013

Our Reference 20121566



THE **FIRST CHOICE** ENVIRONMENTAL BROKER

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List of Abbreviations	
Abbreviation	Description
BOP	Biodiversity Offset Plan
BOS	Biodiversity Offset Strategy
BMC	BHP Billiton Mitsui Coal Pty Ltd
BPA	Biodiversity Planning Assessment
BVG	Broad Vegetation Group
DEHP	Department of Environment and Heritage Protection
DERM	Department of Environment and Resource Management (former)
DNRM	Department of Natural Resources and Mines
DOA	Deed of Agreement
DSEWPaC	Department of Sustainability, Environment, Water, Population & Communities
EA	Environmental Approval
EE	Ecological Equivalence
EEM	Ecological Equivalence Methodology
EIS	Environmental Impact Statement
EMP	Environmental Management Plan
EOP	Environment Protection & Biodiversity Conservation Act Environmental Offset Policy 2012
EPBC	Environment Protection & Biodiversity Conservation Act (Cth)
EPC	Exploration Permit for Coal
ha	Hectares
HVR	High Value Regrowth
km	Kilometres
LBM	Legally Binding Mechanism (on title)
ML	Mining Lease
MLA	Mining Lease Application
MNES	Matters of National Environmental Significance
Mtpa	Million tonnes per annum
NCA	Nature Conservation Act (Qld)
NRMP	Natural Resource Management Plan
OAMP	Offset Area Management Plan
PCI	Pulverised Coal Injection
PMAV	Property Map of Assessable Vegetation
QBOP	Queensland Biodiversity Offset Policy
RE	Regional Ecosystem
ROM	Run of mine
SPA	Sustainable Planning Act (Qld)
TEC	Threatened Ecological Community
VDec	Voluntary Declaration
VMA	Vegetation Management Act (Qld)

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1. Introduction

1.1. Project background

The Poitrel Coal Mine (**Poitrel**) is located in the Bowen Basin region of Queensland, approximately 35 kilometres south-east of Moranbah, and approximately 150km south-west of Mackay (refer **Figure 1**). It is one of two mines owned by BHP Billiton Mitsui Coal Pty Ltd (**BMC**), with the other being South Walker Creek Mine (also located within the Bowen Basin). Further to these two existing operations, BMC also has an underground 'greenfield' mine project located at Glenden, being approximately 60km north-west of Poitrel Mine.

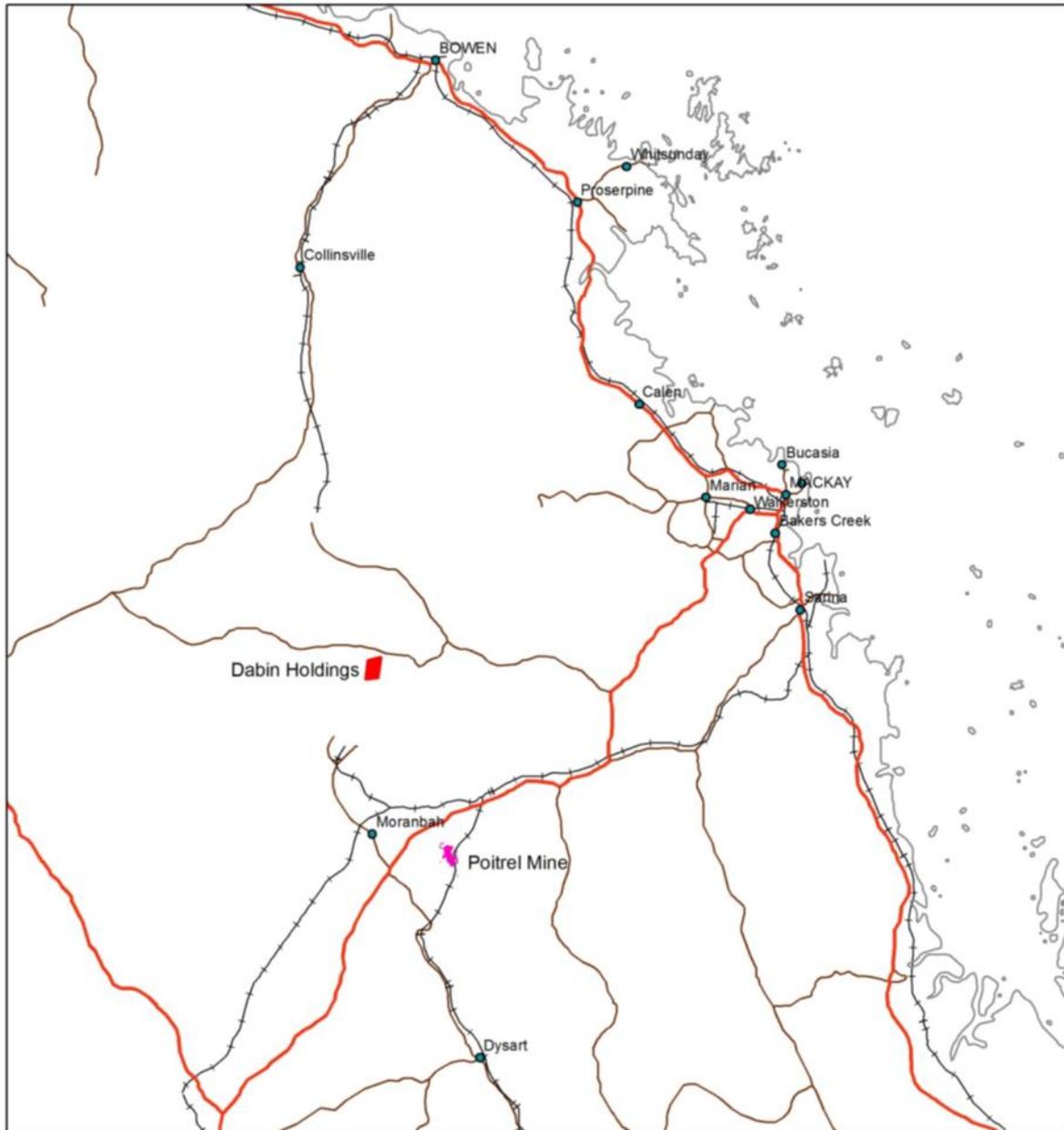
The Poitrel Coal Mine was approved for development in 2006, with operations commencing in September that year as part of Stage 1 Coal Mining. The mine is an open cut coal mine utilising an excavator and truck fleet to mine coking and pulverized coal injection (**PCI**) coal for the export market. Poitrel Mine currently produces up to 4 Mtpa of product, with a life of mine estimated at approximately 30 years.

As part of the approval of Poitrel Mine, an Offset Obligation (relating to impacts to Brigalow communities) was imposed by the Department of Sustainability, Environment, Water, Population and Communities (**DSEWPaC**) via the Environmental Approval dated 2 June 2006 (EPBC 2004/1770). This approval was subsequently amended in the "Variation of Approval – Poitrel Coal Mine (EPBC 2004/1770)" dated 7th September 2006 (**Varied Approval**). Fundamentally, the Varied Approval requires that the proponent offset the loss of 156ha of the Threatened *Acacia harpophylla* (Brigalow) dominant and co-dominant ecological community.

Initially, an offset was proposed on lease which was deemed to not satisfy the condition. The area was still set up as an exclusion zone. It is understood that the BHP Mitsubishi Alliance (BMA – as then operator of Poitrel), then worked closely with DSEWPaC and the Department of Environment and Resource Management (**DERM**) to establish an alternative offset area adjacent to BMC's South Walker Creek Mine operation – to satisfy the outstanding offset obligation. Upon BMC taking over Poitrel in 2010 however, due diligence work identified that recent and ongoing mineral and gas exploration activity had begun to fragment the proposed offset area. Further to this, intense interest from petroleum and coal companies in developing the proposed offset land, created significant concerns with the potential sustainability of the proposed offset area. As such, following consultation with DERM in late 2011, it was agreed that the proposed area would not be a preferable location for an offset establishment.

In early 2012 therefore, BMC commissioned Earthtrade to identify a suitable offset area to fulfil the outstanding offset obligation. Potential offsets for Poitrel have now been identified on one of BMC's rural properties, Dabin Holdings (refer **Figure 1**). Dabin Holdings is located 45 km north of Moranbah and 68km west of Nebo (adjacent to BMC's Wards Well Project).

Figure 1: Poitrel Mine and Dabin Holdings Locality Map



Legend

- Poitrel_Cleared_Area
- Proposed Offset Area
- Highways
- Railways
- Main roads

40 20 0 40 Kilometers



Projection: UTM (MGA Zone 55)
Datum: GDA 94



Dabin Holdings

The data and information used to produce this drawing was current at the date of the drawing. STIRD Services does not accept liability for any errors contained within the data supplied on this map and any changes made after the date of drawing.

Client	Earthtrade
Regional Council	Isaac
Source:	DERM 2011
Job No:	2012_08_31
Drawn by:	J.Kelman
Date	31st August 2012



2. Legislation

2.1 Project approvals

As part of the 2006 approval of the Poitrel Mine, the project was declared a “controlled action” under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. This occurred on 2nd June 2006 and was subsequently amended in the Varied Approval. The controlling provisions were potential impacts on listed threatened species and ecological communities.

2.2 Purpose of this biodiversity offset plan

This Biodiversity Offset Plan has been specifically devised to address the requirements of Condition 4 of the Varied Environmental Approval, as detailed in the following table:

Table 1 – Conditions of Varied Approval

Condition	Relevant section of this Report
4. <i>Within 12 months of the date of this approval, the person taking the action must submit for the Ministers approval a plan to offset the loss of 156ha of Brigalow (Acacia harpophylla dominant and co-dominant) ecological community and to manage that community. The plan must include:</i>	This Plan
a. <i>measures for the long-term protection of at least an equivalent existing area(s) of remnant or regrowth Brigalow (Acacia harpophylla dominant and co-dominant) ecological community;</i>	Section 6, Section 7, Section 8
b. <i>measures for weed control, fire management, erosion and sediment control, exclusion of livestock, and restrictions on access;</i>	Section 7
c. <i>the development and implementation of a monitoring program including performance criteria against which the effectiveness of this plan can be measured; and</i>	Section 11
d. <i>a process to review and report on this plan.</i>	Section 10 and Section 11

3. Impact on Threatened Ecological Communities (TECs)

The TEC approved to be cleared as part of the Poitrel Mine is outlined in **Table 2** below.

Table 2 – TEC impacted

Threatened Ecological Community	EPBC Status	Analogous Regional Ecosystems	Area Cleared under Approval (ha)
Brigalow (<i>Acacia harpophylla</i> dominant and co-dominant)	Endangered	11.3.1/11.4.8/11.4.9 (Brigalow)	156

4. Terrestrial values to be offset

4.1 Brigalow

The ecological community known as 'Brigalow (*Acacia harpophylla* dominant and co-dominant)' was listed as Endangered in 2001 under the EPBC Act. "Brigalow" is the commonly accepted name for the species *Acacia harpophylla* and the vegetation in which this species is dominant or co-dominant, and is used in Queensland to describe the regional ecosystems/vegetation communities that correspond with the listed Brigalow ecological community.

The EPBC-listed ecological community is characterised by the presence of Brigalow (*Acacia harpophylla*) as one of the three most abundant tree species. Brigalow is usually either dominant in the tree layer or co-dominant with other species such as *Casuarina cristata* (Belah), other species of *Acacia*, or species of *Eucalyptus*. Occasionally Belah, or species of *Acacia* or *Eucalyptus* may be more common than Brigalow within the broad matrix of Brigalow vegetation. The structure of the vegetation ranges from open forest to open woodland. The height of the tree layer varies from about 9 m in low rainfall areas (averaging around 500 mm per annum) to around 25 m in higher rainfall areas (averaging around 750 mm per annum). A prominent shrub layer is usually present.

The listing advice for the Brigalow ecological community is located at **Appendix 3a** to this Biodiversity Offset Plan. A more detailed description of this ecological community may be found in the "Recovery plan for the "Brigalow (*Acacia harpophylla* dominant and co-dominant)" endangered ecological community" (which is located at **Appendix 3b** to this Biodiversity Offsets Plan).

In Queensland, the listed Brigalow ecological community comprises 16 regional ecosystems, which include those located within the offset area being:

- Regional Ecosystem 11.3.1 – Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata* (particularly in southern parts), with or without scattered emergent *Eucalyptus spp.* such as *E. coolabah*, *E. largiflorens*, *E. populnea*, *E. orgadophila*, and *E. pilligaensis*. A low tree layer dominated by *Geijera parviflora* and *Eremophila mitchellii* is

usually present. The vegetation sometimes occurs as low open-forest or woodland. Tree height generally about 11-15m and the low tree (to tall shrub) understorey layer is between 2 and 8m high (where present). Ground cover is generally sparse. Associated with Cainozoic alluvial plains which may be occasionally flooded. Landforms range from level to very gently sloping plains, alluvial flats, drainage floors, back-swamps and abandoned channels. Associated soils are predominantly deep to very deep cracking clays, sometimes with gilgai or texture contrast soils with sandy surface (particularly where *Eucalyptus populnea* is present), and

- Regional Ecosystem 11.3.1a – A subset of 11.3.1. Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata* (particularly in southern parts), with scattered emergent *Eucalyptus* spp. *E. orgadophila*. Occurs on alluvium with basaltic influence, and
- Regional Ecosystem 11.9.5 – Open-forest dominated by *Acacia harpophylla* and/or *Casuarina cristata* (10-20m). Open-forest dominated by *C. cristata* is more common in southern parts of the bioregion. A prominent low tree or tall shrub layer dominated by species such as *Geijera parviflora* and *Eremophila mitchellii*, and often with semi-evergreen vine thicket species is often present. The latter include *Flindersia dissosperma*, *Brachychiton rupestris*, *Excoecaria dallachyana*, *Macropteranthes leichhardtii* and *Acalypha eremorum* in eastern areas, and species such as *Carissa ovata*, *Owenia acidula*, *Croton insularis*, *Denhamia oleaster* and *Notelaea microcarpa* in south-western areas. *Melaleuca bracteata* may be present along watercourses. Occurs on fine-grained sediments. The topography includes gently undulating plains, valley floors and undulating foot slopes and rarely on low hills. The soils are generally deep texture-contrast and cracking clays. The cracking clays are usually black or grey to brown or reddish-brown in colour, often self-mulching and sometimes gilgaied in flatter areas. Some texture contrast soils are shallow to only moderately deep.

5. Proposed offset area

An offset area to satisfy this condition has been identified on “Dabin Holdings” a property located approximately 48 km north-east of Moranbah and 68km north-west of Nebo (see **Figure 2**). The area is sub-tropical with a sub-humid climate that has hot wet seasons and cool dry seasons with a high degree of variability. Mean annual rainfall at Dabin Holdings is around 600 mm and is received mostly between November and April. About a quarter of this is received in the remaining months (Royal Geographical Society of Queensland, 2009).

The predominant land use on the offset site is low-intensity cattle grazing. Historically the grazing of cattle has dominated land use within the region.

5.1. Brigalow offset

Condition 4a of the Varied Approval requires measures for the long-term protection of at least an equivalent existing area(s) of remnant or regrowth Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community. 156ha was cleared at the Poitrel site.

The proposed offset area on Dabin Holdings is a heavily vegetated area, being 100% remnant vegetation (Version 6.1 of the Queensland Regional Ecosystem Mapping), see **Figure 3**.

The offset area comprises areas of Regional Ecosystems 11.9.5 and 11.3.1 that qualify under the EPBC Act listing advice as Brigalow (*Acacia harpophylla* dominant and co-dominant) ecological community

The offsets are mapped as remnant vegetation under the VMA99, however the offset areas are considered at risk from ongoing grazing pressure and weed invasion. Although the remnant areas are protected under the VMA, the existing cattle grazing operations are not prevented from accessing these remnant areas and therefore impacting the ground and shrub layers. Consequently, canopy cover of the remnant vegetation remains intact yet the overall condition of the vegetation is degraded.

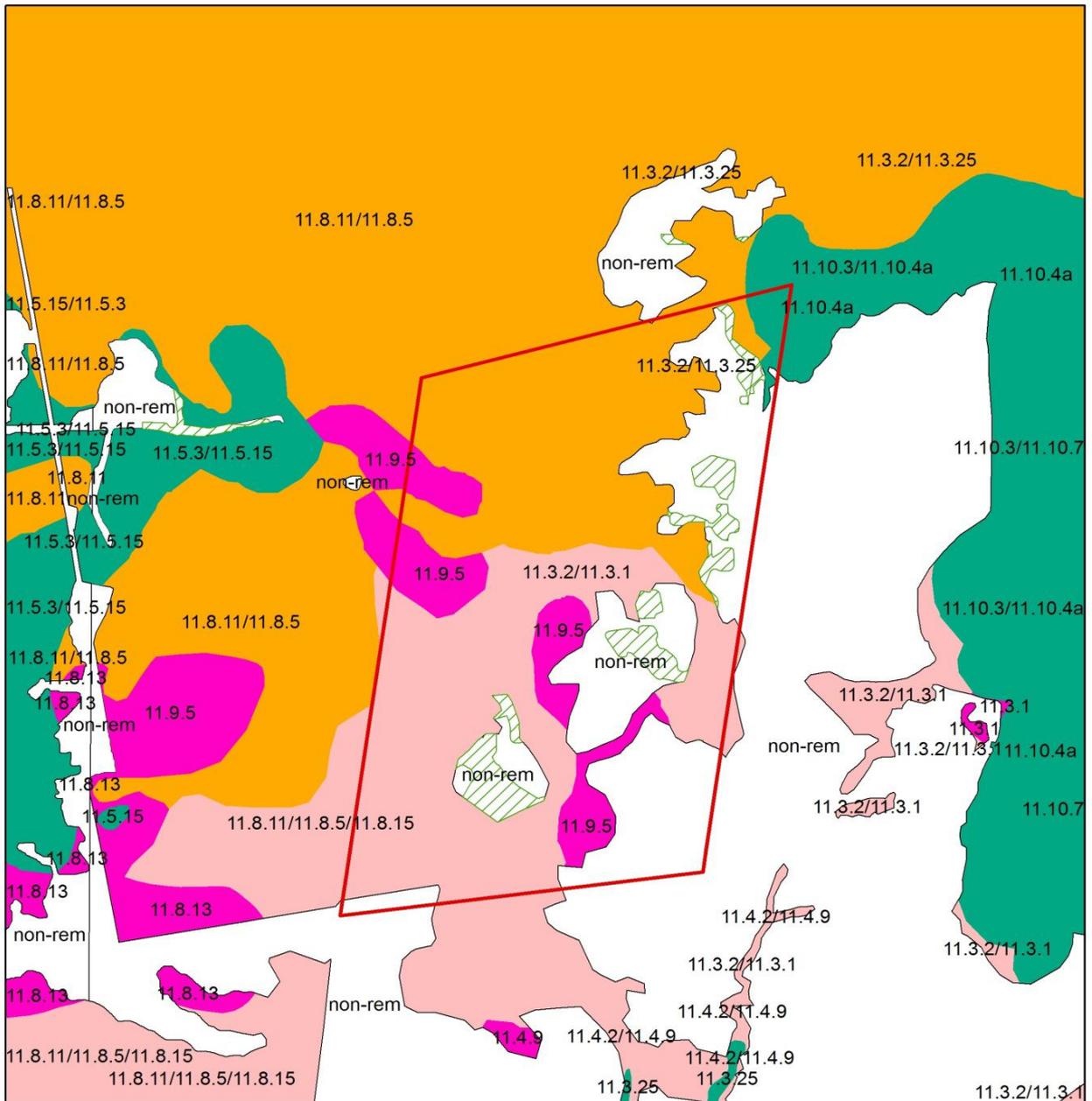
The management of the vegetation to improve the condition of the sub-canopy and ground layers, the accumulation of fallen woody debris and large hollow bearing trees will improve the condition of the vegetation and therefore the use of the vegetation by fauna species. This will enable a faster and localised solution to the impact as well as improve the connectivity across the landscape.

Vegetation is part of a large vegetation corridor to the north and west (See **Figure 3**). All of the vegetation is over 15 years of age with the majority of the area containing vegetation in excess of 25 years.

Figure 2: Site Locale



Figure 3: Remnant Vegetation Map



Legend

- Vegetation Survey Area
- DH_HVR
- Issac Council RE**
- E-dom
- E-subdom
- NotOfC
- O-dom
- O-subdom
- non-rem



1 0.5 0 1 Kilometers

Projection: UTM (MGA Zone 55)
Datum: GDA 94

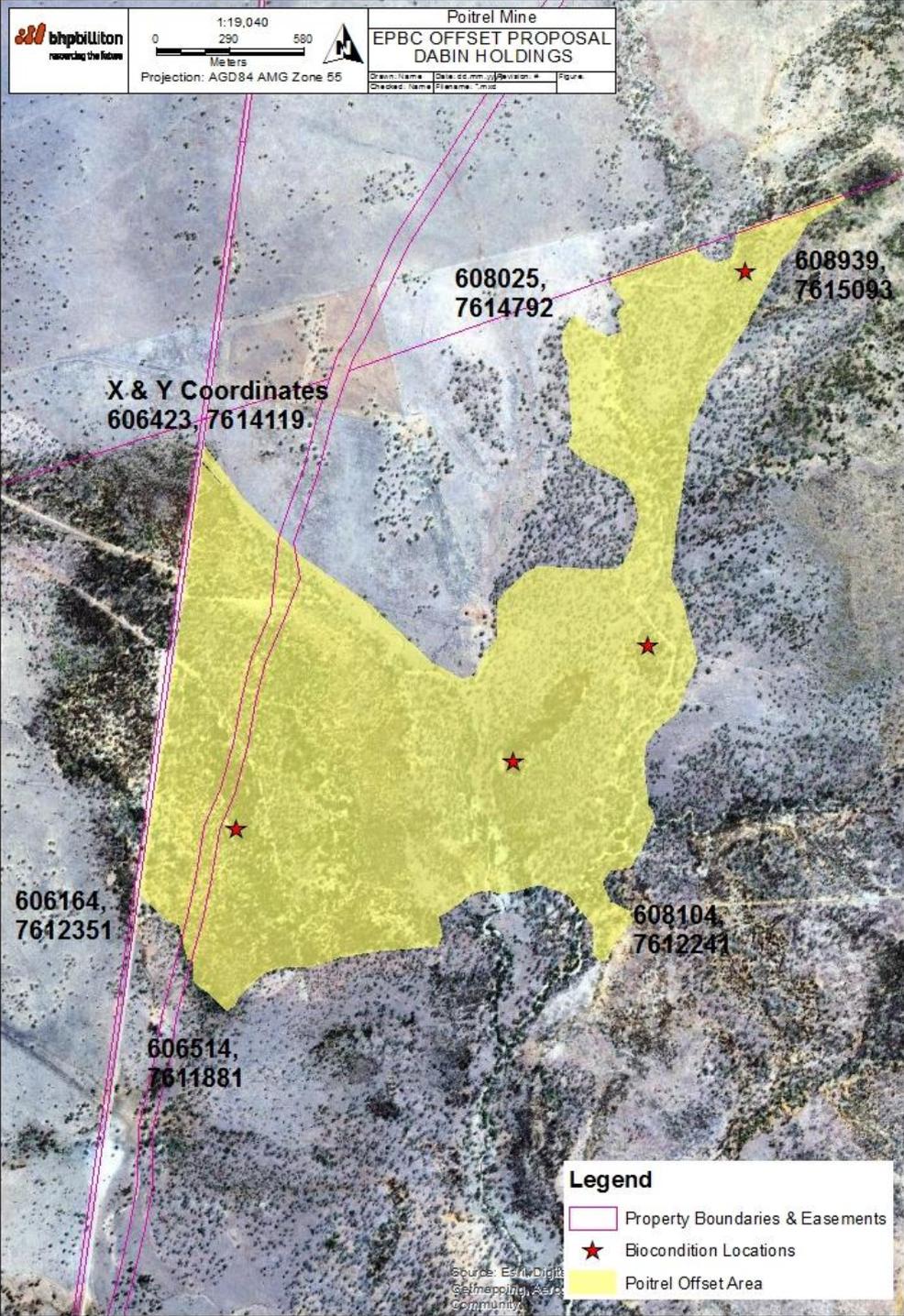
Dabin Holdings

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Client	Earthtrade
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Figure 4: Dabin Holdings Proposed Offset



*Note this figure indicates there is a historical easement through the offset area. However this area remains uncleared.

5.2. Botanical survey of Proposed Offset Area – Brigalow

Following a desktop appraisal, and initial reconnaissance of the proposed offset area, STIRD Services conducted a botanical field survey of the proposed offset area on Dabin Holdings between the 26th and 29th July 2012. The survey included BioCondition assessment sites, Quaternary assessment sites and a foot traverse of the offset area. **Figure 5** indicates the area surveyed and the sites assessed.

Flora surveys were undertaken over a five day period between 26th and 29th July 2012. The timing of the survey in the dry season provided sub-optimal conditions for vegetative vigour and inflorescence set, particularly for herbaceous and graminoid (grass) species. For this ground verification aerial photographs from 1987, 2000 and 2007 were used to compare vegetation growth and clearance over a 20 year period. Using the preliminary site visit map, RE mapping, aerial photography and on-ground analysis of vegetation composition, a BioCondition assessment and Ecological Equivalence analysis has been undertaken.

5.3.1 BIOCONDITION ASSESSMENTS

A BioCondition assessment methodology has been developed to provide a replicable and repeatable means of assessing vegetation condition. The BioCondition methodology offers a framework for Queensland that 'provides a measure of how well a terrestrial ecosystem is functioning for biodiversity values'. It is designed so that individual sites can be compared to a reference site of the 'best condition available' of the same regional ecosystem. It provides an output score that can be used to group condition into four classes, as outlined in **Table 3**.

Table 3 - Classification of BioCondition

BioCondition Class	% value against best condition available	Description
1	>80	Good
2	>60-79	Fair
3	>40-59	Poor
4	<40	Very Poor

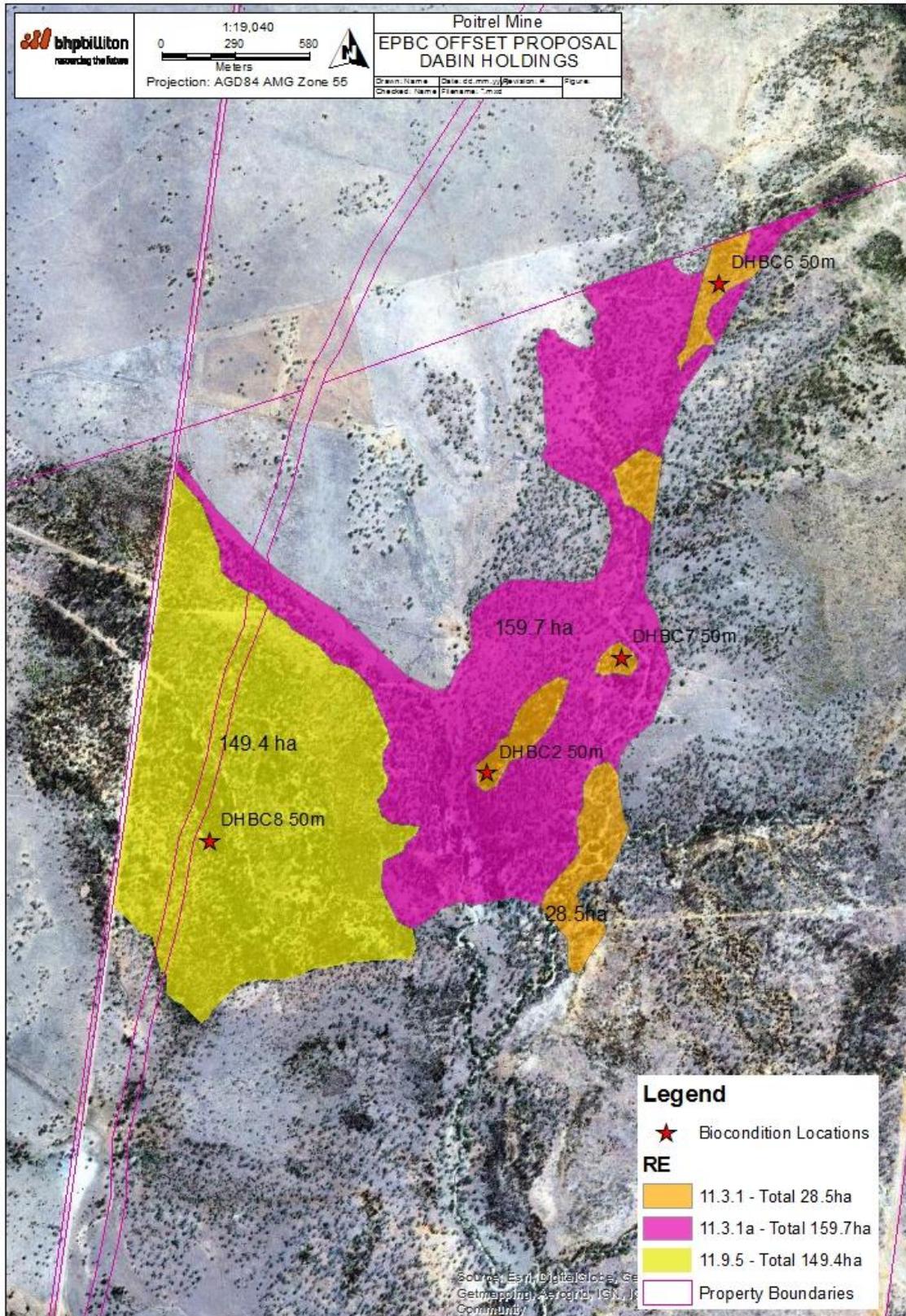
5.3.2 ECOLOGICAL EQUIVALENCE

Additional to the BioCondition assessment, an Ecological Equivalence comparison was undertaken between the impact site at Poitrel Mine and the offset site at Dabin Holdings, as per the Ecological Equivalence Methodology.

The Ecological Equivalence Methodology (**EEM**) has been developed by the Department of Environment and Heritage Protection Queensland (**DEHP**). The EEM is used to assess the ecological equivalence between an area impacted by development (the clearing area) and an area being offered in exchange for the clearing (the offset area). Ecological equivalence measures are used to compare the ecological attributes between two sites. The EEM was used in this instance as an indicative scientific measure for the offset proposed under the EPBC Act.

Section 5.3 outlines the results of these assessments.

Figure 5: Dabin Holdings Offset Area Field Verified Brigalow



5.3. Vegetation condition and suitability as an Offset

A total area of 337 ha of vegetation possessing characteristics of the Brigalow TEC (Regional Ecosystems 11.3.1 (188.15ha) and 11.9.5 (149.37ha), both of which are classified as endangered) has been identified as the Offset Area. This area of vegetation is in fair (ranging to good) biological condition and provides a suitable compensatory match (equivalency) for the impacted vegetation at the Poitrel Mine.

5.3.1 PRE-CLEAR VEGETATION

The pre-clear vegetation mapping indicated that the offset area would have historically supported vegetation which was representative of RE 11.9.5 (*Acacia harpophylla* and/or *Casuarina cristata* open-forest on fine-grained sedimentary rocks) and RE 11.3.1 (*Acacia harpophylla* and/or *Casuarina cristata* open-forest on alluvial plains).

5.3.2 GEOLOGY

The proposed offset site is located on an underlying layer of Triassic arenite mudrock. There is overlying Cainozoic basalt over the western section of the site. The south-east section of the property has an overlying layer of unconsolidated sediments.

5.3.3 BIOCONDITION OF THE TEC IN THE OFFSET AREA

A series of BioCondition assessment sites were chosen to reflect the variations of the ecological communities present at Dabin Holdings, four of these are located in Brigalow TEC within the offset area. **Table 4** provides the summary scores for these four sites and Appendix 2 contains the more detailed BioCondition assessment score sheets.

The remnant Brigalow communities (>15 years) ranged from fair to good condition and were determined to be relatively functional ecosystems. The classification was lowered due to the dominance of *Pennisetum ciliare* (Buffel grass). Buffel was introduced as a pasture plant and has spread throughout central and northern Australia. The dominance of Buffel in the understorey reduces plant species richness and alters the structure of the communities which affects the overall BioCondition (Grice 2003 and Smyth *et al.* 2009). In the BioCondition sites surveyed in the project area Buffel composed as much as 50% of the ground layer.

Table 4 – Summary of BioCondition sites within the Dabin Holdings offset area

Site #	% value against best condition available	BioCondition Class	Description
2	74	2	Fair
6	73	2	Fair
8	84	1	Good
7	58	3	Poor
Average across the offset area	72.25	n/a	Fair

5.3.4 ECOLOGICAL EQUIVALENCY TO THE IMPACT SITE

Three site surveys were conducted at the Poitrel Mine site during the project's EIS. The area affected covered 156 hectares of Brigalow TEC. These sites have been used for comparison to the offset site. CORVEG data from within 100km of the cleared area was used to provide further benchmarking information.

The CORVEG database contains all the vegetation data collected in the field by Queensland Herbarium botanists. The data is based on measurements collected from 'secondary vegetation' transects usually 50m long which includes species, foliage cover and stem density (Neldner *et al.* 2005). This potentially gives a more representative measure of condition given that most attributes required for the BioCondition are also collected in secondary vegetation sites. The only attributes absent are recruitment of species and coarse woody debris. A maximum score has been given for these attributes.

Table 5 – Summary of Impact Area EEM Scores vs Offset Area EEM Scores

Impact Area (Poitrel Mine)							
RE	11.3.1 (Ecoserve Sites)			11.3.1 (CORVEG Sites)			11.9.5a (CORVEG)
Site number	7	5	Average	19018	19245	Average	17026
Sum of scores Ecological Condition	92.00	83.50	87.80	72.50	78.50	75.50	65.50
Area (ha)	156.00			156.00			156.00
Ecological Condition score	136.97			117.78			102.18
Sum of Special Features Score	3.70	3.70	3.70	N/A			N/A
Area (ha)	156.00						
Special Features Score	5.77						

Offset Area					
RE	11.9.5	11.3.1	11.3.1	11.3.1	
Site number	8	2	6	7	Average
Sum of Ecological Condition Scores	84.00	74.00	73.00	58.00	72.25
Area (ha)	149.37	188.15			
Ecological Condition	125.47	135.94			

Scores					
Sum of scores Special Features	20.00	20.00	40.00	20.00	26.67
Area (ha)	149.37	188.15			
Special Features Score	29.87	50.18			

In summary, the offset site is more than ecologically equivalent to the cleared site. The maximum scores given to missing BioCondition data for the clearing site suggest that the scores are likely to be higher than the actual condition of the impact site prior to clearing.

Overall, the offset area on Dabin Holdings is in fair condition. Occurring on the site is the introduced pasture grass Buffel, however it does not currently appear to be preventing regrowth recruitment and seedlings are present in the grass sward. There is also a moderate distribution of native grass species across the site.

6. Legally binding mechanism

The offset area on Dabin Holdings as depicted at **Figure 5** is proposed to be protected via a Voluntary Declaration as an Area of High Nature Conservation Value, made by the land owners (BMC) under the *Vegetation Management Act 1999 (Qld)* (**VMA**). The declaration and the map at **Figure 5**, will be registered on the title of the property with the associated Offset Area Management Plan (**OAMP**). This will then be binding on all current and future owners until the intent and outcomes of the OAMP have been achieved. In relation to the Brigalow offset, the management intent will be achieved when:

- at 30 June 2040 the Specific Management Outcomes in Section 4 of the OAMP to protect and maintain the biocondition of the overall site has been achieved; or
- if prior to 30 June 2040 the Specific Management Outcomes in Section 4 of the OAMP to sustainably improve the biocondition of the overall site has been achieved.

Noting that in either case the protection afforded by the VMA for remnant vegetation will continue to apply past these dates. Should neither outcome be achieved the OAMP will be reviewed and revised outcomes determined.

7. Management of the Offset area

The offset areas will be managed in accordance with the Offset Area Management Plan which will be attached to the voluntary declaration.

An Offset Area Management Plan (refer **Appendix 1**) has been prepared in accordance with the specific requirements of the site. The offset area management plan includes information on the threats and the management actions required on the offset site to abate those threats. The OAMP contains an estimate of

the costs of management and the reporting and monitoring program that will extend until the management outcomes are achieved.

The length of active management will be influenced by the condition of vegetation, type of habitat and vegetation on site, as well as existing management issues.

7.1. Management Actions

Condition 4(b) requires that the Offset Area Management Plan include:

“measures for weed control, fire management, erosion and sediment control, exclusion of stock and restrictions on access;”

7.1.1 MANAGEMENT ACTIONS

Costs associated with the management of the property will be the responsibility of the landholder, subject to the finalisation of an agreement between BMC and the landholder. The Management Actions for the offset area will be undertaken in accordance with the OAMP (**Appendix 1**). In summary, this will include:

Management activity	Performance Objectives	Where and how will the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Monitoring Method	Reporting
Weed Management	Keep weed cover at or below current levels as determined by BioCondition surveys.	Weeds to be controlled by chemical spraying in the Offset Area.	The Landowner will undertake regular assessments for weed infestations. Should the weed infestation have increased then any additional weed control required will be undertaken as early as practicable.	Landowner	Biennial photo point monitoring for first four years of plan operation to establish improved baseline information. BioCondition monitoring every 5 years starting at year 5.	Photo point report to be submitted at year 5. BioCondition reports are to be submitted every 5 years starting at year 5.
Fire Management	Maintenance of appropriate controls to enhance biodiversity and reduce fuel loads.	A suitably qualified member of the Rural Fire Service Brigade (RFSB) will assess the suitability of the current and proposed firebreaks. Any recommendation for improvement will be implemented within 6 months from receipt of those recommendations. Stock will be grazed in the Offset Area for fuel reduction purposes. The Landowner is to ensure that the Offset Area does not become	The Landowner must within 12 months from the date of this Offset Area Management Plan coming into effect have a member of the Rural Fire Service Brigade (RFSB) inspect the offset area.	Landowner	Biennial photo point monitoring for first four years of plan operation to establish improved baseline information. Biocondition monitoring every 5 years starting at year 5.	Photo point report to be submitted at year 5. Biocondition reports are to be submitted for the every 5 years starting at year 5.

Management activity	Performance Objectives	Where and how will the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Monitoring Method	Reporting
		over grazed or degraded.				
Restricted Access	Access is strictly controlled, available to only the landholder and employees as required.	Offset Area throughout management	Maintained for the life of this Management Plan	Landowner or lessee of landowner (subject to negotiations)	Ongoing observation	N/A
Erosion and Sediment Control	Minimise erosion caused by stock and ensure the ground maintains stability	The Landowner is to monitor the effects of stock grazing in the Offset Area and is to ensure that there is always off stream watering points available for any stock in the area. If the landowner notices that the land is eroding, then the Landowner is to exclude or remove the stock from the affected area. The Landowner is to take all reasonable and appropriate action to remedy any erosion caused by stock.	The Landowner is to monitor the effects of the stock grazing in the Offset Area throughout the duration of this Management Plan.	Landowner	Regular inspection of potential erosion sites, creek banks etc.	Erosion control activities to be reported every 5 years.
Biodiversity Enhancement	Allow the accumulation of fallen timber/debris and the establishment of natural undergrowth. The activity is to be carried out by not removing the fallen timber/debris from the Offset Area.	The accumulation of fallen timber/debris is to occur throughout the Offset Area.	This is to be carried out for the life of this Offset Area Management Plan	Landowner or lessee of the landowner	Biocondition monitoring every 5 years starting at year 5.	Biocondition reports are to be submitted every 5 years starting at year 5.

Management activity	Performance Objectives	Where and how will the activity will be carried out	When the activity will be carried out	Who will be carrying out the activity	Monitoring Method	Reporting
Livestock Management	Stock will be grazed in the Offset Area for fuel reduction purposes only.	The Landowner is to graze stock in the following manner. There are no set stocking rates or times throughout the year where stock are to be permitted to graze. However the landholder is to rotate stock across different areas to prevent degradation and minimise fuel load across the entire offset area.	This is to be carried out for the life of the Offset Area Management Plan.	Landowner or lessee of the landowner	This will be monitored through ongoing interactions between BMC & the landholder.	Livestock management activities to be reported every 5 years.

8. Desired outcomes/objectives of implementing the Offset Area Management Plans

Condition 4c requires that the Monitoring Program include “performance criteria against which the Offset Area Management Plan can be assessed”. Management Outcomes/Intent for the Brigalow Offset Areas is set out in the OAMP. In summary, these consist of:

MANAGEMENT INTENT

“To protect and enhance the condition of the endangered ecological communities and threatened species habitat values, including regeneration, weed control, fire management, erosion and sediment control, management of livestock, and restrictions on access within the offset area to meet the offset requirements of the Approval Conditions EPBC 2004/1770 for Poitrel Coal Mine.”

“A legally binding mechanism, in the form of a Voluntary Declaration under the Vegetation Management Act 1999 will protect and manage this vegetation from clearing in conjunction with this management plan. The areas will be actively managed until the Specific Management Outcomes in Section 4 of the Offset Area Management Plan (OAMP) are achieved.

Specific Management Outcomes

- 1) a. The offset area will be managed; restored and protected by undertaking:
 - i. Maintenance and enhancement of natural groundcover
 - ii. Stock management for fuel load reduction
 - iii. Control of weed species
 - iv. Soil and Erosion Control
 - v. Maintenance and enhancement of natural tree and shrub regeneration
 - vi. Exclusion of fire whenever practically possible
 - b. Habitat values associated with the areas will be maintained or enhanced and protected through management, including:
 - i. Retention of habitat trees, including dead and fallen timber,
 - ii. Application of fire management (only as necessary, and as per Annexure A of the OAMP) that enhances the vegetation community
 - iii. Exclusion of fire whenever practically possible
 - iv. Control of weed species
-
- 2) The Specific Management Outcomes will be determined to have been achieved if:
 - a. at 30 June 2040 the activities outlined in 1) a. and 1) b. above have resulted in the maintenance of the BioCondition value for the overall offset area; or
 - b. prior to 30 June 2040 activities outlined in 1) a. and 1) b. above have resulted in a sustained (10% or greater) improvement to the BioCondition value of the overall offset area.

Notes

- At the time of entering into this management plan, the average BioCondition value for the overall site is 72 as detailed in the table 5 of this Biodiversity Offset Plan.
- A ‘sustained improvement’ will be achieved if in two consecutive BioCondition assessments an average improvement of 10% or greater occurs to the average BioCondition value (e.g. obtaining an average BioCondition value score of at least 79.2 for two consecutive BioCondition assessments).

9. Monitoring and reporting on implementation of legally secured offsets

Regular monitoring and reporting on the progress of the offset will be provided to the regulator with photo point monitoring to be conducted every two years for the first four years. Following this, BioCondition assessment(s) will be conducted every five years at the same location(s). These monitoring actions provide a record of comparability over the term of the offset and the overall progress of the offset in returning to a good condition for the TEC.

10. Location and boundaries of offset areas

For the offset area to be afforded long term protection (Condition 4(a)), the Queensland Government require that the OAMP include:

“a clear definition of the location and boundaries of the offset areas, through maps and/or textual descriptions as well as an accompanying shapefile”.

This is provided with the OAMP.

11. Risks and Risk Management

On Dabin Holdings, the most serious risks to the Offset Area are exotic weed invasions and uncontrolled fire. However, these threats will be effectively managed by the management actions above and through the further detail provided in the Offset Area Management Plan.

12. Conclusion

The Offset Area proposed in this Biodiversity Offset Plan is 337.5 ha of “Brigalow (*Acacia harpophylla* dominant and co-dominant) Threatened Ecological Community”.

The area will be secured using a Voluntary Declaration under the VMA and will be managed through an Offset Area Management Plan, which addresses the requirements of the Varied EPBC Act Approval.

Appendix 1 – Offset Area Management Plan

Please refer to pdf file supplied separately.

Appendix 2 – Assessment Site Score Sheets

BioCondition field assessment sheet (v 2.1)

Site: DHBC2	RE/Landtype: 11.3.1	Bioregion: 11	Property: Dabin Holdings
Date: 07/27/2012	Photos (optional) N:	S:	E: W:
Landscape photo(s):		Spot photo (s): 4	
Datum: WGS84 or GDA94	Zone: 55	0m mark AMGE: 607739	AMGN: 7613005
		50m mark AMGE: 607758	AMGN: 7613050
Transect bearing: 10N			
General description: Mature Brigalow remnant, a lot of coarse wood debris, Lysiphyllum hookeri common understorey tree, generally appears to be in good condition			

100 x 50 m area: * Ecologically Dominant Layer (EDL)

Eucalypt large tree DBH 0 (from benchmark doc.):	Non-eucalypt large tree DBH 26 (from benchmark doc.):
Number of large eucalypt trees: 0	Number of large non-eucalypt trees: 58
Total large trees: 58	
Tree canopy (EDL) height: 8	
Subcanopy and/or emergent height (where relevant): S: E:	
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree species richness includes all tree (i.e. single stemmed >2 m height) species in 100 x 50 m, not just EDL species: Acacia harpophylla, Eremophila mitchellii, Brachychiton rupestris, Lysiphyllum hookeri, Eucalyptus populnea (5)	

50 x 10 m area: (*list species if known or count if unknown)

Shrub species richness (defined as single stemmed below 2 m or multi-stemmed from base or below 20 cm) *: Alectryon diversifolius, Atalya hemiglauca, Malvastrum americanum* Dodonaea stenophylla, Carrisa ovata, Euphorbia spp (5 Native, 1 Exotic)
Grass species richness: Paspalidium distans, Entolasia sp., Chloris ventricosa, Penisetum ciliare* (3 Native, 1 Exotic)
Forbs and others (non grass ground) species richness: Brachyscome dentata, Stachytarpheta spp., Capparis lasiantha, Harrisia tortuosa*, Opuntia sp*, Asteraceae*, Plumbago zeylanica, Einadia nutans var linifolia, Enchylaena tomentosa, Ipomoea cairica, Amaranthus sp., Abutilon sp. (9 Native, 3 Exotic)
Non-native plant cover: 20% (buffel)

50 x 20 m area: Coarse woody debris (CWD; >10 cm, >0.5 m, measured to the plot boundary):

CWD Length:		CWD Length:		CWD Length:		CWD Length:		CWD Length:		CWD Length:	
1	1.50	8	11.00	15	5.10	22		29		36	
2	8.50	9	2.60	16	3.10	23		30		37	
3	5.60	10	10.30	17	3.70	24		31		38	
4	7.80	11	10.00	18		25		32		39	
5	6.00	12	9.00	19		26		33		40	
6	3.40	13	9.00	20		27		34		41	
7	10.00	14	9.50	21		28		35		Total	



Appendix 2: BioCondition field assessment sheet (v 2.1)

Site: DHBC6	RE/Landtype: 11.3.1	Bioregion: 11	Property: Dabin Holdings
Date: 07/27/2012	Photos (optional) N:	S:	E: W:
Landscape photo(s):		Spot photo (s): 4	
Datum: WGS84 or GDA94	Zone: 55	0m mark AMGE: 608694 50m mark AMGE: 608669	AMGN: 7615024 AMGN: 7614987
Transect bearing: 205			
General description: Brigalow remnant with Lysiphylum caronni understorey predominatly Pennisetum ciliare*. Lots of cattle damage i.e. bare ground			

100 x 50 m area: * Ecologically Dominant Layer (EDL)

Eucalypt large tree DBH 31.25 (from benchmark doc.):	Non-eucalypt large tree DBH 24.4 (from benchmark doc.):
Number of large eucalypt trees: 5	Number of large non-eucalypt trees: 18
Total large trees: 23	
Tree canopy (EDL) height: 8 (8-10)	
Subcanopy and/or emergent height (where relevant): S: E:	
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree species richness includes all tree (i.e. single stemmed >2 m height) species in 100 x 50 m, not just EDL species: Acacia harpophylla, Eucalyptus orgadophila, Alectryon oleifolius, Eremophilla mitchelli, Santalum lanceolatum (5)	

50 x 10 m area: (*list species if known or count if unknown)

Shrub species richness (defined as single stemmed below 2 m or multi-stemmed from base or below 20 cm) *: Carrisa ovata, Atalaya hemiglauca, Bursaria incana, Malvastrum americanum*, Grewia latifolia, Abutilon auritum (5 Native, 1 Exotic)
Grass species richness: Pennisetum ciliare*, Panicum queenlandicum, Dichanthium fecundum, Bothriochloa decipens, Melinis repens, Astrebla squarrosa, Aristida latifolia (6 Native, 1 Exotic)
Forbs and others (non grass ground) species richness: Brachyscome dentata, Passiflora foetida*, Harissa tortuosa*, Sida filiformis, Lamiaceae, Enchylaena tomentosa, Marsdenia sp. (5 Native, 2 Exotic)
Non-native plant cover: 20% (buffel)

50 x 20 m area: Coarse woody debris (CWD; >10 cm, >0.5 m, measured to the plot boundary):

| CWD Length: |
|-------------|-------------|-------------|-------------|-------------|--------------------|
| 1 3.5 | 8 2 | 15 5 | 22 | 29 | 36 |
| 2 1.2 | 9 0.5 | 16 2 | 23 | 30 | 37 |
| 3 3.5 | 10 4.5 | 17 2 | 24 | 31 | 38 |
| 4 3 | 11 7.5 | 18 8 | 25 | 32 | 39 |
| 5 2 | 12 5.5 | 19 | 26 | 33 | 40 |
| 6 4 | 13 5.5 | 20 | 27 | 34 | 41 |
| 7 2 | 14 1 | 21 | 28 | 35 | Total: 62.7 |



Appendix 2: BioCondition field assessment sheet (v 2.1)

Site: DHBC8	RE/Landtype: 11.9.5	Bioregion: 11	Property: Dabin Holdings
Date: 07/27/2012	Photos (optional) N:	S:	E: W:
Landscape photo(s):		Spot photo (s): 4	
Datum: WGS84 or GDA94	Zone: 55	0m mark AMGE: 606720 50m mark AMGE: 606667	AMGN: 7612790 AMGN: 7612781
Transect bearing: 250			
General description: Remnant Brigalow, obvious shrub understorey of SEVT species.			

100 x 50 m area: * Ecologically Dominant Layer (EDL)

Eucalypt large tree DBH (from benchmark doc.): 51.5	Non-eucalypt large tree DBH 26.5 (from benchmark doc.):
Number of large eucalypt trees: 1	Number of large non-eucalypt trees: 74
Total large trees: 75	
Tree canopy (EDL) height: 13m	
Subcanopy and/or emergent height (where relevant): S: E:	
Proportion of dominant canopy (EDL) species with evidence of recruitment: 100%	
Total tree species richness includes all tree (i.e. single stemmed >2 m height) species in 100 x 50 m, not just EDL species: Acacia harpophylla, Brachychiton rupestris, Eucalyptus populnea, Lysiphillum carronii, Flindersia dissosperma, Denhamia oleaster, Ventilago viminalis (7)	

50 x 10 m area: (*list species if known or count if unknown)

Shrub species richness (defined as single stemmed below 2 m or multi-stemmed from base or below 20 cm) *: Alectryon diversifolius, Alectryon oleifolius, Carrisa ovata, Geijera parviflora, Bursaria spinosa, Acalpha eromorum, Croton phebalioides, Ehretia membranifolia (8)
Grass species richness: Pennisetum ciliare*, Panicum queenslandicum, Eragrostis seroria (2 Native, 1 Exotic)
Forbs and others (non grass ground) species richness: Capparis lasiantha, Harrisia tortuosa*, Emilia sonchifolia, Trophis scandens subsp. scandens, Jasminum sp. Convolvulaceae (5 Native, 1 Exotic)
Non-native plant cover: 25% (buffel)

50 x 20 m area: Coarse woody debris (CWD; >10 cm, >0.5 m, measured to the plot boundary):

| CWD Length: |
|-------------|-------------|-------------|-------------|-------------|------------------|
| 1 16 | 8 | 15 | 22 | 29 | 36 |
| 2 10 | 9 | 16 | 23 | 30 | 37 |
| 3 12 | 10 | 17 | 24 | 31 | 38 |
| 4 11 | 11 | 18 | 25 | 32 | 39 |
| 5 | 12 | 19 | 26 | 33 | 40 |
| 6 | 13 | 20 | 27 | 34 | 41 |
| 7 | 14 | 21 | 28 | 35 | Total: 49 |



Site: DHBC7	RE/Landtype: 11.3.1	Bioregion: 11	Property: Dabin Holdings
Date: 07/28/2012	Photos (optional) N:	S:	E: W:
Landscape photo(s):		Spot photo (s): 4	
Datum: WGS84 or GDA94	Zone: 55	0m mark AMGE: 608270	AMGN: 7613461
		50m mark AMGE: 608285	AMGN: 7613508
Transect bearing: 35 NE			
General description: Dominated by <i>Acacia harpophylla</i> with Bluegrass understorey. Few large trees in the area. Some sinescent <i>Lysiphylum carronii</i> .			

100 x 50 m area: * Ecologically Dominant Layer (EDL)

Eucalypt large tree DBH 0 (from benchmark doc.):	Non-eucalypt large tree DBH 0 (from benchmark doc.):
Number of large eucalypt trees: 0	Number of large non-eucalypt trees: 0
Total large trees: 0	
Tree canopy (EDL) height: 4m	
Subcanopy and/or emergent height (where relevant): S: E:	
Proportion of dominant canopy (EDL) species with evidence of recruitment:	
Total tree species richness includes all tree (i.e. single stemmed >2 m height) species in 100 x 50 m, not just EDL species: <i>Acacia harpophylla</i> , <i>Corymbia clarksoniana</i> (2)	

50 x 10 m area: (*list species if known or count if unknown)

Shrub species richness (defined as single stemmed below 2 m or multi-stemmed from base or below 20 cm) *: <i>Atalya hemiglauca</i> , <i>Carrisa ovata</i> , <i>Geijera parviflora</i> (3)
Grass species richness: <i>Melinis repens</i> *, <i>Pennisetum ciliare</i> *, <i>Bothriochloa</i> sp., <i>Dicanthium fecundum</i> , <i>Paspalidium distans</i> , <i>Aristida longiceps</i> , <i>Astrelba squarrosa</i> , <i>Dicanthium sericum</i> (6 Native, 2 Exotic)
Forbs and others (non grass ground) species richness: <i>Brachyscome dentata</i> , <i>Capparis lasiantha</i> , <i>Harrisia tortuosa</i> *, <i>Optunia</i> sp*, <i>Sida gonocarpa</i> , <i>Sida filiformis</i> , <i>Desmodium</i> sp. (5 Native, 2 Exotic)
Non-native plant cover: 20% (buffel)

50 x 20 m area: Coarse woody debris (CWD; >10 cm, >0.5 m, measured to the plot boundary):

| CWD Length: |
|-------------|-------------|-------------|-------------|-------------|--------------------|
| 1 6.5 | 8 | 15 | 22 | 29 | 36 |
| 2 6.2 | 9 | 16 | 23 | 30 | 37 |
| 3 3.5 | 10 | 17 | 24 | 31 | 38 |
| 4 10 | 11 | 18 | 25 | 32 | 39 |
| 5 8 | 12 | 19 | 26 | 33 | 40 |
| 6 10 | 13 | 20 | 27 | 34 | 41 |
| 7 | 14 | 21 | 28 | 35 | Total: 44.2 |



Appendix 3 – Supporting Documentation

Please refer to pdf file supplied separately.

Appendix 3a – Listing Advice for Brigalow

Appendix 3b – Recovery Plan for Brigalow

Appendix 3c – Wildlife Online Search

Appendix 3d – Weed Fact Sheets