

# Offset Area Management Plan

for

## KEMMIS II PROJECT

and

## MULGRAVE RESOURCE ACCESS PROJECT

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## 1.0 Introduction

The purpose of this Offset Area Management Plan (OAMP) for Kemmis II Project and Mulgrave Resource Access Project is to identify the management objectives and outcomes, and the actions necessary to fulfil a statutory requirement for the provision of an offset under the *Queensland Environmental Offsets Policy 2014 Version 1.1* and the *Environment Protection & Biodiversity Conservation Act 1999 (Cwth)* (EPBC Act).

The offsets required and described in this OAMP are a result of the approval process for two projects on BHP Mitsui (BMC) South Walker Coal Mine (SWC). The projects are referred to as Kemmis II (K2) and Mulgrave Resource Access (MRA). Both the K2 and MRA projects were referred to the Department of the Environment (EPBC Act Administrative Authority) (now the Department of Agriculture, Water and the Environment - DAWE) and approved with conditions.

The MRA project was approved under EPBC 2014/7272 on the 16th January 2015 and the K2 project was also approved under EPBC 2013/7025 on the 16th January 2015. A variation to the K2 approval EPBC 2013/7025 requiring the approval holder to secure offsets with a legal binding mechanism within 2 years of construction of Stage 1 (Condition 6a) and within 2 years of construction of Stage 2 (Condition 6b) was approved on 26 August 2015. A further variation to each approval was approved on 7<sup>th</sup> October 2020 to align the annual compliance reporting dates for each approval to cover the full year ending on 30 June. The approval conditions for each project require submission of this OAMP to secure and manage offset areas to compensate for significant residual impacts to Matters of National Environmental Significance from each project as discussed in Section 4.1

Approval condition 10 for K2 EPBC 2013/7025 and condition 11 EPBC 2014/7272 require that *“if the approval holder wishes to carry out any activity otherwise than in accordance with the plans, as specified in the conditions, the approval holder must submit to the Department for the Minister’s written approval a revised version of that plan. The varied activity shall not commence until the Minister has approved the revised plan in writing. The Minister will not approve a revised plan, unless the revised plan would result in an equivalent or improved environmental outcome. If the Minister approves the revised plan that plan must be implemented in place of the plan originally approved.”*

Version 4.0 of this OAMP has accordingly been submitted to the Department in accordance with Condition 10 (EPBC 2013/7025) and Condition 11 (EPBC 2014/7272) and includes updated management actions (refer Sections 5.3) as they relate to improving management of cattle grazing and fire management in the offsets area based on proposed infrastructure installation (new fencing, firebreaks and water points) (refer Figure 1). The purpose of the proposed infrastructure is solely to achieve a conservation outcome to increase the ecological condition of the Dabin Holdings offset areas through adaptive management of livestock grazing and fire management.

This document should be read in conjunction with the *Biodiversity Offset Management Plan (BOMP) for Kemmis II and Mulgrave Resource Access Projects* which has also been updated to reflect the changes in this OAMP (BMC, 2021).

## 2.0 Summary Information

### 2.1 Departmental Reference Details

Departmental Reference Details for application that triggers offset	
Departmental Reference Number and Case Name:	EPBC Reference 2013/7025 and EPBC Reference 2014/7272
Offset reference number (if applicable):	
Tenure: Land Lease – Mining Lease 4750 (ML4750) Environmental Authority MIN 100552107	Primary Local Government Area: Isaac Regional Council

Offset Triggers and Values	
Offset Trigger	Values requiring to be offset
<input type="checkbox"/> Regional Vegetation Management Code <input type="checkbox"/> Part P <input type="checkbox"/> Part S <input type="checkbox"/> Part Xa <input type="checkbox"/> Part Xb <input type="checkbox"/> Material Change of Use / Reconfiguration of a lot Policies (Table F1) <input checked="" type="checkbox"/> <i>Environment Protection and Biodiversity Conservation Act 1999 (Cth)</i>	<input checked="" type="checkbox"/> EPBC TEC and/or Protected Spp. <input type="checkbox"/> Assessable vegetation adjacent to a wetland, significant wetland <input type="checkbox"/> Assessable vegetation adjacent to a watercourse <input type="checkbox"/> Connectivity <input type="checkbox"/> Endangered regional ecosystem <input type="checkbox"/> Of concern regional ecosystem <input type="checkbox"/> Threshold regional ecosystem <input type="checkbox"/> Critically limited regional ecosystem <input type="checkbox"/> Essential habitat <input type="checkbox"/> Essential habitat for koalas in SEQ <input type="checkbox"/> Values within a highly vegetated bioregion

## 2.2 Offset Area Details

Landholder Details	
Register Owner/Lessee (s) on Title: BHP Mitsui Coal Pty Ltd (BMC)	
Business/Company name: BHP Mitsui Coal Pty Ltd (BMC)	
ABN/ACN: 34 009 713 875	
Phone number: (07) 3329 2600	Mobile phone:
Facsimile number:	Contact person: Michael Gale Superintendent Environment BMC & NSW Energy Coal
Email: michael.gale1@bhp.com	
Postal Address: GPO Box 1389, Brisbane Qld 4001	
Property Details	
Property name: Dabin Holdings (Eastern Section)	
Real property description (lot on Plan/s): Lot 2 SP 214117	
Tenure: Leasehold	Primary Local Government Area: Isaac Regional Council
Planning Scheme Zone: Rural	Property area (ha): 10,300      Offset Area (ha): 207
Landzone / geology	Landzone 3 - Recent Quaternary alluvial systems, including closed depressions, paleo-estuarine deposits currently under freshwater influence, inland lakes and associated wave built lunettes. Landzone 8 - Cainozoic igneous rocks, predominantly flood basalts forming extensive plains and occasional low scarps. Also includes hills, cones and plugs on trachytes and rhyolites, and associated interbedded sediments, and talus. Landzone 9 - Fine grained sedimentary rocks, generally with little or no deformation and usually forming undulating landscapes.
Soils	Includes a diverse range of fine textured soils of moderate to high fertility, predominantly Vertosols and Sodosols.
Pre-clear regional ecosystem (V.)	11.3.1/11.3.2/11.3.25/11.9.5/11.8.11/11.8.5
Existing vegetation	11.10.3/11.3.1/11.3.25/11.8.11/11.8.5/11.9.10/11.9.2/11.9.5/11.9.7
Estimated age of vegetation	Varies between remnant, non-remnant and regrowth
Is there a PMAV currently over all or part of the property, Please Detail	Yes – PMAV – 2012/003187
Legally Binding Mechanism	

<input checked="" type="checkbox"/> Voluntary Declaration ( <i>Vegetation Management Act 1999</i> ) <i>Title Act 1994</i>	<input type="checkbox"/> Covenant ( <i>Land Act 1994/ Land Title Act 1994</i> )
Reference Number:	Reference Number:
<input type="checkbox"/> Nature Refuge ( <i>Nature Conservation Act 1992</i> )	<input type="checkbox"/> Other
Reference Number:	Reference Number:

### 3.0 Location and boundaries of Offset Areas

For the offset area to be afforded long term protection, as required in EPBC approval conditions, 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 in Appendix 1 – Detailed Mapping.

### 4.0 Project impact and offset area summary

#### 4.1 Project Impact

Both the MRA and K2 projects were referred to the EPBC Act Administrative Authority for assessment and declared a “controlled action” under the *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. The controlling provisions for both projects were potential impacts on listed threatened species and ecological communities. The assessment processes resulted in a quantified residual impact to threatened ecological communities (TECs) or threatened species as summarised below in Table 1.

**Table 1. Summary of MNES impact**

Project	Threatened species or ecological community	EPBC status	Area disturbed
K2	Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant)	Endangered	13.2ha
	Natural grasslands of the Queensland Central Highlands and northern Fitzroy Basin	Endangered	31.7ha
MRA	Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant)	Endangered	59ha
	Ornamental Snake ( <i>Denisonia maculata</i> ) *	Vulnerable	17.5ha

Note: \* the offset for the Ornamental Snake was approved on 28<sup>th</sup> July 2015 in accordance with the BHP Mitsui Coal Pty Ltd EPBC 2014/7272 Mulgrave Pit Expansion Project South Walker Creek Mine Offset Area Management Plan “Zamia Creek (North Section) (30 June 2015).

#### 4.2 Offset Area

The eastern section of Dabin Holdings has been identified as being able to satisfy all of the offset relevant conditions for both MRA and K2 with the exception of Ornamental Snake.

An existing offset area for the Poitrel Mine (EPBC 2004/1770) has already been established on Dabin Holdings through a legally binding mechanism. The offset requirements for K2 and MRA are also placed on Dabin Holdings as detailed in Table 2 below and shown in Appendix 1 – Detailed Mapping. Of particular interest is the staging of offsets for Brigalow TEC for the K2 Project.

The K2 project will be undertaken in a staged manner. Stage 1 will only impact the Brigalow TEC, while Stage 2 will impact Brigalow and Natural Grassland TEC. Given the staged approach to the K2 project, the Offset Area for Brigalow TEC will be provided and legally secured also in a staged approach. As calculated, the 13.2ha impact area is equivalently offset by 17ha of Brigalow TEC at Dabin. Given Stage 1 will only impact up to 18.9% of the 13.2ha (or 2.5ha over two patches), the equivalent offset area for Stage 1 is 3.2ha. The remaining 13.8ha Offset Area will be legally secured within 2 years of commencement of Stage 2 which is dependent upon BMC receiving approval for Surface Areas 6, 7 and 8. The offset areas are graphically represented in Appendix 1 – Detailed Mapping, while the K2 staged areas are represented in Figure 3 of the BOMP.

**Table 2. Summary of Offset Areas placed on Dabin Holdings.**

Project	Threatened species or ecological community	Offset area required	Timing of legal mechanism
K2	Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant)	17ha (comprised of offsets for Stage 1 and Stage 2)	VDEC 2015/006292 approved 9/12/2016 (updated 12/5/2021)

	Natural grasslands of the Queensland Central Highlands and northern Fitzroy Basin	65ha	(Appendix 1)
MRA	Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant)	125ha	VDEC 2015/006292 approved 9/12/2016 (updated 12/5/2021) (Appendix 1)

#### 4.2.1 Offset area equivalency

To ascertain the equivalency of the proposed offset areas, equivalency calculations were undertaken in accordance with the EPBC Act Environmental Offsets Policy and associated Offsets Assessment Guide using the EPBC Offset Calculator. Table 3 below presents a summary of the equivalency calculations, with the final column showing the proposed offsets directly offset over 100 per cent of the impact.

The full details of the calculations can be found in the BOMP (BMC, 2015). The proposed “future quality with offsets” scores used in the EPBC Offset Calculator are considered to be the offset specific management outcomes as discussed in section 5.2 below.

**Table 3. Offset equivalency.**

Project	Threatened species or ecological community	Impact area	Quantified impact score	Offset area	Offset %
K2	Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant)	13.2ha	2.64	17ha	188.63%
	Natural grasslands of the Queensland Central Highlands and northern Fitzroy Basin	31.7ha	22.19	65ha	100.54%
MRA	Brigalow ( <i>Acacia harpophylla</i> dominant and co-dominant)	59ha	35.4	125ha	103.5%
	Ornamental Snake ( <i>Denisonia maculata</i> ) *	Not part of this management plan			

## 5.0 Offset Area Management

### 5.1 Management Area objective

The management objective of the environmental offsets for MRA and K2 is:

*To conserve and enhance the environmental values of the threatened ecological communities over the long term, by working to increase the extent of both remnant and regrowth vegetation and improving its condition and management.*

The management area objective is estimated to be achieved within 20 years. It is recognised that the timeframes are subject to natural environmental and climatic conditions while unexpected events and other potential risks are also identified in Section 7.0; Risks and Risk Management.

The results of the baseline monitoring are listed in Appendix 2. The results of ongoing ecological condition monitoring undertaken in 2021 (Earthtrade 2021<sup>1</sup>) found the overall condition of the natural grasslands to be of fair and functional biodiversity condition while the Brigalow regional ecosystems have slightly declined in condition since baseline assessments. This reduction in condition was most likely attributed to several factors including a run of drought years as well as damage from cyclone Debbie (April 2017) and grazing during drought. The historic grazing management across the site and lack of waterpoints has also resulted in more intensive localised grazing closer to the existing watering points which has compounded the effects of the drought.

The quality of the offset area can be improved by implementation of additional fencing and water points to control grazing to reduce the density of exotic pasture grasses principally Buffel Grass (*Cenchrus ciliaris*) and Indian Couch (*Bothriochloa pertusa*). The strategic management of fire will also assist in improving the quality of the offset in particular the natural grasslands.

This Version 4 of the OAMP has been updated (refer Figure 1 and Tables 6 and 7) to include improved management actions and additional fencing and water points and fire breaks to improve management of the offset area and ultimately improve the ecological condition. The objective of this OAMP is to return improvements in ecological condition of the offsets area within 20 years of initial approval. The approval for MRA (EPBC 2014/7272) is until 31 January 2036 and K2 approval (EPBC 2013/7025) is until 31 January 2030. The required ecological condition improvements must occur by mentioned dates otherwise approvals will need to be extended.

<sup>1</sup> BHP Mitsui Coal Pty Ltd (BMC) EPBC 2013/7025 – SWC KEMMS II (K2) and EPBC 2014/7272 Mulgrave Resources Area Offset Area Biocondition Report 2021 Dabin Holdings (Earthtrade 2021)

## 5.2 Offset Area Specific Management Outcomes

During the EPBC approval process (for both projects) the EPBC Offset Assessment Guide was used to define an equivalent offset for the residual significant impacts. This included use of the EPBC Impact Calculator and EPBC Offset Calculator, whereby the known condition of ecosystems (impact and offset) was represented as an attribute score, through use of Biocondition Assessment data and adoption of the Queensland *Guide to Determining Terrestrial Habitat Quality* (version 1.1). The input scores and rationale used in those calculators and the Preliminary Documentation were approved by the EPBC Act Administrative Authority.

The scores used in the 'Future Condition with offsets' section of the Offset Calculator have been adopted as the Specific Management Outcomes for the Offset Areas.

The management objective will be considered to have been delivered if the Specific Management Outcomes have been achieved.

During the course of the offset, ongoing monitoring and reporting will include measurements of Biocondition indices in accordance with *BioCondition: A Condition Assessment Framework for Terrestrial Biodiversity in Queensland Assessment Version 2.2* (Eyre, et al 2015) which will be translated into scoring as per the *Guide to determining terrestrial habitat quality Version 1.3* (DES 2020), or subsequent versions, and into the EPBC Offset Calculator. The offset is deemed to have been delivered when future quality scores have been delivered (Tables 4 and 5).

The future condition inputs as per the approval process are provided in Table 4 and Table 5.

**Table 4. Specific management outcomes for Brigalow TEC areas**

Attribute	Value/Score	Rationale
Future quality with offsets		
Site context	8	Increased connectivity to surrounding vegetation. Improved active management of weed and cattle grazing in conjunction with other combined offset areas.
Site condition	7	Reduction of grazing pressure will allow saplings and suckers to regenerate. Less trampling and increased woodier debris will provide more potential shelter habitat for reptiles.
Species stocking rate	7	Assumed density would increase due to the increase in habitat and feed items, plus reduction of predators (dogs and pigs) and cattle disturbance.
Average of above three quality component scores.	7.33	
Score	7	As per Offset Assessment Guide calculations.

**Table 5. Specific management outcomes for Natural Grassland TEC areas**

Attribute	Value/Score	Rationale
Future quality with offsets		
Site context	8	Continued connectivity to surrounding vegetation. Ongoing management of weed and cattle grazing in conjunction with combined offset area to the south.
Site condition	8	Reduction of grazing pressure will allow native forbs and grasses to improve in density and abundance. Active management of weeds will lead to an improvement in condition
Species stocking rate	8	Assumed density and extent would increase due to the reduction in grazing pressure and competition from weed species.
Average of above three quality component scores.	8	
Score	8	As per Offset Assessment Guide calculations.

## 5.3 Specific Management Actions

The Specific Management Outcome and Offset objective will be achieved through implementation of a range of specific management actions to be performed by the Landholder (or lessees), including vegetation regeneration, weed control, fire management, erosion and sediment control, management of livestock, and restrictions on access within the offset area.

Notwithstanding this OAMP specifically refers to, and is written for, management of clearly defined Offset Areas on Dabin Holdings (eastern section), the outcome and general contextual improvement will be achieved through the management of the broader property lot as a whole. This will reduce the likelihood of edge effects, weed invasion and provides security to the habitat connectivity in place.

With improved and active management of the Offset Areas it is anticipated that an improvement in both the condition and the context attributes of the Offset Areas can be achieved. The specific management actions consist of a range of on-ground management regimes which involve differing components to match the two types of threatened ecosystem communities as described below.

### 5.3.1 Brigalow

The management actions are designed to be consistent with the national recovery plan for the listed Brigalow ecological community (Butler 2007), which identifies the following on-ground activities that are likely to assist the recovery of the TEC:

- limiting disturbance (e.g. clearing for, or maintenance of, fence lines, fire breaks, water infrastructure and access tracks) in or adjacent to remnants to minimise weed incursion (Butler 2007),
- making regular checks and carrying out appropriate treatment to avoid weed invasion (especially by exotic grasses) (Butler 2007),
- managing grass fuel loads through strategic fire management to avoid hot fires in remnants (Butler 2007), including but not limited to maintenance and management of firebreaks within and surrounding the offsets area, noting that the total area of the offset must not be reduced,
- managing grazing by domestic and native herbivores in a way that enables recruitment of native plant species and maintains a good cover of litter and woody debris including logs and fallen tree limbs (Queensland Parks and Wildlife Service 2000; Butler 2007), including time controlled grazing during the dry season (Earthtrade 2021).
- avoiding the use of the Brigalow ecological community for stock feed during droughts (Queensland Parks and Wildlife Service 2000), and
- avoiding damage to Brigalow and other native plants from aerial application of herbicides to control crop weeds (e.g. by using ground rig technology for herbicide application) (Queensland Parks and Wildlife Service 2000).

The specific management actions for the Brigalow offset areas are discussed over the following sub-sections while Table 6 below outlines the performance objectives, timing and responsible party for delivering the actions.

#### Limiting disturbance

The value of the Brigalow offset area in its remnant state is to be recognised and only the following permissible disturbance will be allowed during the term of this OAMP:

- the removal of invasive plant species
- ensure public safety
- construction and maintenance of access tracks, firebreaks, fence lines, water infrastructure for controlled cattle grazing is permitted provided that the new construction does not reduce the extent of the Brigalow offset.

Where vegetation clearing is sought for any other purpose, it must be in accordance with this management plan and the VM Act (Qld) or relevant VDEC. If any clearing in the approved offset area (beyond permissible clearing listed above) is proposed, the approval holder must notify the Commonwealth Department of Agriculture, Water and the Environment and will require additional offset areas to replace it under the EPBC Act.

#### Managing grazing by domestic and native herbivores

Grazing management requires a balanced approach in order to deliver positive improvement outcomes. As such, grazing in the Brigalow offset areas will continue but timing of grazing, stocking densities and frequencies will be managed to avoid overgrazing and damage to microhabitats whilst also managing fuel load for fires. Management activities will be focused on time controlled grazing, stock rotation and appropriate grazing pressure.

Cattle will be introduced into the offset area when timing and conditions are suitable (i.e. in accordance with the timing and measurable outcomes detailed in this plan). Fuel loads and impacts will be monitored monthly while cattle are in the offset area to ensure progress and measurable outcomes are met. Time controlled grazing will require high intensity management and cattle may need to be introduced and removed intermittently during the permissible period.

Cattle will be excluded from the Brigalow offset area during periods of drought as defined by the Queensland government including a declared Individually Droughted Property (IDP) or drought declared area, shire or part-shire.

Cattle may be rotationally grazed through the Brigalow offsets area in accordance with the following time periods, pasture and weather conditions:

- Cattle may be introduced in early-late dry season (from May to Dec)
- Cattle may be introduced when pasture dry matter yields (DM) exceed 2500 kg/ha and no free water is present in stream order one gullies.
- Remove cattle when pasture dry matter yields are nearing 1250 kg/ha<sup>2</sup> or when the wet season begins or following >25 mm of rain in a 24 hour period.

In addition to managing stock on the property, native herbivores will also be managed to avoid plague proportions becoming established or moving through the offset area. Ideally native species will be encouraged to disperse and move away from the offset area through use of noise, movement and other nuisance activities.

Management efforts discussed above in regards to grazing and pasture management are expected to have the side benefit of adjusting rates of erosion towards those naturally experienced in the region. Having an appropriate groundcover and species distribution should protect the soil from the various types of erosion forces, while the species diversity will also aid in improving soil condition to increase resilience to those forces.

Management and reporting actions will include:

- Installation and maintenance of fencing and provision of off-stream watering points to allow for rotational grazing to allow for time controlled grazing (refer Figure 1)
- If the landowner notices that the land is eroding, then the Landowner is to exclude or remove the stock from the affected area
- The land manager will document the grazing periods (Paddock number/ name, Number and Type of stock) that occurred in the offset areas during the reporting period (Quarterly) and the correlating responsive actions that occurred as part of grazing management.

### **Pest animal and weed management**

From a pest and weed perspective, the dominant risk to improving the condition of the Brigalow TEC is that of Buffel grass or invasive weeds such as Parthenium infestation, and soil disturbance by pigs. These key risks will be managed by:

- Initial and ongoing herbicide spraying program using appropriate techniques for the targeting invasive weed/s species, including Parthenium, in areas that are within or adjacent to the offset areas. It is noted that aerial application of herbicides within the offset area is not permitted.
- Subsequent inspections for the presence of weed species will occur at regular intervals not exceeding 6 months. Further application of herbicides will be used to control developing infestations of weed species.
- Implementation of a pig eradication program at times when pig presence and abundance is considered to have an impact upon the Offset Areas.
- Minimise the introduction of pest animals and control of existing populations of pest animals within the Offset Area in accordance with the *Biosecurity Act 2014*.

Wild dogs may also reduce the rate of TEC condition improvement through impacts to ecological processes and balances. If wild dogs are noticed on the property a baiting program will be implemented.

### **Fire management**

Fire management is important in the Brigalow TEC because of its susceptibility to hot burns.

To the extent practicable, fire is to be excluded from the Brigalow TEC Offset Area, except for ecological burns.

The following strategy taken from the Queensland Government Regional Ecosystems Description Database (REDD) (Queensland Herbarium 2021) Fire management guidelines is recommended for the Brigalow community associated with RE 11.9.5:

*STRATEGY: Maintain fire management of surrounding country so that wildfires will be very limited in extent. Frequent fire at the edge of this RE keeps fuel loads low. Protection from fire is necessary.*  
*ISSUES: Casuarina cristata is fire sensitive, although germination can be good in bare areas. Brigalow is soft-seeded, so germination is not promoted by fire. Buffel grass invasion will increase risk from fire. High intensity fires will cause damage to overstorey. Grazing may be an option for reducing fuel loads where exotic grass such as buffel have invaded.*

This Brigalow fire management strategy will be achieved by:

- maintaining effective firebreaks and construction of appropriate firebreaks relative to the Offset Area (refer Figure 1)

<sup>2</sup> For calculation methods refer <https://futurebeef.com.au/knowledge-centre/dry-season-pasture-budget-a-guide-for-stocking-rates/>. The benchmarks for commencing and ceasing grazing in the offset have been derived from the pasture photo standards for the Brigalow Belt, with the chosen benchmarks representing pasture dry matter yields that are moderately high (2500kg/ha) and moderately low (1250kg/ha) for the region.

- maintaining fire management of surrounding country
- co-locating firebreaks with existing roads and fence lines on the property wherever practicable (refer Figure 1)
- using an appropriate grazing intensity to minimise the fuel load during peak fire season
- fire is not used as a tool for regrowth management on the property and the risk of wildfire is managed in cooperation with neighbours
- an ecological, low intensity fire may be used at intervals greater than 7 years if recommended by a qualified ecologist.

### 5.3.2 Grassland

Currently, a recovery plan for the Natural Grassland of the Central Queensland Highlands community does not exist, however the *Approved Conservation Advice for Natural grasslands of the Queensland Central Highlands and the northern Fitzroy Basin* (Approved 2008) provides some priority threat abatement and recovery actions, examples of which are as follows:

- Identify occurrences of high conservation priority.
- Investigate and implement formal conservation arrangements such as the use of covenants, conservation agreements or inclusion in reserve tenure.
- Monitor known occurrences to identify key threats or the progress of recovery, including the effectiveness of management actions and the need to adapt them if necessary.
- Develop and implement management plans for the eradication of weeds such as *Parthenium (Parthenium hysterophorus)*, *Parkinsonia (Parkinsonia aculeata)*, *Prickly Acacia (Acacia nilotica subsp. indica)* and *Buffel Grass (Cenchrus ciliaris)*.
- Ensure chemicals or other mechanisms used to eradicate weeds do not have a significant adverse impact on the ecological community.
- Observe appropriate State protocols to avoid the spread of weeds. Implement good hygiene measures for mowing and grading equipment and take appropriate steps to avoid dispersing seeds when moving stock.
- Maintaining a good cover of native perennial grasses and spelling the grasslands from grazing are reliable methods of managing the risk of weed invasion.
- Grazing management should focus on maintaining a good cover of perennial grasses and legumes, especially the most palatable species and carrying vegetation cover through the driest years.
- Manage known sites on private property to ensure appropriate cattle and sheep grazing regimes are conducted outside the growing season, i.e. when plants are not fertile.
- Where possible, use an intermittent grazing regime in preference to burning. Avoid burning (or grazing or slashing) during peak flowering season (spring to summer).

As shown above, many of the recovery activities are generally not 'on-ground' based, and indeed the research and survey work done to date, along with the involvement with the land manager and the establishment of a conservation mechanism over the Natural Grassland Offset at Dabin delivers many of the recovery activities.

This OAMP provides for specific on-ground management activities to assist with recovery of the Natural Grassland TEC to which it applies. These are discussed over the following sub-sections while Table 7 below outlines the performance objectives, timing and responsible party for delivering the actions.

#### Limiting disturbance

The value of the Natural Grassland offset area is to be recognised and only the following permissible disturbance will be allowed during the term of this OAMP:

- the removal of invasive plant species
- ensure public safety
- construction and maintenance of access tracks, firebreaks, fence lines, and water infrastructure for controlled cattle grazing is permitted provided that the new construction does not reduce the extent of the Natural Grassland offset.

Where vegetation clearing is sought for any other purpose, it must be in accordance with this management plan or the VM Act (Qld) or relevant VDEC. If any clearing in the approved offset area (beyond permissible clearing listed above) is proposed, the approval holder must notify the Commonwealth Department of Agriculture, Water and the Environment and will require additional offset areas to replace it under the EPBC Act.

#### Managing grazing by domestic and native herbivores

Grazing management is critical to the improvement of the Natural Grassland offset area. The area will continue to be used for commercial production of cattle, however stocking densities and frequencies will be altered to avoid overgrazing and allow native grass seed to set naturally whilst minimising the likelihood of weed infestation.

The management of grazing will be improved within the Natural Grassland offsets area through use of existing and installation of new fencing and water infrastructure (i.e. tanks, troughs, and pipeline) (refer Figure 1). A time controlled grazing regime will be introduced which will be based on local conditions and knowledge and conform to the published science on grazing in native woodlands and grasslands, as has been documented in (Lunt 2005)

whereby agricultural stock grazing may be implemented for biodiversity conservation of native grasslands and savannah woodlands.

The focus of grazing management in the natural grassland area is on maintaining a good cover of perennial grasses and legumes and encourage regrowth of TEC indicator species.

Cattle may be rotationally grazed through the Natural Grasslands offsets area in accordance with the following time periods, pasture and weather conditions:

- Cattle may be introduced in the dry season (from April to September) when no water is present in stream or gullies.
- Cattle may be introduced when pasture dry matter yields (DM) exceed 2000 kg/ha and groundcover is >70%<sup>3</sup>.
- Buffel grass control will be associated with time controlled grazing after small amounts of rain < 25mm that trigger growth and do not trigger native grasses.
- Cattle should not be moved into the Natural Grassland area if they have come from a grazing area known to contain weed species that are seeding, until the fodder has passed through their systems

Cattle will be excluded from the Natural Grassland offset area during periods of drought as defined by the Queensland government including a declared Individually Droughted Property (IDP) or drought declared area, shire or part-shire.

Cattle are to be removed from the Natural Grassland in spring and early summer and grazing should be avoided during peak flowering and seed set period (Oct – Dec inclusive). Cattle should be further removed from the Natural Grassland when any of the following occur:

- pasture dry matter yields are nearing 1250 kg/ha or,
- when groundcover is <50% or,
- the wet season begins or,
- following >25 mm of rain in a 24 hour period.

Existing and planned fencing (refer Figure 1) will be maintained to enable stock management in the grassland offset area.

The grazing regime is to be carried out for the life of the Offset Area Management Plan.

In addition to managing stock on the property, native herbivores will also be managed to avoid plague proportions becoming established or moving through the offset area. Ideally native species will be encouraged to disperse and move away from the offset area through use of noise, movement and other nuisance activities.

Management efforts discussed above in regards to grazing and pasture management are expected to have the side benefit of adjusting rates of erosion towards those naturally experienced in the region. Having an appropriate groundcover and species distribution should protect the soil from the various types of erosion forces, while the species diversity will also aid in improving soil condition to increase resilience to those forces.

Further, the use of fertilisers for pasture improvement will not be allowed.

Management and reporting actions will include:

- Installation and maintenance of fencing and provision of off-stream watering points to allow for rotational grazing to allow for time controlled grazing (refer Figure 1)
- If the landowner notices that the land is eroding, then the Landowner is to exclude or remove the stock from the affected area
- The land manager will document the grazing in the offset areas during the reporting period (Quarterly) and the correlating responsive actions that occurred as part of grazing management.

### **Weed and pest animal management**

From a weed and pest animal perspective, the dominant risk to improving the condition of the Natural Grassland TEC is that of Buffel grass and Parthenium infestation or further establishment. This key risk will be managed by:

- An initial and ongoing herbicide spraying program, using appropriate techniques for the weed distribution and proximity to grassland species, in known areas of Buffel grass and Parthenium infestations that are within or adjacent to offset areas. Spraying will be by a methodology to limit exposure of the grassland to any herbicide (i.e. targeted spraying, not aerial spraying).
- Subsequent inspections for the presence of weed species will occur as part of the quarterly monitoring checklist.
- Subsequent herbicide spraying programs will be performed at intervals suited to regrowth of Buffel grass and seasonal timing and conditions pending the findings of the regular inspections.
- Minimise the introduction of pest animals and control of existing populations of pest animals within the Offset Area in accordance with the *Biosecurity Act 2014*.

<sup>3</sup> For calculation methods refer <https://futurebeef.com.au/knowledge-centre/dry-season-pasture-budget-a-guide-for-stocking-rates/>. The benchmarks for commencing and ceasing grazing in the offset have been derived from the pasture photo standards for the Brigalow Belt, with the chosen benchmarks representing pasture dry matter yields that are moderately high (2500kg/ha) and moderately low (1250kg/ha) for the region.

## Fire management

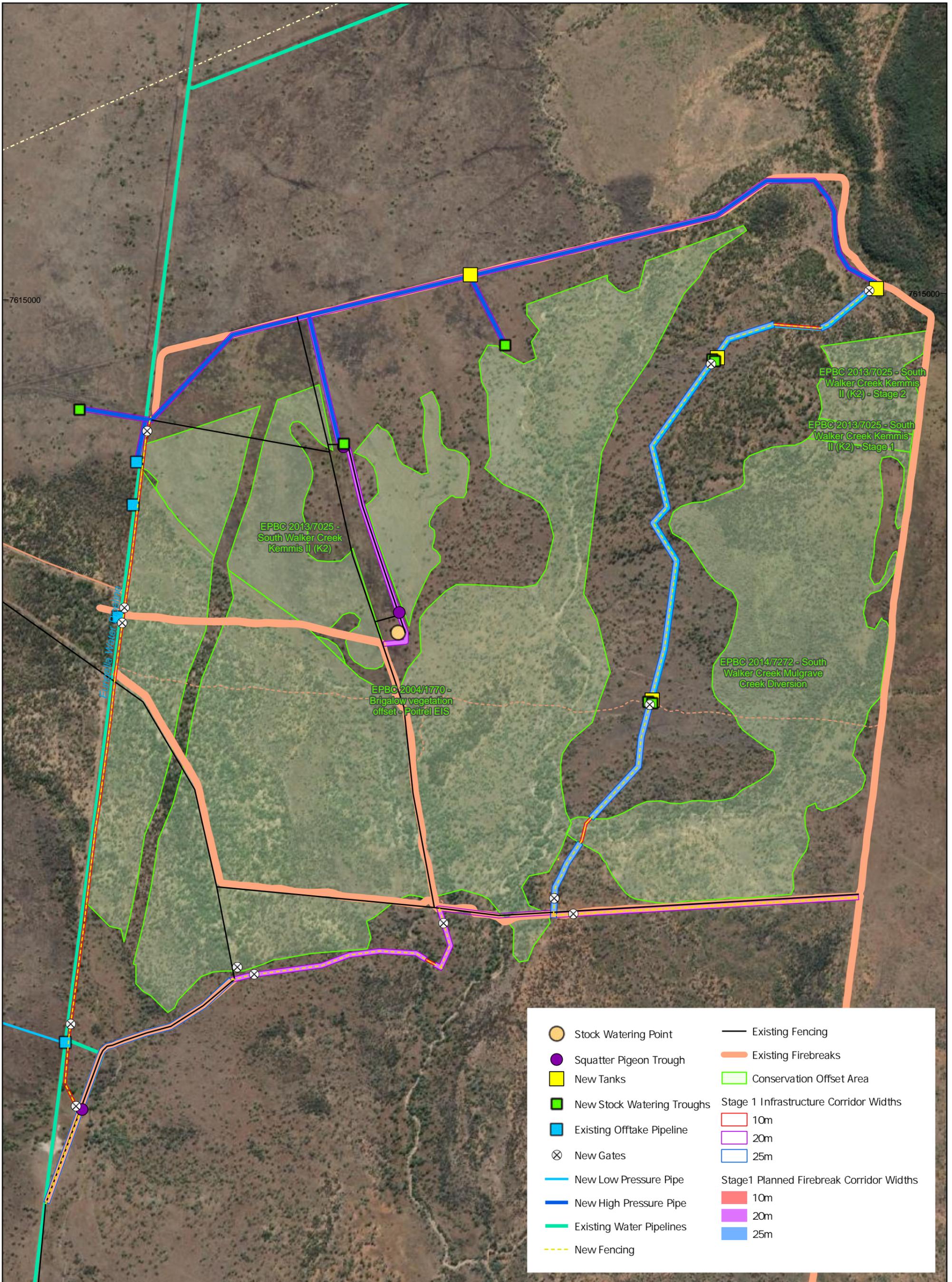
To the extent practicable, fire is to be excluded from Natural Grassland Offset Area, except for ecological burns. A low intensity fire may be permitted at intervals recommended by a qualified ecologist.

The following strategy taken from the Queensland Government Regional Ecosystems Description Database (REDD) (Queensland Herbarium 2021) Fire management guidelines is recommended for the Natural Grassland community associated with RE 11.8.11:

*SEASON: Late wet to early dry season when there is good soil moisture. Early storm season or after good spring rains. INTENSITY: Various. Mainly low, but also moderate. INTERVAL: >5 years. STRATEGY: Low to moderate burns can help limit the spread of fires. Burn less than 30% in any year. Burn under conditions of good soil moisture and when plants are actively growing. ISSUES: Fire can be used to control weed invasions, although there are also risks of promoting weeds.*

This Natural Grassland fire management strategy will be achieved by:

- maintaining effective firebreaks and construction of appropriate firebreaks relative to the Offset Area (refer Figure 1)
- maintaining fire management of surrounding country
- co-locating firebreaks with existing roads and fence lines on the property wherever practicable (refer Figure 1)
- using an appropriate grazing intensity to minimise the fuel load during peak fire season;
- fire is not used as a tool for regrowth management on the property and the risk of wildfire is managed in cooperation with neighbours.



**Table 6. Brigalow Offset Area Management Actions.**

Management activity	Performance objectives	Where, when and how will the activity be carried out	Who will be carrying out the activity	Monitoring method	Reporting
<b>Limiting disturbance</b>	The extent and condition of Brigalow TEC will be maintained or increased between each successive BioCondition assessment.	<p>Disturbance to vegetation within the offset is not permitted, except for vegetation clearing that is necessary for:</p> <ul style="list-style-type: none"> <li>a) the removal of invasive plant species</li> <li>b) ensure public safety</li> <li>c) construction and maintenance of access tracks, firebreaks, fence lines, and water infrastructure for controlled cattle grazing is permitted provided that the new construction does not reduce the extent of the Brigalow offset.</li> </ul> <p>Clearing for new fencing, firebreaks, access tracks and water infrastructure will wherever possible be on the outside of the offset area boundary or along the property boundary or minimised wherever possible. Where clearing is unavoidable in the offsets area ground disturbance will be limited to slashing and hand clearance.</p> <p>Where vegetation clearing is sought for any other purpose, it must be in accordance with this management plan and/ the VM Act (Qld) or relevant VDEC. If any clearing in the approved offset area (beyond permissible clearing listed above) is proposed, the approval holder must notify the Commonwealth Department of Agriculture, Water and the Environment and will require additional offset areas to replace it under the EPBC Act.</p> <p>Ground disturbance (i.e ploughing) is not permitted.</p> <p>Vehicle and machinery movement through the offset area is to be minimised.</p> <p>Deliberate introduction of non-endemic species is not permitted.</p> <p>The use of fertilisers on the property at locations where it could move into the offset area is to be avoided.</p> <p>Any vegetation clearing must be undertaken in accordance with any applicable legislative requirements</p>	Landowner / Land manager	<p>All activities will be monitored through:</p> <ul style="list-style-type: none"> <li>• routine inspections by the landholder and or agistee/ lessee and or a third party.</li> <li>• Land manager and/or a third party to develop a basic checklist for observations or actions relevant to managing the offset, including <ul style="list-style-type: none"> <li>○ weather conditions,</li> <li>○ grazing intensity and stock rotation</li> <li>○ pasture management activities such as seeding or fertilising,</li> <li>○ pest and weed occurrence/intensity and management activities,</li> <li>○ erosion issues and any control works</li> <li>○ incidents of fire and description</li> <li>○ general property management activities such as fencing</li> </ul> </li> <li>• checklist to be completed quarterly by land manager.</li> <li>• ongoing interactions between BMC &amp; the landholder including landholder records and anecdotal discussions.</li> <li>• Biannual photopoint monitoring for first 2 years, then annually for next 5 years, then biennially for remaining duration of offset.</li> </ul>	<p>Biocondition reporting to be undertaken ever 5 years.</p> <p>A detailed report will be submitted to the administering Government department at an interval not exceeding 5 years.</p> <p>The detailed report will compile and make an assessment of:</p> <ul style="list-style-type: none"> <li>• quarterly checklist data</li> <li>• photopoint monitoring data</li> <li>• Biocondition results</li> </ul> <p>The summary report will undertake recalculation of the Offset Area score (as per EPBC calculator) to determine condition trajectory and ascertain if the Offset Area has achieved the outcome.</p>
<b>Grazing management</b>	<p>An improvement in the site condition and species stocking rate scores between each successive BioCondition assessment.</p> <p>Natural regeneration of Brigalow species will be recorded at each Biocondition Assessment.</p>	<p>Cattle may be introduced into the offsets area in the early to late dry season (from May to Dec) when pasture dry matter yields (DM) exceed 2500 kg/ha and no free water is present in stream order one gullies<sup>4</sup>.</p> <p>Cattle are to be excluded from the offset area during the wet season and removed from the offsets area when pasture dry matter yields (DM) are nearing 1250 kg/ha or when the wet season begins following &gt;25 mm of rain in a 24 hour period.</p> <p>Cattle will be excluded from the Brigalow offset area during periods of drought as defined by the Queensland government including a declared Individually Droughted Property (IDP) or drought declared area, shire or part-shire.</p> <p>The quarterly checklist completed by the land manger will document the grazing periods that occurred (type and number of cattle) in the offset areas during the reporting period and the correlating responsive actions that occurred as part of grazing management</p> <p>The grazing regime is to be carried out for the life of the Offset Area Management Plan.</p>	Landowner / Land manager	As above	As above
<b>Weed management</b>	Keep weed cover at or below baseline levels as determined by BioCondition surveys.	<p>An initial weed spraying program will occur within the first 6 months of offset establishment. This will specifically target any small populations of Buffel grass or Parthenium that may be present.</p> <p>Annual offset inspections will also identify if any weeds become established. If identified during annual inspections then additional weed control will be undertaken as early as practicable considering climatic conditions.</p> <p>The presence of Parthenium makes weed eradication unlikely. Weeds will be managed annually with an aim to reduce weeds to below 10% cover.</p>	Landowner / Land manager	As above	As above

<sup>4</sup> For calculation methods refer <https://futurebeef.com.au/knowledge-centre/dry-season-pasture-budget-a-guide-for-stocking-rates/>. The benchmarks for commencing and ceasing grazing in the offset have been derived from the pasture photo standards for the Brigalow Belt, with the chosen benchmarks representing pasture dry matter yields that are moderately high (2500kg/ha) and moderately low (1250kg/ha) for the region.

Management activity	Performance objectives	Where, when and how will the activity be carried out	Who will be carrying out the activity	Monitoring method	Reporting
		Cattle should not be moved into the Brigalow area if they have come from a grazing area known to contain weed species that are seeding, until the fodder has passed through their systems			
<b>Pest animal management</b>	Occurrence of pest animals is at or below levels estimated at commencement through baseline assessments	<p>Wild pigs pose the greatest risk to the improvement of the Brigalow offset area.</p> <p>Should the presence of pigs be noticed during the quarterly checklist, a pig eradication program shall be implemented within the Offset Area in accordance with the <i>Biosecurity Act 2014</i>. A similar program could be implemented if other pest animals become a noticeable problem.</p> <p>Where possible, native pest animals should be encouraged to move outside of the offset area through disturbance and nuisance activities such as noise and human presence.</p> <p>Anecdotal evidence (eg photos, written records) of pest animal presence and abundance should be collected.</p>	Landowner / Land manager	As above	As above
<b>Fire management</b>	<p>Maintenance of appropriate controls (i.e. firebreaks and grazing) to enhance biodiversity and reduce fuel loads and risk of wildfire.</p> <p>The occurrence of any fire in the offset area will be recorded.</p> <p>Biocondition assessments will make a determination of impact resulting from any fire.</p> <p>Allow the accumulation of fallen timber/debris and the establishment of natural undergrowth. Biocondition Assessments will be used to measure this.</p>	<p>Fire management is a key item in the threat abatement plan.</p> <p>To the extent practicable, fire is to be excluded from the Brigalow TEC Offset Area, except for ecological burns. A low intensity fire may be permitted at intervals greater than 7 years for ecological purposes if recommended by a qualified ecologist.</p> <p>Within 12 months from the date of this Offset Area Management Plan coming into effect a member of the Rural Fire Service Brigade (RFSB) inspect the offset area to assess the suitability of the current and proposed firebreaks. Any recommendation for improvement will be implemented within 6 months from receipt of those recommendations, provided they do not contradict this OAMP.</p> <p>Stock may be grazed, in accordance the Grazing Management requirements in this Table 6, within the Offset Area to assist in fuel reduction.</p> <p>The fire management strategy for Brigalow offsets will be achieved by:</p> <ul style="list-style-type: none"> <li>maintaining effective firebreaks and construction of appropriate firebreaks relative to the Offset Area (refer Figure 1)</li> <li>maintaining fire management of surrounding country</li> <li>co-locating firebreaks with existing roads and fence lines on the property wherever practicable (refer Figure 1)</li> <li>using an appropriate grazing intensity to minimise the fuel load during peak fire season.</li> </ul>	Landowner / Land manager / RFSB.	As above	As above

**Table 7. Natural Grassland Offset Area Management Actions.**

Management activity	Performance objectives	Where, when and how will the activity be carried out	Who will be carrying out the activity	Monitoring method	Reporting
<b>Grazing management</b>	<p>An increase in the density and abundance of indicator species in the Grassland TEC between each successive BioCondition assessment.</p> <p>An improvement in the site condition and species stocking rate scores between each successive BioCondition assessment.</p> <p>The presence of at least 4 indicator native grasses.</p>	<p>The focus of grazing management in the Natural Grassland area is to on maintaining a good cover of perennial grasses and legumes and encourage regrowth of TEC indicator species.</p> <p>Cattle may be rotationally grazed through the Natural Grasslands offsets area in accordance with the following time periods, pasture and weather conditions:</p> <ul style="list-style-type: none"> <li>Cattle may be introduced in the dry season (from April to September) when no water is present in stream order one gullies.</li> <li>Cattle may be introduced when pasture dry matter yields (DM) exceed 2000 kg/ha and groundcover is &gt;70%<sup>5</sup>.</li> <li>Buffel grass control will be associated with time controlled grazing after small amounts of rain &lt; 25mm that trigger growth and do not trigger native grasses.</li> <li>cattle should not be moved into the Natural Grassland area if they have come from a grazing area known to contain weed species that are seeding, until the fodder has passed through their systems</li> </ul> <p>Cattle should be further removed from the Natural Grassland when any of the following occur:</p> <ul style="list-style-type: none"> <li>pasture dry matter yields are nearing 1250 kg/ha or,</li> <li>when groundcover is &lt;50% or,</li> <li>the wet season begins or,</li> <li>following &gt;25 mm of rain in a 24 hour period.</li> </ul> <p>Cattle will be excluded from the Natural Grassland offset area during periods of drought as defined by the Queensland government including a declared Individually Droughted Property (IDP) or drought declared area, shire or part-shire/</p> <p>Grazing is to be avoided during peak flowering and seed set period (Oct – Dec inclusive).</p> <p>Existing and new fencing will be maintained to enable stock management in the grassland offset area.</p> <p>Any new water points are to be located outside the offset area where possible. Relocation of existing water points will be investigated if these are considered to have an impact upon community recovery.</p> <p>The grazing regime is to be carried out for the life of the Offset Area Management Plan</p>	Landowner / Land manager	<p>All activities will be monitored through:</p> <ul style="list-style-type: none"> <li>routine inspections by the landholder and or agistee/ lesee and or a third party.</li> <li>Land manager and/or a third party to develop a basic checklist for observations or actions relevant to managing the offset, including <ul style="list-style-type: none"> <li>weather conditions,</li> <li>grazing intensity and stock rotation</li> <li>pasture management activities such as seeding or fertilising,</li> <li>pest and weed occurrence/intensity and management activities,</li> <li>erosion issues and any control works</li> <li>incidents of fire and description</li> <li>general property management activities such as fencing</li> </ul> </li> <li>checklist to be completed quarterly by land manager.</li> <li>ongoing interactions between BMC &amp; the landholder including landholder records and anecdotal discussions.</li> <li>Biannual photopoint monitoring for first 2 years, then annually for next 5 years, then biennially for remaining duration of offset.</li> </ul>	<p>Biocondition reporting to be undertaken ever 5 years.</p> <p>A detailed report will be submitted to the administering Government department at an interval not exceeding 5 years.</p> <p>The detailed report will compile and make an assessment of:</p> <ul style="list-style-type: none"> <li>quarterly checklist data</li> <li>photopoint monitoring data</li> <li>Biocondition results</li> </ul> <p>The summary report will undertake recalculation of the Offset Area score (as per EPBC calculator) to determine condition trajectory and ascertain if the Offset Area has achieved the outcome.</p>
<b>Weed management</b>	<p>Keep weed cover at or below baseline levels as determined by BioCondition surveys</p>	<p>An initial and ongoing weed spraying program will occur within the first 6 months of offset establishment. This will specifically target any small populations of Buffel grass or Parthenium that may be present.</p> <p>The Land manger will undertake quarterly assessments for weed development. Should any weeds become established then additional weed control will be undertaken as early as practicable considering climatic conditions.</p> <p>The presence of Parthenium makes weed eradication unlikely. Weeds will be managed annually with an aim to reduce weeds to below 10% ground cover.</p>	Landowner / Land manager	As above	As above

<sup>5</sup> For calculation methods refer <https://futurebeef.com.au/knowledge-centre/dry-season-pasture-budget-a-guide-for-stocking-rates/>. The benchmarks for commencing and ceasing grazing in the offset have been derived from the pasture photo standards for the Brigalow Belt, with the chosen benchmarks representing pasture dry matter yields that are moderately high (2500kg/ha) and moderately low (1250kg/ha) for the region.

Management activity	Performance objectives	Where, when and how will the activity be carried out	Who will be carrying out the activity	Monitoring method	Reporting
		<p>Should the Buffel grass persist, additional targeted herbicide spraying may occur as until such point as the natural grassland species are able to outcompete the Buffel grass.</p> <p>If it becomes apparent that a large seed bank is present then the land manager may choose to plough the soil (only in the areas of Buffel grass) to promote germination so that herbicides are more effective longer term.</p>			
<b>Pest animal management</b>	Occurrence of pest animals is at or below levels estimated at commencement through baseline biodiversity assessments	<p>Native herbivores may pose a risk to the improvement of the Natural Grassland offset area should they reach plague proportions.</p> <p>Control of pest animals within the Offset Area shall be undertaken in accordance with the <i>Biosecurity Act 2014</i>.</p> <p>When required, pest animals should be encouraged to move outside of the offset area through disturbance and nuisance activities such as noise and human presence.</p> <p>Anecdotal evidence (eg photos, written records) of pest animal presence and abundance should be collected.</p>	Landowner / Land manager	As above	As above
<b>Limiting disturbance</b>	<p>The extent and condition of Natural Grassland TEC will be maintained or increased between each successive BioCondition assessment.</p> <p>The presence of at least 4 indicator native grasses.</p>	<p>Permissible vegetation clearing on the offset area is that necessary for:</p> <ol style="list-style-type: none"> <li>the removal of invasive plant species</li> <li>ensure public safety</li> <li>construction and maintenance of access tracks, firebreaks, fence lines, and water infrastructure for controlled cattle grazing is permitted provided that the new construction does not reduce the extent of the Natural Grassland offset.</li> </ol> <p>Where vegetation clearing is sought for any other purpose, it must be in accordance with this management plan or the VM Act (Qld) or relevant VDEC. If any clearing in the approved offset area (beyond permissible clearing listed above) is proposed, the approval holder must notify the Commonwealth Department of Agriculture, Water and the Environment and will require additional offset areas to replace it under the EPBC Act.</p> <p>Cultivation is not allowed under this Offset Area Management Plan.</p> <p>Clearing for new fencing will wherever possible be on the outside of the offset area boundary or along the property boundary or minimised wherever possible. Where clearing for a new fence is unavoidable ground disturbance is limited to slashing and hand clearance only and establishment of fence posts or pickets.</p> <p>Deliberate introduction of non-endemic species is not permitted.</p> <p>The use of fertilisers on the property at locations where it could move into the offset area is to be avoided.</p> <p>No further ground disturbance or clearing of the vegetation (i.e. Ploughing or slashing) except in areas of Buffel grass or other weed infestations where turning of the soil may assist in weed management by speeding up seed germination and regrowth to then be eradicated.</p> <p>Avoidance of pasture improvement activities</p> <p>Any vegetation clearing must be undertaken in accordance with any applicable legislative requirements</p>	Landowner / Land manager	As above	As above
<b>Fire management</b>	<p>Maintenance of appropriate controls to enhance biodiversity and reduce fuel loads. The occurrence of any fire in the offset area will be recorded.</p> <p>Biocondition assessments will make a determination of</p>	<p>To the extent practicable, fire is to be excluded from the Natural Grassland TEC Offset Area, except for ecological burns. A low intensity fire may be permitted at intervals recommended by a qualified ecologist.</p> <p>Within 12 months from the date of this Offset Area Management Plan coming into effect a member of the Rural Fire Service Brigade (RFSB) inspect the offset area to assess the suitability of the current and proposed firebreaks. Any recommendation for improvement will be implemented within 6 months from receipt of those recommendations, provided they do not contradict this OAMP.</p> <p>Stock may be grazed, in accordance the Grazing Management requirements in this Table 7, within the Offset Area to assist in fuel reduction.</p>	Landowner / Land manager/ RFSB.	As above	As above

Management activity	Performance objectives	Where, when and how will the activity be carried out	Who will be carrying out the activity	Monitoring method	Reporting
	impact resulting from any fire.	<p>The following strategy taken from the Queensland Government Regional Ecosystems Description Database (REDD) (Queensland Herbarium 2021) Fire management guidelines is recommended for the natural Grassland community associated with RE 11.8.11:</p> <p>SEASON: Late wet to early dry season when there is good soil moisture. Early storm season or after good spring rains. INTENSITY: Various. Mainly low, but also moderate. INTERVAL: &gt;5 years. STRATEGY: Low to moderate burns can help limit the spread of fires. Burn less than 30% in any year. Burn under conditions of good soil moisture and when plants are actively growing. ISSUES: Fire can be used to control weed invasions, although there are also risks of promoting weeds.</p> <p>This Natural Grassland fire management strategy will be achieved by:</p> <ul style="list-style-type: none"> <li>• maintaining effective firebreaks and construction of appropriate firebreaks relative to the Offset Area (refer Figure 1);</li> <li>• maintaining fire management of surrounding country</li> <li>• co-locating firebreaks with existing roads and fence lines on the property wherever practicable (refer Figure 1);</li> <li>• using an appropriate grazing intensity to minimise the fuel load during peak fire season;</li> <li>• fire is not used as a tool for regrowth management on the property and the risk of wildfire is managed in cooperation with neighbours.</li> </ul>			

## 6.0 Monitoring, evaluation, reporting and adaptive management

### 6.1 Monitoring program

Condition 5c).v of the Kemmis II approval and condition 6c).vi of the MRA approval require, as part of the plan to improve the baseline condition, a monitoring plan to be developed to assess the success of management activities. The monitoring must be statistically robust and must be able to quantify change in the condition of the TECs. This should include, but not be limited to, control sites and periodic ecological surveys to be undertaken by a qualified ecologist.

The monitoring program includes the items listed below and presented in Table 6 and Table 7.

- Quarterly checklist completed by Land manger
- Photo point monitoring to be conducted at intervals described below
- BioCondition assessment(s)

#### 6.1.1 Quarterly checklist

The quarterly checklist is a basic approach to capturing the observations and general farm management practices that occur, but are only limited to the offset areas. It is expected that much of this information is collected as part of standard farm management practices by the land manger. The types of data that will be sought includes:

- weather conditions,
- grazing intensity and stock rotation
- pasture management activities such as seeding or fertilising,
- pest and weed occurrence/intensity and management activities,
- erosion issues and any control works,
- incidents of fire and description
- general property management activities such as fencing
- general observations

#### 6.1.2 Photo point monitoring

Photopoint monitoring has already commenced on the property as part of establishing baseline conditions. This type of monitoring will continue to occur biannually for the first 2 years (May and November), then annually (April/May) for the next 5 years and then biennially (April/May) for the remaining duration of the offset. This monitoring will be performed at the Biocondition sites in a North, East, South and West direction by the landholder or land manager at the already established locations (and others if deemed necessary).

#### 6.1.3 Biocondition

BioCondition monitoring will be performed by a qualified Ecologist and occur at an interval not exceeding 5 years, although additional monitoring may be carried out if climatic conditions or other events are expected to have had a significant impact. The monitoring will follow the prescriptive methodology and occur at the same monitoring locations each time. An evaluation of the Biocondition data will be made at the time of monitoring to again inform and recommend modification to management regimes if required.

### 6.2 Evaluation, reporting and adaptive management

Condition 5c).vii of the Kemmis II approval and condition 6c).viii of the MRA approval require, as part of the plan to improve the baseline condition, a process to report to the EPBC Act Administrative Authority the progress of management activities undertaken in the offset areas and the outcome of those activities, including identifying any need for improved management and activities to undertake such improvement.

Accordingly, evaluation and reporting on the monitoring activities discussed above will occur at intervals not exceeding 5 years and will be provided to the Department upon completion.

The evaluation of the quarterly checklist and photo point monitoring will be performed by the Land Owner and occur at intervals not exceeding 5 years. That evaluation will include an assessment of the condition of the ecosystems in terms of vegetation cover and health and recommendations for modified management practices provided to the Land Manager. Reporting for photo point monitoring will form part of the Biocondition monitoring report.

A formal reporting process on the Biocondition monitoring will occur immediately following each Biocondition monitoring event which will not exceed a 5 yearly interval. This reporting process will include an evaluation of all data collected during the preceding 5 years and make a comparison to earlier report findings including baseline conditions. Importantly this reporting process will re-calculate the condition of the offset areas using the Offset Calculator (EPBC Act Administrative Authority) and make a determination regarding achievement of the Specific Management Outcomes and any recommendations for adaptive management required. The evaluation will enable a determination of trajectory for the longer term condition of the TECs, and if not on an appropriate trajectory then modifications to management actions can be applied. Should recommended management actions vary drastically from those detailed in this OAMP then the EPBC Act Administrative Authority will be informed as part of normal reporting processes and a revised OAMP will be prepared and submitted for approval.

## 7.0 Risks and risk management

A risk analysis has been performed to identify current threats and potential risks to achieving the specific management outcomes, and to identify the management actions required to minimise those risks. The highest risks to the Offset Areas are exotic weed invasions, over grazing and uncontrolled fire. However, these threats will be effectively managed by the management actions above. The risk analysis is provided below in Table 8.

**Table 8. Risk analysis.**

Risk	Unmitigated risk level	Proposed actions to minimise risk	Proposed actions if risk event occurs
Pest Plant invasion (and further spread)	<b>High</b>	Undertake an initial weed spraying program (focused on Buffel grass) within 6 months of offset establishment, and a subsequent follow up spraying program within the following 12 months. Thereafter use of cattle grazing during non-flowering periods for native grasses. Spot spraying should occur on an as needed basis for small outbreaks.	If the initial spraying program (x2 events) is unsuccessful or inadequate, a third spraying program should occur within 3 years of offset establishment. If after 3 spraying attempts the weed infestation remains, then targeted spraying programs for invasive plants will be initiated. If buffel grass requires more intensive management then additional grazing infrastructure, including fencing and water points, will be implemented to allow crash grazing in accordance with the conditions of approval and this OAMP.
Over grazing	<b>Moderate</b>	Grazing of domestic livestock may occur on Dabin Holdings (including the Offset Area) under the following conditions: <ul style="list-style-type: none"> <li>• avoid the native grassland offset area during the peak flowering and seed set season;</li> <li>• grazing in the Brigalow area for fuel reduction purposes only.</li> <li>• rotate stock at rates appropriate to achieve 30% cover at the end of the dry season.</li> </ul> Fencing will be checked as part of normal management responsibilities for a grazing property. This is an ongoing and continuous process by the land manager. The quarterly inspection checklist includes monitoring of fencing.	Stock removed from offset area until ground cover has improved or flowering season has finished.  Any entry points due to fencing breaks etc. to be repaired to a stock proof condition within a 5 day period.  If the offset areas require improved grazing management to exclude and rotate cattle then additional grazing infrastructure including fencing and water points will be implemented to improve cattle management in accordance with the conditions of approval and this OAMP
Fire Outbreak	<b>Moderate</b>	Fire to be excluded wherever possible from the offset area other than as recommended by a suitably qualified ecologist (as per fire management in Tables 6 and 7).  Seek advice from local RFSB to develop appropriate fire break plan.  Install and maintain firebreaks at appropriate widths to prevent fires on adjoining properties from impacting on the offset area.  Manage fuel loads through controlled grazing. <i>Force Majeure</i> events are	Destock the offset area, re-establish fire breaks and control lines and if appropriate, widen fire control lines and reassess fuel load reduction practices.  Maintain and upgrade fire breaks surrounding offset areas to improve wildfire protection and allow strategic fire management as recommended by a suitably qualified ecologist, noting that the total area of the offset must not be reduced.

		acknowledged being separate from general fire use practices. Fire control lines to be checked annually for condition and adequacy.	
Pest Animals	<b>Low</b>	Maintain annual baiting program on the property.	If an increase in pig or wild dog activity is noted during monthly checklist then a program of baiting and or pig trapping is to be instigated until the population and occurrence of these pests is reduced. This will have a greater impact if control measures are integrated with neighbouring properties.
Erosion	<b>Low</b>	Maintaining grass cover at a minimum of 30% at the end of the dry season. This, in conjunction with other forms of groundcover (fallen woody debris, organic matter etc.), will minimise the risk of erosion.	Further reduction of grazing levels and checking on the cause of any point source erosion (such as illegal vehicle access) and rectifying access if this is the cause.
Offset does not provide required habitat quality within specified timeframe	<b>Moderate</b>	Management actions undertaken to improve habitat quality. Biocondition assessments to track progress towards final habitat quality criteria/management outcomes in Tables 4 and 5. Reporting on progress at 5-yearly intervals.	Review management actions and revise, including revision of OAMP, as required, to address lack of progress in progressing towards final habitat quality scores/management outcomes. If final habitat quality scores may not be met, source alternative offset prior to end of approval.

## 8.0 Conclusion

The Offset Areas to be managed by implementation of this Offset Area Management Plan are:

- 3.2ha of “Brigalow (*Acacia harpophylla* dominant and co-dominant) Threatened Ecological Community”(stage 1 Kemmis 2 project)
- 13.8ha of “Brigalow (*Acacia harpophylla* dominant and co-dominant) Threatened Ecological Community” (stage 2 Kemmis 2 project)
- 125ha of “Brigalow (*Acacia harpophylla* dominant and co-dominant) Threatened Ecological Community”
- 65ha of “Natural grasslands of the Queensland Central Highlands and northern Fitzroy Basin Threatened Ecological Community”

The proposed Brigalow and Natural Grassland TEC offset areas for MRA, K2 stage 1 and K2 stage 2 were legally secured under VDEC 2015/006292, approved on the 9<sup>th</sup> December 2016 (subsequently updated on the 12<sup>th</sup> May 2021 to correct initial geospatial projection - refer Appendix 1).

Once a VDEC is made, it is registered in title and is binding on all current and future owners of the land until the intent and outcomes of the offsets area management plan have been achieved. Upon such time as the offset areas reaches remnant vegetation status and the offset outcomes have been achieved, the ecosystem condition information will be provided to the Queensland Herbarium for remapping as regulated vegetation to provide long term protection under existing legislation including the *Vegetation Management Act 1999* and the *Environmental Offsets Act 2014*. At this same time, the BOMP and this OAMP will no longer apply.

## 9.0 Consent

### Administering authority

**SIGNED** by the (enter name of the delegate of the Chief Executive Officer and the relevant delegation) to indicate approval of the offset area management plan.

Name:..... Position:.....

Signature:.....

Date.....

### Landholder

The landowner agrees:

1. Any non-compliance with the requirements of this offset area management plan shall constitute a breach of the terms and conditions of the legally binding mechanism entered into.
2. To notify the State in writing of an Event, or the likelihood of the occurrence of an Event.  
Event means any agreement or understanding entered into or accepted by and or circumstance permitted or suffered by the landholder which effects a change of ownership, control or use of the offset area, the exercise of power of sale under any Mortgage, the granting of a Mortgage, the appointment of a receiver, the death of a landholder or any other circumstance which may allow or permit a person, other than the Landholder to own, control or use the offset area.  
In notifying the State of an Event, the landholder will notify the State of the nature of the change, or potential change of ownership, control or use result from the Event, and the name and address of any person who may own, control or use the offset area as a result of the Event.
3. That if, at the time of execution of this offset area management plan, there exists a Property Map of Assessable Vegetation (PMAV) over the offset area or a part of it, the landholder hereby agrees, where the management plan area is identified as Category X on the PMAV, to the replacement of the PMAV by the State to reflect the offset area as Category A.
4. To take all necessary steps as may be required to accomplish the obligations contained in this offset area management plan.

The landowner acknowledges:

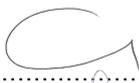
5. That before the State will agree to the release this offset area management plan the State must be satisfied that the objectives and activities contained in the offset area management plan have been achieved.

The landowner notes:

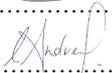
6. All reports, notices or requests for amendment in relation to this offset area management plan must be in writing and delivered to the administering authority at the following address:  
<Insert departmental name>  
<Insert postal address and telephone number>

**SIGNED** by BHP Mitsui Coal Pty Ltd being the current owner/s of the abovementioned property to indicate that the terms of this offset area management plan including responsibilities under the offset area management plan, have been read, understood and accepted.

Name: Elizabeth Muller.....

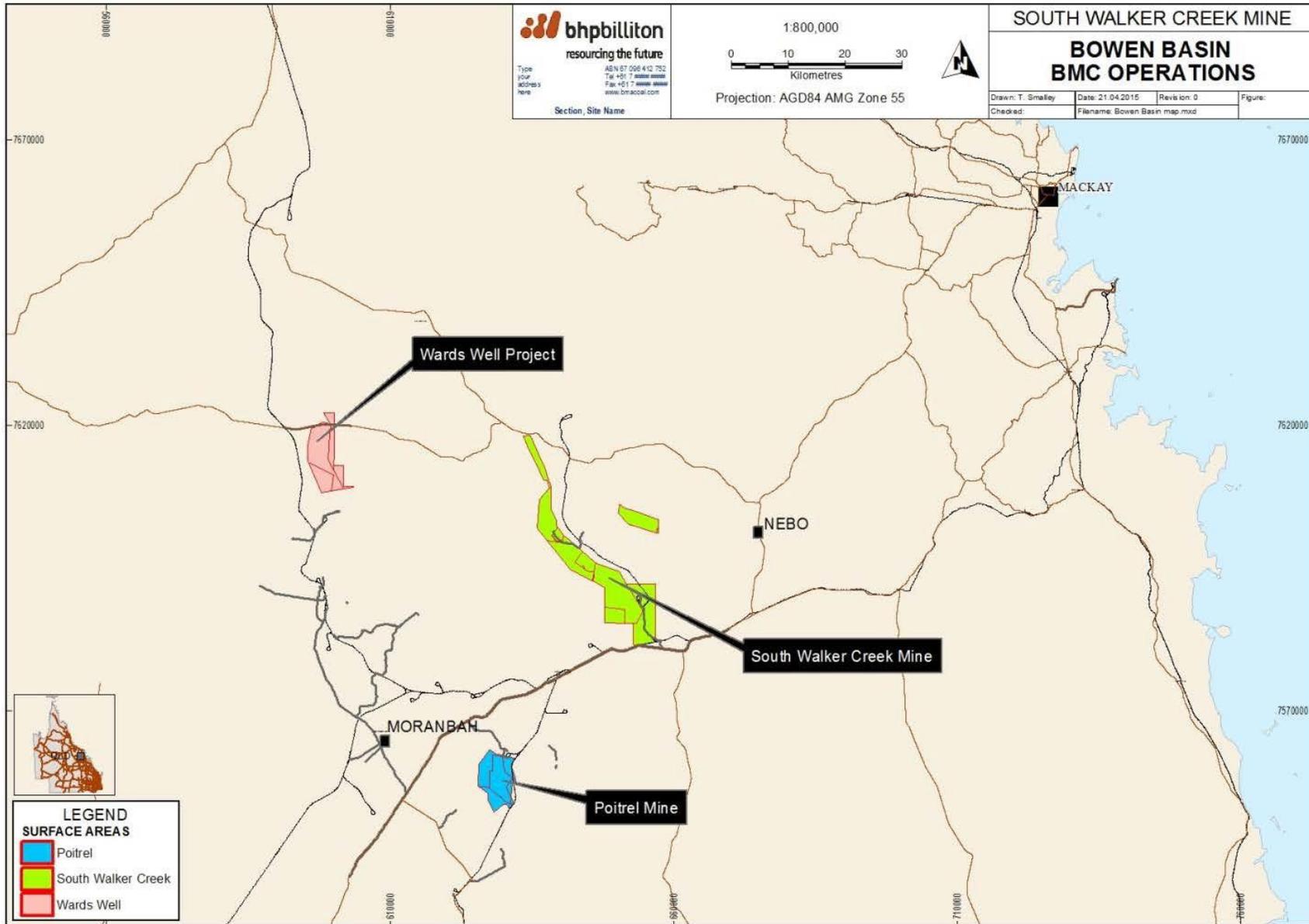
Signature: .....

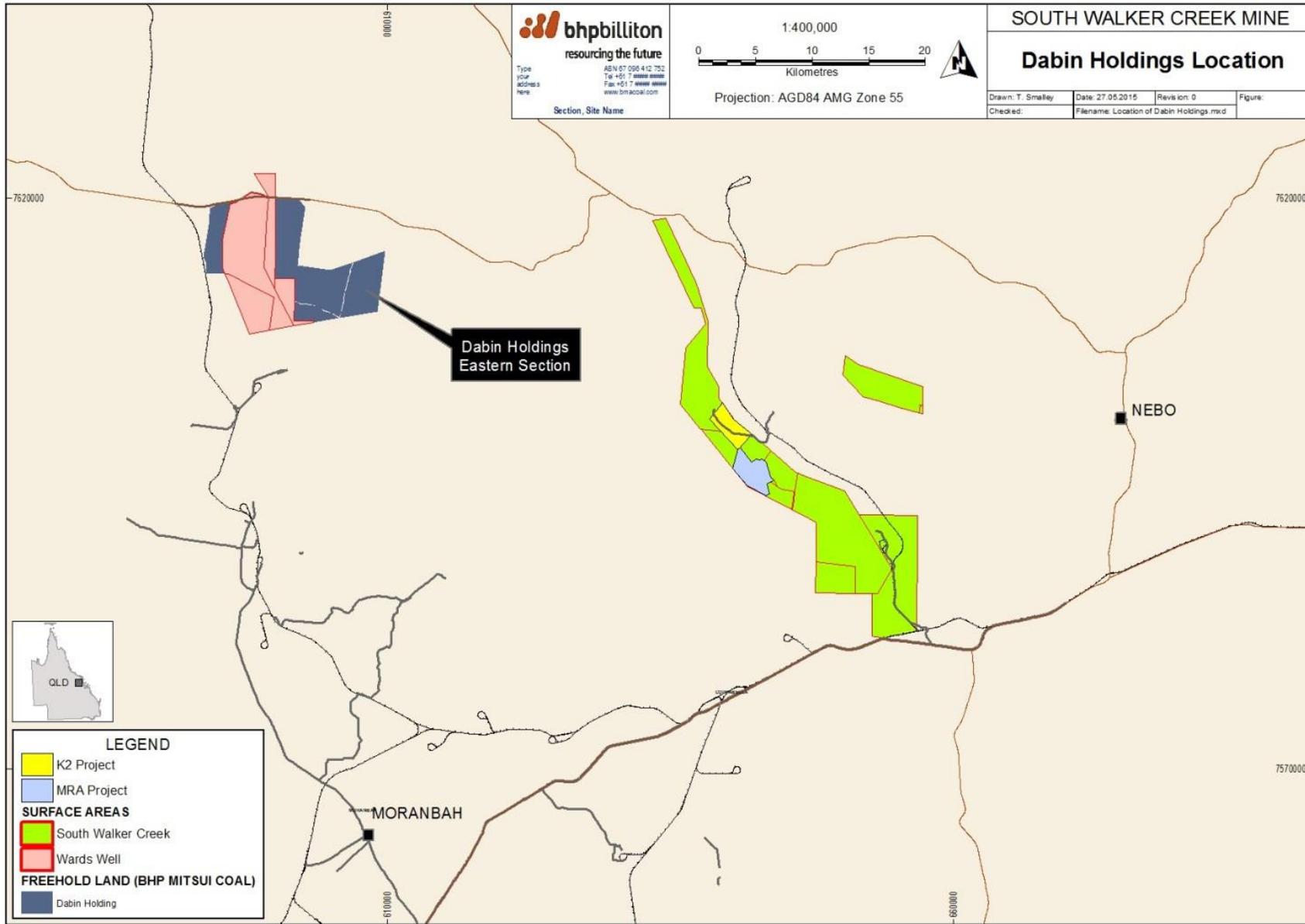
Witness name: Chelsea Andrews.....

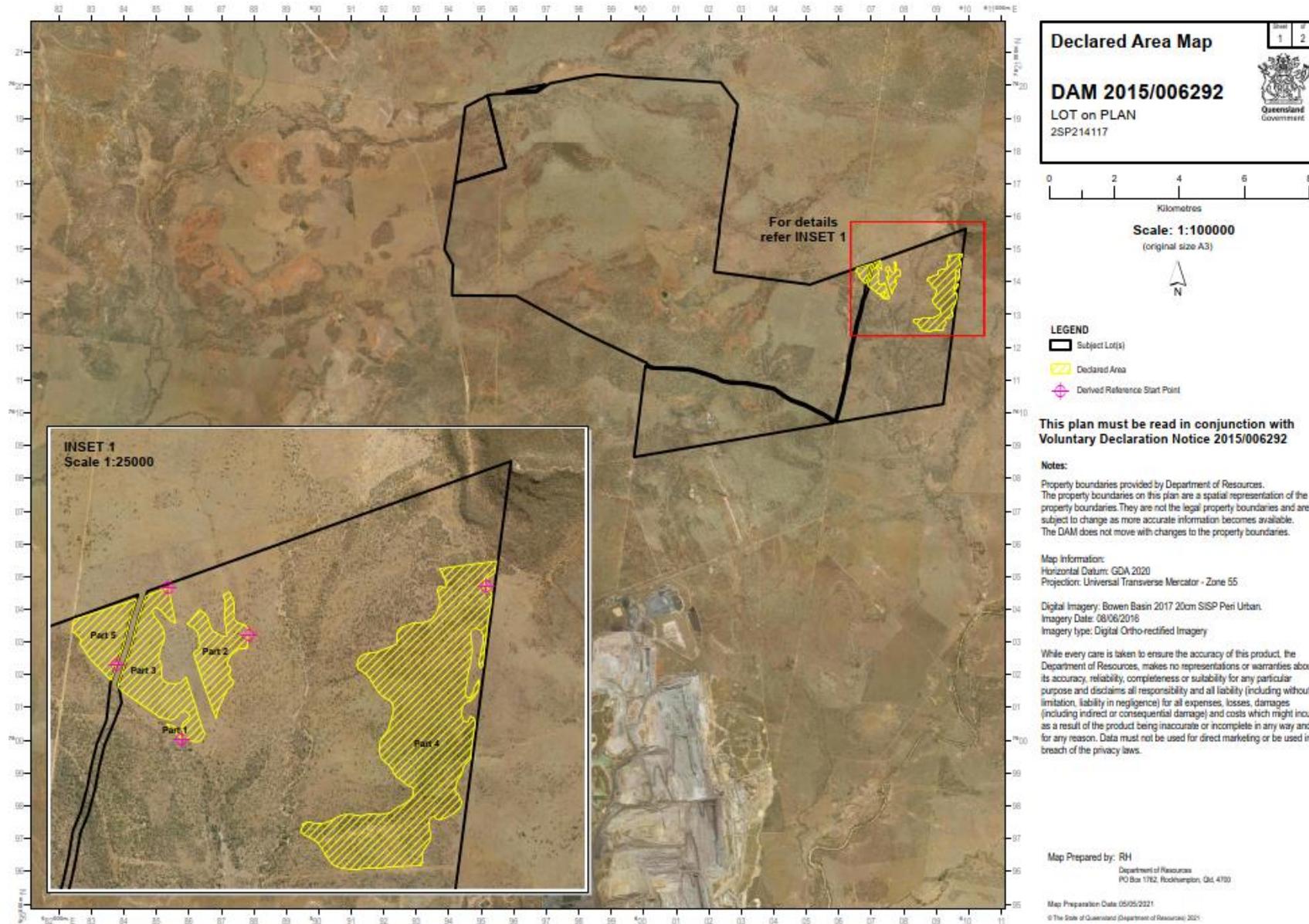
Signature: .....

Date: 1/12/21.....

## Appendix 1 – Detailed Mapping







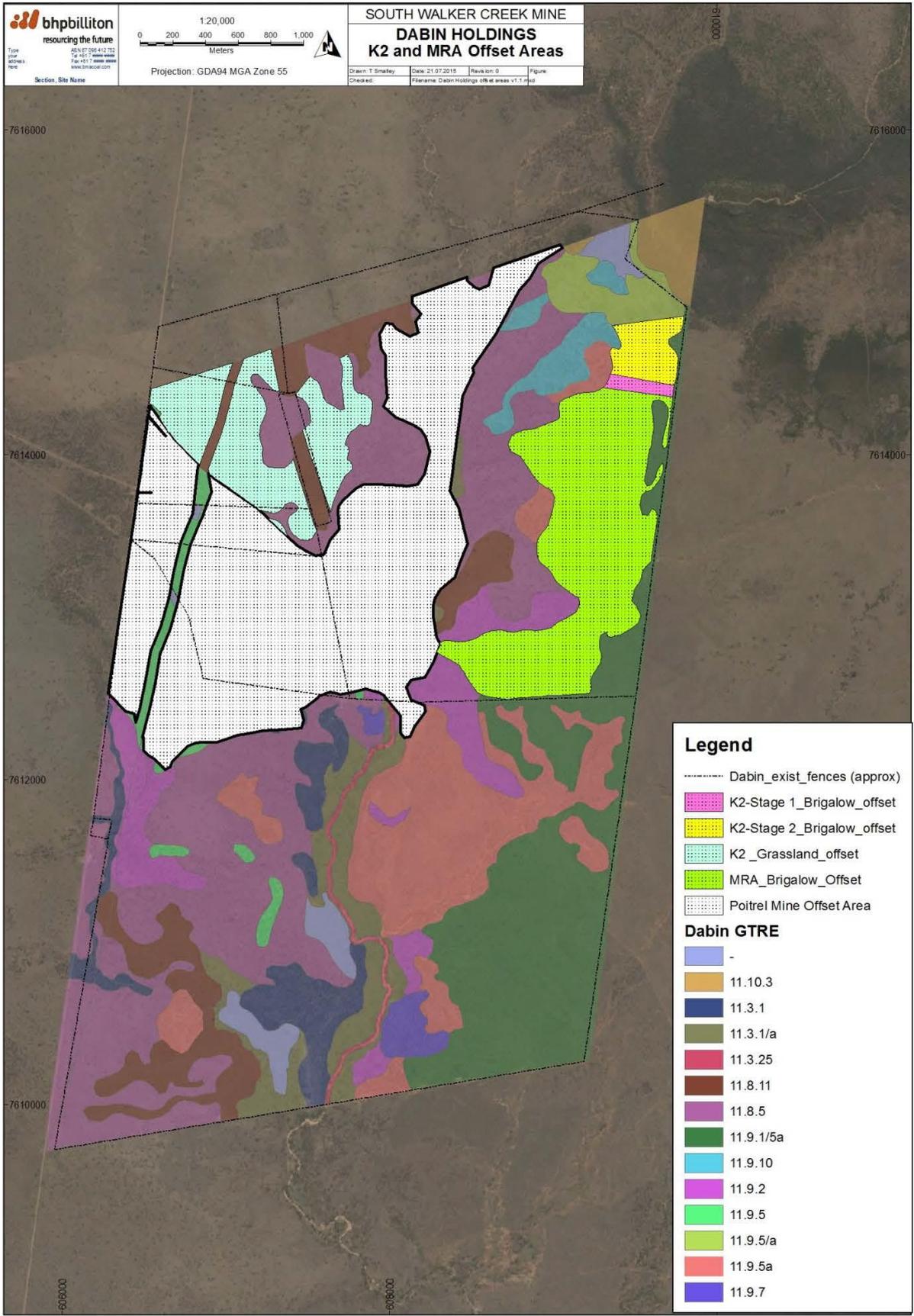
PMAV 2021/000753

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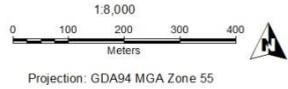
**DAM 2015/006292**

Derived Reference Points  
Projection: UTM (MGA Zone 55)  
Datum: GDA2020

Coordinates start at a point indicated and proceed in a clockwise direction.



Overview of MRA and K2 (and Poitrel) Offset Areas on Dabin Holdings (eastern section)

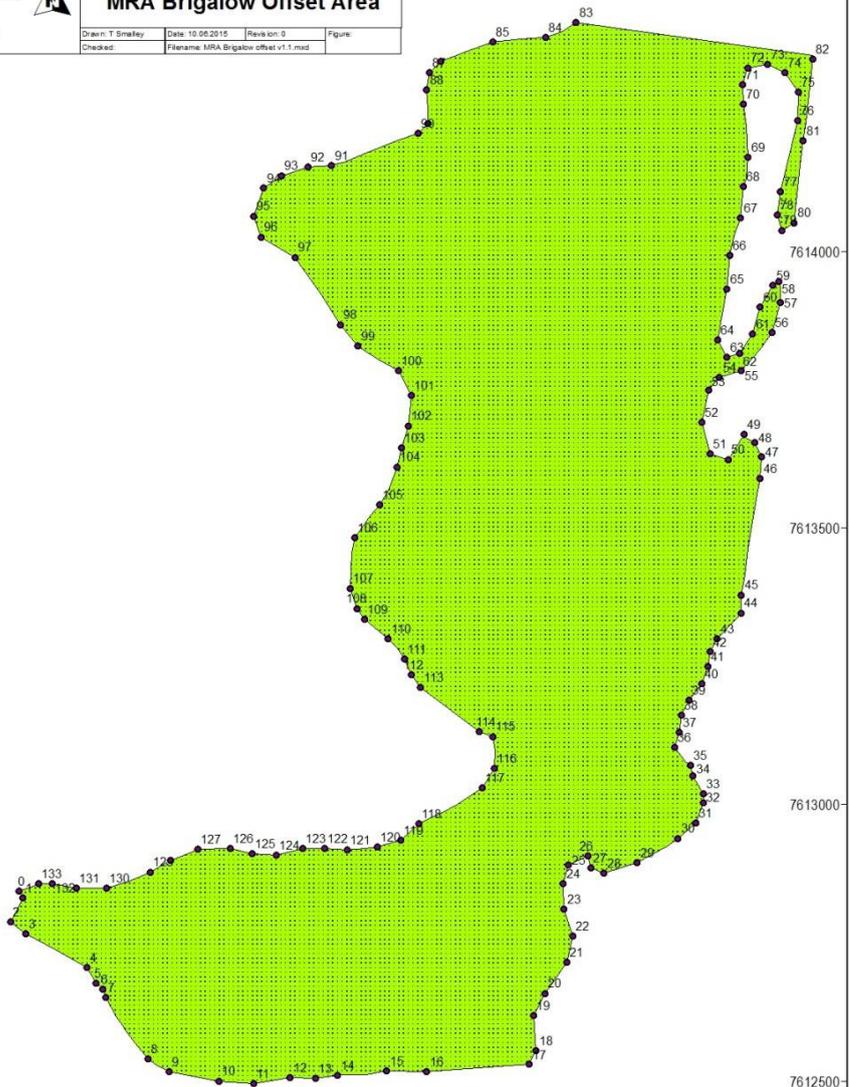


**SOUTH WALKER CREEK MINE**

**MRA Brigalow Offset Area**

Drawn: T Smalley Date: 10.06.2015 Revision: 0 Figure:  
Checked: Filename: MRA Brigalow offset v1.1.mxd

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19	Point	0	609112	7612439
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21	Point	0	609171	7612535
22	Point	0	609182	7612582
23	Point	0	609167	7612631
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30	Point	0	609371	7612758
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37	Point	0	609374	7612950
38	Point	0	609377	7612981
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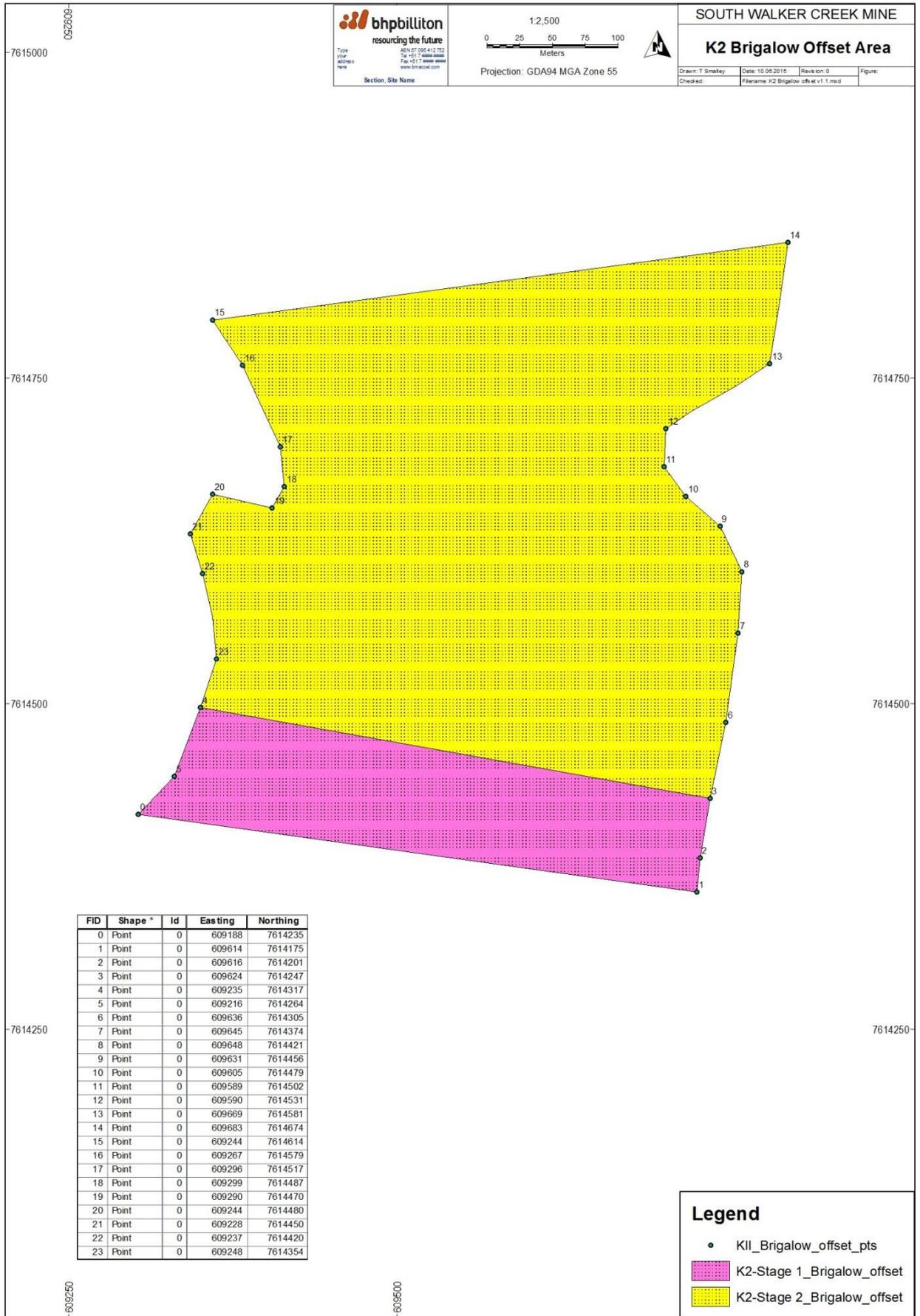


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92	Point	0	608707	7613972
93	Point	0	608660	7613957
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127	Point	0	608510	7612739
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131	Point	0	608292	7612669
132	Point	0	608248	7612676
133	Point	0	608224	7612676



**MRA Brigalow Offset Area and point coordinates**



**bhpbilliton**  
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 Your address here  
 ABN 61 100 412 752  
 Tel +61 7 4619 1000  
 Fax +61 7 4619 1001  
 www.bhpbilliton.com

1:2,500  
 0 25 50 75 100  
 Meters  
 Projection: GDA94 MGA Zone 55

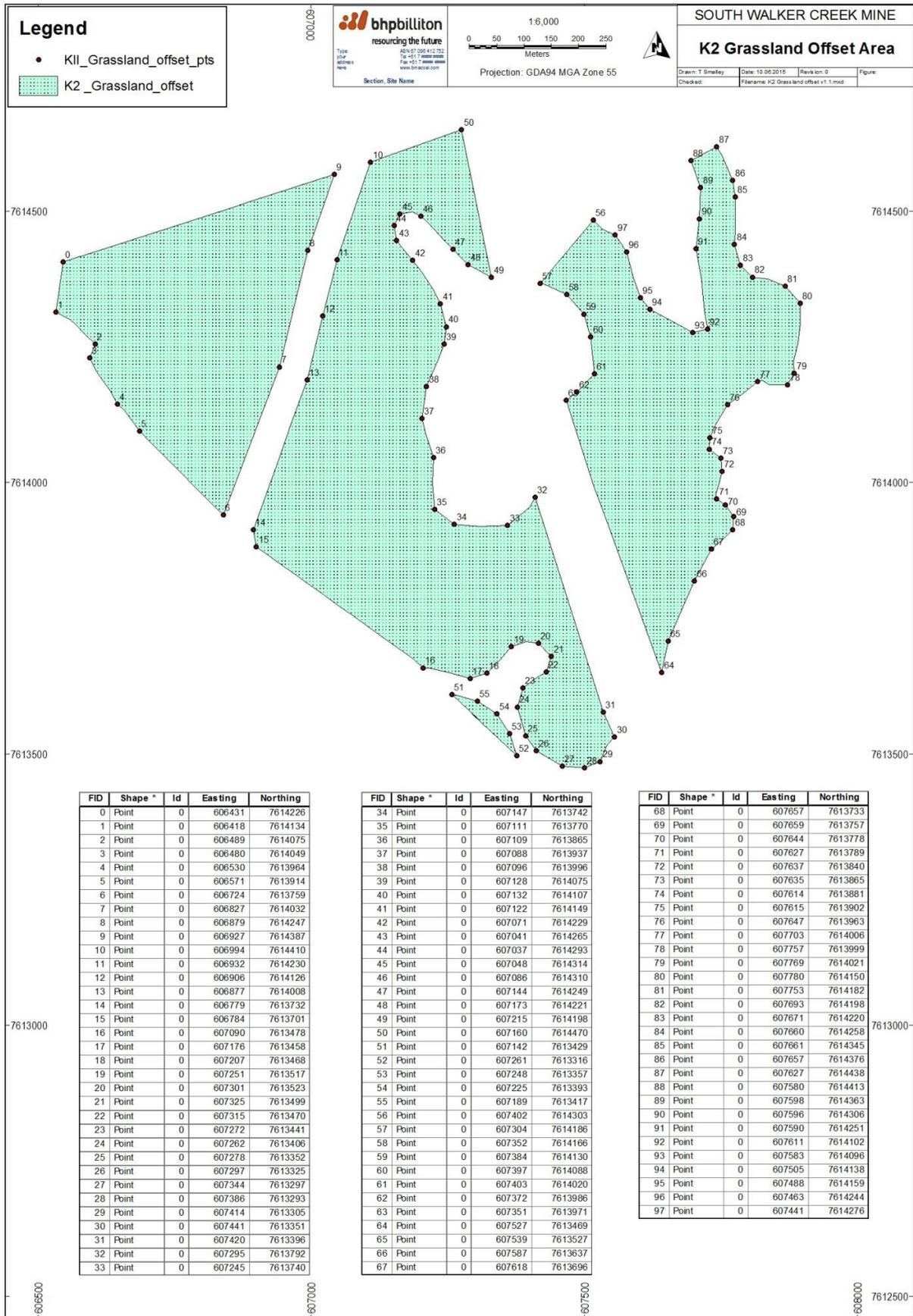
**SOUTH WALKER CREEK MINE**  
**K2 Brigalow Offset Area**  
 Drawn: T Smalley Date: 10.05.2015 Revision: 0 Figure:  
 Checked: Filename: K2\_Brigalow\_offset v1.1.mxd

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15	Point	0	609244	7614614
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21	Point	0	609228	7614450
22	Point	0	609237	7614420
23	Point	0	609248	7614354

**Legend**

- K11\_Brigalow\_offset\_pts
- K2-Stage 1\_Brigalow\_offset
- K2-Stage 2\_Brigalow\_offset

**K2 Brigalow Offset Area(s) and point coordinates**



**Legend**

- K2\_Grassland\_offset\_pts
- ▨ K2\_Grassland\_offset

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Scale: 1:6,000  
0 50 100 150 200 250  
Meters

Projection: GDA94 MGA Zone 55

**SOUTH WALKER CREEK MINE**

**K2 Grassland Offset Area**

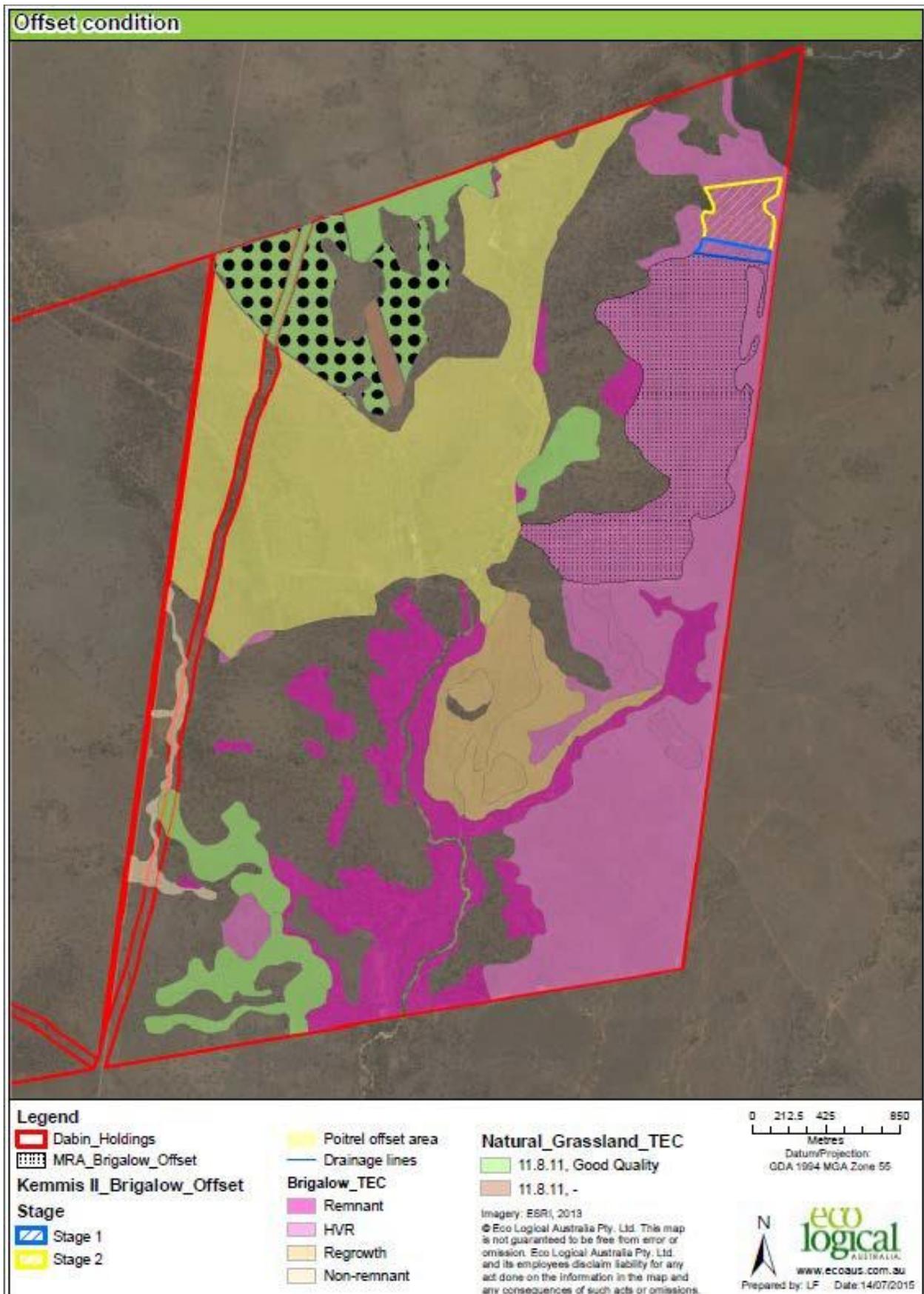
Drawn: T Smalley Date: 10/06/2015 Revision: 0 Figure:  
Checked: Filename: K2 Grassland offset v1.1.mxd

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45	Point	0	607048	7614314
46	Point	0	607086	7614310
47	Point	0	607144	7614249
48	Point	0	607173	7614221
49	Point	0	607215	7614198
50	Point	0	607160	7614470
51	Point	0	607142	7613429
52	Point	0	607261	7613316
53	Point	0	607248	7613357
54	Point	0	607225	7613393
55	Point	0	607189	7613417
56	Point	0	607402	7614303
57	Point	0	607304	7614186
58	Point	0	607352	7614166
59	Point	0	607384	7614130
60	Point	0	607397	7614088
61	Point	0	607403	7614020
62	Point	0	607372	7613986
63	Point	0	607351	7613971
64	Point	0	607527	7613469
65	Point	0	607539	7613527
66	Point	0	607587	7613637
67	Point	0	607618	7613696

FID	Shape *	Id	Easting	Northing
68	Point	0	607657	7613733
69	Point	0	607659	7613757
70	Point	0	607644	7613778
71	Point	0	607627	7613789
72	Point	0	607637	7613840
73	Point	0	607635	7613865
74	Point	0	607614	7613881
75	Point	0	607615	7613902
76	Point	0	607647	7613963
77	Point	0	607703	7614006
78	Point	0	607757	7613999
79	Point	0	607789	7614021
80	Point	0	607780	7614150
81	Point	0	607753	7614182
82	Point	0	607893	7614198
83	Point	0	607671	7614220
84	Point	0	607660	7614258
85	Point	0	607661	7614345
86	Point	0	607657	7614376
87	Point	0	607627	7614438
88	Point	0	607580	7614413
89	Point	0	607598	7614363
90	Point	0	607596	7614306
91	Point	0	607590	7614251
92	Point	0	607611	7614102
93	Point	0	607583	7614096
94	Point	0	607505	7614138
95	Point	0	607488	7614159
96	Point	0	607463	7614244
97	Point	0	607441	7614276

**K2 Grassland Offset Area and point coordinates**



Dabin Offset Condition

## Appendix 2 – Baseline Data

Baseline Biocondition sites were established in MRA and K2 offset areas as part of *the South Walker Creek Mine MNES Offset Assessment Dabin Holdings* (ELA 2015) (refer Table A2-1 and Figure A2 -1).

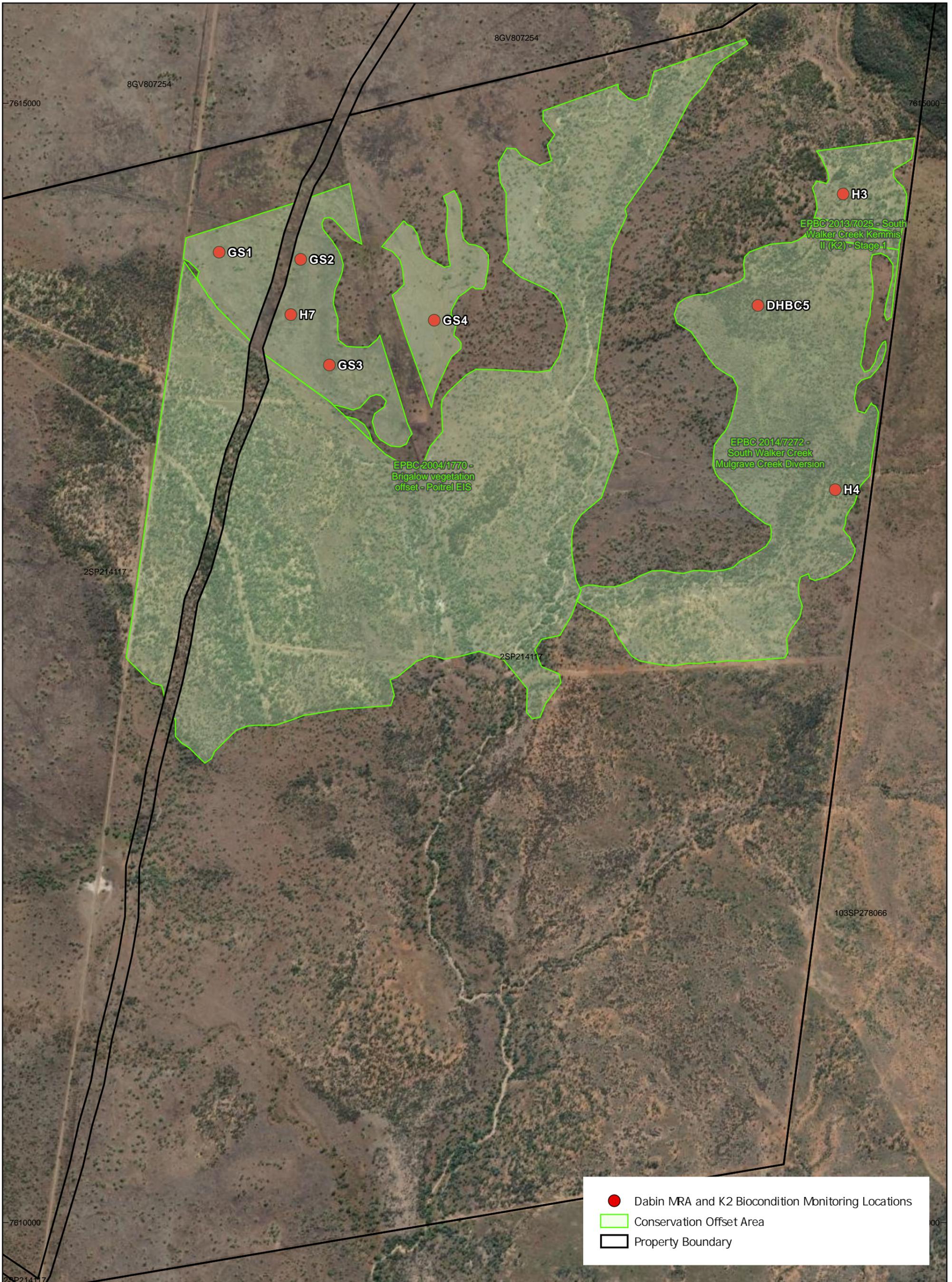
Site DHBC5 was established in 2012 as reported in the *Report for BMC's Poitrel Mine offset ecological equivalence calculations* (STIRD Services 2012) (refer Table A2-1 and Figure A2 -1).

BMC undertook a review of the MRA and K2 offset monitoring program in 2020. The results of the review recommended additional baseline sites be added to the K2 natural grassland offset to provide a more representative assessment of the performance of the natural grassland offset area. The review also recommended that site H6 be discontinued as it was initially established adjacent to the mapped offsets area. The new grassland sites GS1-4 were established as part of the ecological condition monitoring *EPBC 2013/7025 (K2) and EPBC 2014/7272 (MRA) Offset Area Biocondition Report Dabin Holdings (Earthtrade 2021)* (refer Table A2-1 and Figure A2 -1).

Baseline Biocondition monitoring results for MRA and K2 offset areas have been presented in Table A2 -2.

**Table A2 -1 Biocondition sites on Dabin Holdings (MGA 1994 z55)**

Biocondition Site ID	Offset Area	Year established	Easting	Northing
GS1	K2 (Natural Grassland)	2021	606693	7614343
GS2	K2 (Natural Grassland)	2021	607057	7614311
GS3	K2 (Natural Grassland)	2021	607185	7613839
GS4	K2 (Natural Grassland)	2021	607653	7614039
H7	K2 (Natural Grassland)	2014	607013	7614064
DHBC5	MRA (Brigalow)	2012	609098	7614105
H3	K2 (Brigalow)	2014	609478	7614603
H4	MRA (Brigalow)	2014	609443	7613282



- Dabin MRA and K2 Biocondition Monitoring Locations
- Conservation Offset Area
- Property Boundary



### **Appendix 3 – Wildlife Online extract**

See separate document.

### **Appendix 4 – Land manager’s monitoring guide**

The Land managers monitoring guide includes an overview of property level monitoring, a template for developing a monitoring plan and a list of possible indicators. It is a tool to assist land managers to

- improve property management, planning and long-term sustainability
- implement an environmental farm management system
- monitor progress on agreed management strategies and outcomes in land management agreements required by Queensland law
- support the activities of local Landcare groups or regional natural resource management bodies.

The guide is available from the DSITIA website at the following link :

<https://www.business.qld.gov.au/industry/agriculture/agriculture/tools-software>

or Email [science.products@dsitia.qld.gov.au](mailto:science.products@dsitia.qld.gov.au) or phone (07) 3170 5759 to order a copy.

### **Appendix 5 – Weed and pest animal fact sheets**

Fact sheets have been produced by Biosecurity Queensland for weeds and pest animals. Hard copies are available from all Biosecurity Queensland offices or downloadable from the link below. Fact sheets are not to be manipulated.

<https://www.business.qld.gov.au/industries/farms-fishing-forestry/agriculture/land-management/health-pests-weeds-diseases/weeds-diseases/invasive-plants>

### **Appendix 6 - MNES Offset Assessment report**

See separate document.

## Appendix 7 – Land manager quarterly checklist

**Background**

In accordance with the approved Offset Area Management Plan for the Kemmis II and MRA Projects at South Walker Creek Mine, three offset areas have been placed on Dabin Holdings. One management action was for quarterly inspection and completion of this checklist to be undertaken by the land manager. All questions are to be answered in terms of the last 3 months within the offset areas only (please circle where relevant).

Date:

Recorder:

<b>Have weather conditions been approximately average or as expected?</b>	<b>Yes</b>	<b>No</b>
If no, describe the difference (e.g., wetter, drier, cloudier, etc.)		

<b>Have stock been rotated through an offset area?</b>	<b>Yes</b>	<b>No</b>
If yes, what was the duration cattle were in the offset areas?		

<b>Has there been an increase, decrease, or no change to grazing intensity in the offset area?</b>	<b>Increase</b>	<b>No change</b>	<b>Decrease</b>
If a change has occurred, quantify the change.			

<b>Have any pasture management activities occurred? e.g. fertilising, seeding, soil treatment.</b>	<b>Yes</b>	<b>No</b>
If yes, describe and quantify the activity.		

<b>Has there been an increased evidence/sighting of pest animals?</b>	<b>Yes</b>	<b>No</b>
If yes, which pest animal and describe the location and estimate the number of individuals.		

Have any pest animal management activities been carried out?	Yes	No
If yes, describe the activity (quantified where possible).		

Has there been a change in weed abundance or distribution	Yes	No
If yes, describe the change (e.g. reduction/increase/species).		

Have any weed management activities been carried out?	Yes	No
If yes, describe the activity (quantified where possible).		

Has there been an increase in erosion?	Yes	No
If yes, describe the erosion (type of erosion, location and extent).		

Has there been any occurrence of fire?	Yes	No
If yes, describe the fire (type of fire (burn off, ecological, wild), location and extent).		

Describe any general property management measures that may have an impact upon the offset areas (e.g new fencing or repairs to fencing, change in management practices,
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This checklist is to be provided to the BMC Offset Manager within 2 weeks of completion.