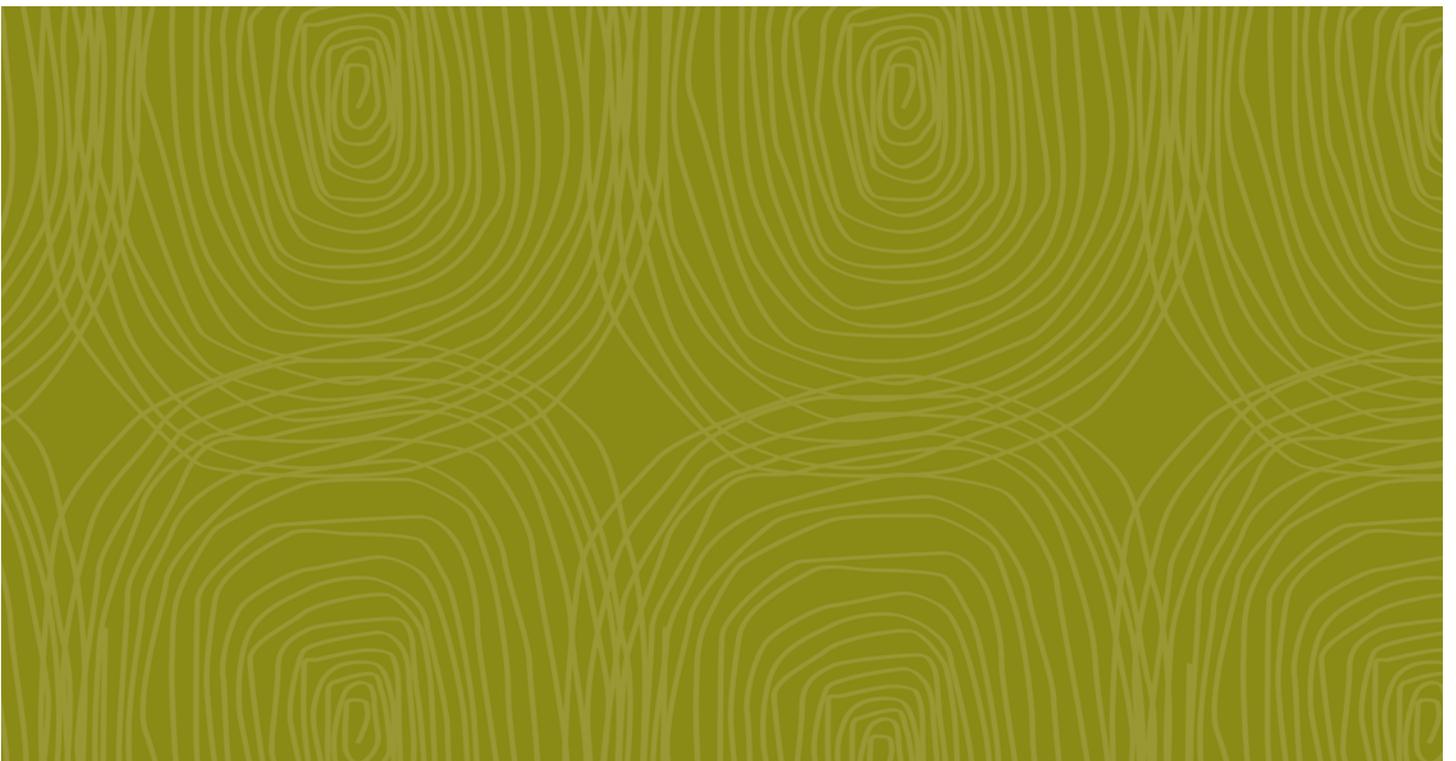


**X** | Report for Alpha Coal  
Project Offset Strategy





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# Hancock Prospecting Pty Ltd

Report for Alpha Coal Project

Offset Strategy

August 2011



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# 1. Introduction

## 1.1 Project Background

Hancock Prospecting Pty Ltd (Hancock - the Proponent) is proposing to develop the Alpha Coal Project (the Project), a 30 million tonnes per annum (Mtpa) product open-cut thermal coal mine to target the seams in the Upper Permian coal measures of the Galilee Basin, Queensland, Australia. The Project will be supported by the development of a standard gauge, single track, non-electrified, 495 kilometre (km) long railway line for the purposes of transporting processed coal from the Alpha coal mine to the Port of Abbot Point in Bowen for export.

The proposed project has been submitted for assessment under a bilateral agreement between the Commonwealth and State of Queensland. The project will be assessed under the State Development and Public Works Organisation Act 1971 (SDPWOA) and will then be referred to the Department of Sustainability, Environment, Water and Communities (DSEWPC) to obtain approval under the EPBC Act. An Environmental Impact Statement (EIS) for the Alpha Coal Project (Issue 3, November 2010) was prepared and made available for public comment and review from 5 November 2010 to 20 December 2010. In response to submissions received and changes to the Project Description a Supplementary EIS (SEIS) report has been prepared.

As part of the EIS and SEIS, desktop, field surveys and potential habitat modelling/mapping were undertaken to document the existing flora and fauna habitat values associated with the mine and rail components of the project, to assess the risks to flora and fauna, to identify any significant ecological constraints to development and recommend mitigation measures.

Despite best efforts during the rail options analysis to avoid impacts to native vegetation (so that the rail alignment traverses large areas of previously cleared land), and due to the location of the resource, some unavoidable impacts associated with the Project are not able to be mitigated and will require offsetting.

Potential impacts associated with the project have been documented in the Alpha Coal Project EIS and SEIS. Relevant documents to this Offset Strategy that are attached in Appendices to the EIS and SEIS include:

- *Report for Proposed Alpha Rail EIS - Terrestrial Ecology Wet and Dry Season Surveys* (Terrestrial Ecology Report – GHD 2010)
- *EPBC Report (Mine)* (URS 2011)
- *EPBC Report (Rail)* (GHD 2011a)
- *Caley Valley Wetland Aquatic Flora and Fauna Assessment for Rail Loop* (Caley Valley Aquatic Report – GHD 2011b)

## 1.2 Purpose of Offsets Strategy

The Terrestrial Ecology Report (GHD, 2010) identified that the Project will impact 68 regional ecosystems (REs) comprising approximately 1,538 ha of remnant vegetation. The EPBC Reports for the mine (URS 2011) and rail (GHD 2011a) have documented, from the work completed to date, a direct impact to MNES of 10,200 ha for the mine and 1,322 ha for the rail. The indirect impact has been calculated as 2,897ha for the mine, and 4846 ha for the rail.

Where the Project will impact important ecological values such as high conservation status REs, threatened ecological communities (TECs), essential habitat, important watercourse, marine plants, wetland or corridor vegetation, and habitat for threatened species offsets will be required



under relevant Commonwealth and State government offsets policies. This report details the road map to develop a thorough understanding of the Projects offset requirements and offers potential solutions that have been identified for further investigation. This report will:

- ▶ Summarise anticipated Project impacts to marine plants, remnant vegetation and MNES
- ▶ Outline the methodology to further refine/reduce anticipated Project impacts
- ▶ Provide an action plan to identify offsets options
- ▶ Confirm the Proponent's initial offset commitments



## 2. Legislative Context

### 2.1 Introduction

The Commonwealth and State Government offsets policies that apply to the Project include:

- ▶ Draft Policy Statement: Use of environmental offsets under the *Environment Protection and Biodiversity Conservation Act 1999*
- ▶ Queensland Government Environmental Offsets Policy
- ▶ Policy for Vegetation management Offsets (QLD)
- ▶ Fish Habitat Management Operational Policy (FHMOP 005)

### 2.2 Environment Protection and Biodiversity Conservation Act 1999

#### 2.2.1 Offset Principles

The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) provides the legal framework used to protect and manage Matters of National Environmental Significance (MNES). Actions which are likely to have an effect on matters of MNES must be referred to the Minister and undergo an environmental assessment and approval process.

Environmental offsets can be applied as an approval condition under the EPBC Act for developments that have undergone assessment and may be used when a development will result in impacts on a MNES protected by the EPBC Act (DEWR 2007). The Draft Policy Statement: Use of environmental offsets under the *Environment Protection and Biodiversity Conservation Act 1999* (DEEWR 2007) states that offsets under the EPBC Act should “maintain or enhance the health, diversity and productivity of the environment as it relates to matters protected by the EPBC Act” (DEEWR 2007). This policy stipulates that it does not intend to make projects with unacceptable impacts acceptable through the use of offsets. The draft policy also notes that the use of offset strategies will be determined on a case-by case basis dependent on the scale and intensity of the impact and the potential for conservation outcomes to be delivered through offsets (DEEWR 2007).

The Australian Government has identified eight principles for the use of environmental offsets under the EPBC Act. These principles are used to assess proposed environmental offsets and are listed below.

1. Environmental offsets should be targeted to the matter protected by the EPBC Act that is being impacted
2. A flexible approach should be taken to the design and use of environmental offsets to achieve long-term and certain conservation outcomes which are cost effective for proponents
3. Environmental offsets should deliver a real conservation outcome (e.g. the purchase of existing unprotected habitat, protection of this habitat in perpetuity, and active management of this habitat for long term conservation purposes)
4. Environmental offsets should be developed as a package of actions - which may include both direct (e.g. reservation of land) and indirect offsets (e.g. ongoing management activities)



5. Environmental offsets should, as a minimum, be commensurate with the magnitude of the impacts of the development and ideally deliver outcomes that are 'like for like'<sup>1</sup>
6. Environmental offsets should be located within the same general area as the development activity
7. Environmental offsets should be delivered in a timely manner and be long lasting
8. Environmental offsets should be enforceable, monitored and audited

Offset ratios can be applied when available, however offsets are required that are (at a minimum) of equal quantity and quality to the area to be impacted, but preferably of a greater quantity and/or higher quality. The Australian Government considers the approach of the relevant state or territory with a view to complementing and/or building on that approach.

### **2.2.2 Implications for the Project**

The Draft Policy Statement: Use of environmental offsets under the *Environment Protection and Biodiversity Conservation Act 1999* (DEWR 2007) applies to this Project, as the Project will impact MNES protected by the EPBC Act.

The Project requires the clearance of REs that are listed as components of a TEC and are habitat for threatened species listed under the EPBC Act, and this action carries offset obligations. Offset solutions can be used to maintain or enhance the health, diversity and productivity of the environment as it relates to matters protected by the EPBC Act (DEWR 2007).

The offsets will need to be consistent with these principles and meet the legislative requirements for offsets outlined in the EPBC Act. Although state and territory government offsets policies may have the capacity to deliver offsets that will satisfy SEWPC's draft policy and the requirements of the EPBC Act, it should not be assumed that that an offset which satisfies state and territory requirements will automatically satisfy the requirements of the EPBC Act. As such, the offset options will need to be negotiated with SEWPC and the relevant state government agencies.

## **2.3 Queensland Government Environmental Offsets Policy**

### **2.3.1 Overview**

The Queensland Government Environmental Offsets Policy (QGEOP) provides a framework for the use of environmental offsets in Queensland, in order to counterbalance unavoidable, negative environmental impacts that result from an activity or a development. The QGEOP guides the appropriate use of environmental offsets across terrestrial and aquatic ecosystems based on the principles of Ecologically Sustainable Development (ESD). This policy is based on the premise that offsets are used consistently and transparently across the State, and are only considered after all environmental impacts have been avoided and minimised, and all other government environmental standards have been met (Queensland Government 2008a). The QGEOP is based on seven basic principles that guide the way in which offsets are used to contribute to ESD. The seven principles are as follows:



- ▶ Offsets will not replace or undermine existing environmental standards or regulatory requirements, or be used to allow development in areas otherwise prohibited through legislation or policy.
- ▶ Environmental impacts must first be avoided, then minimised, before considering the use of offsets for any remaining impact.
- ▶ Offsets must achieve an equivalent or better outcome.
- ▶ Offsets must provide environmental values as similar as possible to those being lost.
- ▶ Offset provision should minimise the time-lag between the impact and delivery of the offset.
- ▶ Offsets must provide additional protection to environmental values at risk, or additional management actions to improve environmental values.
- ▶ Offsets must be legally secured for the duration of the offset requirement.

In Queensland, four specific-issue offset policies have been developed to provide detailed direction for offsets that address specific environmental issues. The QGEOP guides the content of the specific-issue offsets policies, these specific-issue policies must also comply with the seven policy principles of the QGEOP. The specific-issue offset policies and administering authorities include:

- ▶ **Vegetation Management** - Policy for Vegetation Management Offsets (DERM, 2009)
- ▶ **Marine Fish Habitat** - Mitigation and Compensation for Works or Activities Causing Marine Fish Habitat Loss (2002), (DEEDI)
- ▶ **Koala Habitat** - Offsets for Net Benefit to Koalas and Koala Habitat (2006), (DERM)
- ▶ **Biodiversity** - Draft Queensland Biodiversity Offsets Policy, Consultation Draft (2010), (DERM)

The QGEOP supports coordination of Australian Government, Queensland Government and local government offset requirements, and where possible, promotes the development of offset packages that meets the offset requirements of the EPBC Act and any Queensland Government specific-issue offset policy. This co-ordinated approach to offsets means that specific offsets sought under one policy will not also be sought under another policy, providing that the offsets package satisfies the requirements of both policies. For example, where overlapping of policies occurs (e.g. an area is listed as both an endangered RE under the VM Act and a nationally listed TEC under the EPBC Act), the offset package will endeavour to meet the individual requirements of all applicable offset policies.

### 2.3.2 Implications for the Project

The QGEOP is relevant to this Project as the policy applies where current legislation triggers State Government assessment of impacts on environmental values, and to decisions on development approvals under a range of approval processes (e.g. *Environment Protection Act 1994*, *Sustainable Planning Act 2009*, *State Development and Public Works Organisation Act 1971*).



## 2.4 Policy for Vegetation Management Offsets (QLD)

### 2.4.1 Overview

Vegetation clearing in Queensland is regulated through the *Vegetation Management Act 1999* (VM Act), which outlines the rules and regulations that guide what clearing can be carried out, and how it must be undertaken in order to comply with the requirements of the law.

The current Policy for Vegetation Management Offsets (DERM, 2009) outlines the requirements for an offset package as a condition for development approval that the chief executive considers is necessary or desirable for achieving the purpose of the VM Act (DERM, 2009). Regional vegetation management Codes under the VM Act set out performance requirements that development applications involving clearing of native vegetation must meet the Policy for Vegetation Management Offsets (DERM 2009).

Where the applicant has demonstrated reasonable effort to first avoid then mitigate impacts related to the development application, offsets may be proposed as a solution to meet performance requirements in order to maintain the current extent of particular REs (DERM 2009). Areas offered as offsets must be ecologically equivalent to the area being cleared, and the total offset area required will be proportionate to the ecological value of the offset vegetation. As DERM's current Policy for Vegetation Management Offsets no longer specifies ratios, it is impossible to state the total offset area that may be required. However, current indications are that offset proposals being accepted by DERM are generally three to four times larger in area than the area being cleared (Alan Keys, offsets broker, pers. comm. 2 July 2010, in GHD 2010).

### 2.4.2 Implications for the Project

The Policy for Vegetation management Offsets (DERM, 2009) applies to this Project, as it requires the removal of conservation significant REs and remnant vegetation associated with essential habitat, wetlands, watercourses, and will disrupt ecological connectivity. Offsetting is therefore required in order to meet the performance requirements outlined in Part S (Requirements for clearing for significant Projects) of the *Regional Vegetation Management Code for Brigalow Belt and New England Bioregions* (DERM 2009b) and *Regional Vegetation Management Code for Western Bioregions* (DERM 2009c).

## 2.5 Fish Habitat Management Operational Policy (FHMOP 005)

The *Fisheries Act 1994* regulates the management, use, development, and protection of fisheries resources and fish habitats and the management of aquaculture activities, and other related activities (Dixon & Beumer 2002). All works proposed for approvals under Section 51 of the *Fisheries Act 1994* and the *Sustainable Planning Act* (SP Act) (2009), where marine fish habitats (including marine plants and lands within Fish Habitat Areas) are to be permanently or temporarily lost, trigger the Fish Habitat Management Operational Policy (FHMOP 005).

The objectives of the Fish Habitat Management Operational Policy (FHMOP 005) are to maintain fisheries and fish habitat values; match ecosystem costs associated with fish habitat losses with offsets appropriate to the loss; to promote the importance of marine fish habitats during implementation; to recognise the natural capital of fish habitats; and to create public awareness of the value of fish habitats (Queensland Government 2008).

Offset solutions for marine habitat loss can include: fish habitat enhancement; Fish habitat restoration, rehabilitation or creation; Fish habitat exchange and secured where the lands



proposed for exchange contribute to similar fish habitat; and/or contribution of a financial offset to fund related activities (Queensland Government 2008).

### **2.5.1 Implications for the Project**

Marine fish habitat offset requirements apply to this Project, as REs associated with marine fish habitats and marine plants will be impacted by the proposed rail loop at Caley Valley Wetlands.

## **2.6 Draft Biodiversity Offsets**

The QLD government has proposed the Draft Policy for Biodiversity Offsets as a mechanism to capture projects that have been previously exempt from offsetting requirements under current QLD environmental management legislation. It is a 'specific-issue offset policy' proposed under the broader framework of the Queensland Government Environmental Offset Policy.

The policy is proposed to apply to a variety of biodiversity assets for which there has previously been no formal requirement to offset impacts. Such assets include the Protected Area Estate, remnant vegetation not protected by the VM Act, listed threatened species, wetlands of high conservation value and other significant ecosystem values such as bioregional corridors. The proposed policy will be triggered where a State Government agency is the decision maker or a concurrence agency under the Integrated Planning Act 1997. The policy is proposed to apply where provisions that consider the environmental values already exists in the relevant legislation. For example, Level 1 mining and Level 1 petroleum activities under the Environmental Protection Act 1994 and permits for clearing protected plants under the Nature Conservation Act 1992.

The draft policy is currently being reviewed by DERM following the results of targeted consultation with key stakeholders in 2009. The details have not been finalised and endorsed by government, and the draft is no longer publicly available. The final Policy for Biodiversity Offsets is due to be released sometime in 2012.

### **2.6.1 Implications to the Project**

It is not clear at this stage whether this policy will have implications for the project. Advice from the Queensland Government will be required.



## 3. Offset Strategy

### 3.1 Introduction

The Offset Strategy presented within this report incorporates the following:

- ▶ Current understanding of Project impacts and associated offset requirements (Section 3.2)
- ▶ A number of offset options identified that may meet the offset requirements (Section 3.3)
- ▶ Outstanding actions required to compile an offset package for the Project and secure the offsets (Section 3.4).

An assessment of the offset requirements and an options analysis has been undertaken and will be attached to the final offsets plan. For the purposes of this Strategy, the following sections provide a summary of that assessment.

### 3.2 Project Impacts and Offset Requirements

Throughout the planning and design stages of the Project steps were taken to minimise the residual impact of the Project by avoiding native vegetation where reasonable and minimising the Project footprint. The Terrestrial Ecology Report (GHD, 2010) and EPBC reports (URS 2011, GHD 2011a) concluded that substantial removal of native vegetation was still likely to occur following measures taken to avoid and minimise the impact of the Project. A number of potential direct and indirect impacts were identified including the direct loss of vegetation, habitat and resources as a result of vegetation clearing.

The proposed clearing impacts and offset requirements for this Project are discussed in terms of the following environmental offset criteria:

- ▶ Clearing of Endangered and Of Concern REs
- ▶ Clearing of threshold REs
- ▶ Clearing of essential habitat
- ▶ Clearing of watercourse vegetation
- ▶ Clearing of wetland vegetation
- ▶ Clearing of corridor vegetation
- ▶ Clearing of fish habitat
- ▶ Clearing of threatened ecological communities
- ▶ Clearing of high value regrowth vegetation
- ▶ MNES (threatened species habitat and TECs)

The proposed extent of the clearing for each of the above environmental criteria is provided in Table 1 and also in Tables 2-5 for direct and indirect impacts to MNES for the Rail and Mine components of the Project.



**Table 1 Summary of Vegetation Clearing Extents for the Rail**

<b>Environmental Offset</b>	<b>Proposed Clearing Area (ha)</b>
Endangered REs	111.43 ha
Of Concern REs	104.16 ha
Threshold REs	20.81 ha (11.01 ha) <sup>1</sup>
Essential Habitat	14.076 ha
Watercourse vegetation	75.03 ha (72.34 ha) <sup>2</sup>
Wetland vegetation	TBD
Corridor vegetation	395.91 ha
Fish Habitat	2.39 ha (0.43 ha) <sup>3</sup>
Threatened Ecological Communities	257.70 ha (87.35 ha) <sup>4</sup>
High value regrowth vegetation	~62 ha
<sup>1</sup> Area (11.01 ha) requiring new offsets. Remaining area (9.8 ha) can be addressed under delivery of Endangered and Of Concern RE offsets, or offsets not required as area is less than 2 ha.	
<sup>2</sup> Area (72.34 ha) requiring new offsets. Remaining area (2.69 ha) can be addressed under delivery of Essential Habitat offset requirements	
<sup>3</sup> Area (0.43ha) requiring new offsets. Remaining area (1.96ha) can be addressed under delivery of watercourse vegetation offsets.	
<sup>4</sup> Area (87.35 ha) requiring new offsets. Remaining area (170.35 ha) can be addressed under delivery of Endangered and Of Concern RE offsets	



**Table 2 Quantification of Direct Impacts to MNES Potential Threatened Species Habitat and Threatened Ecological Communities (Rail)**

	A	B	C	D	E	F
	Direct impact - number of hectares of potential habitat and TECs (overlaid)	Number of hectares of potential habitat and TECs (overlaid) – landscape#	% potential habitat and TECs (overlaid) in landscape# directly impacted i.e. (a/b)*100	Direct impact footprint area (i.e. 0.06 km x length of alignment)	% Direct impact footprint area that is potential habitat and TECs (overlaid) (i.e. a/d)*100	% potential habitat and TECs (overlaid) in landscape# i.e. (b/total area of landscape)*100
Potential habitat for 1-3 species/TECs	777.98 ha	1,010,328.70 ha	0.08 %	3,264.45 ha	23.83 %	17.20 %
Potential habitat for 4-6 species/TECs	378.12 ha	984,391.30 ha	0.04 %	3,264.45 ha	11.58 %	16.76 %
Potential habitat for 7-10 species/TECs	166.31 ha	273,715.53 ha	0.06 %	3,264.45 ha	5.09 %	4.66 %
Potential habitat for >10 species/TECs	0.05 ha	1179.88 ha	0.00 %	3,264.45 ha	0.00 %	0.02 %

# - 'landscape' is the landscape surrounding the rail study area (within the Brigalow Belt and Desert Uplands bioregions) as depicted on a map sheet at a scale of 1:500,000)



**Table 3 Quantification of Indirect Impacts to MNES Potential Threatened Species Habitat and Threatened Ecological Communities (Rail)**

	A	B	C	D	E	F
	Indirect impact - number of hectares of potential habitat and TECs (overlaid)	Number of hectares of potential habitat and TECs (overlaid) – landscape#	% potential habitat and TECs (overlaid) in landscape# indirectly impacted i.e. (a/b)*100	Indirect impact footprint area	% indirect impact footprint area that is potential habitat and TECs (overlaid) (i.e. a/d)*100	% potential habitat and TECs (overlaid) in landscape# i.e. (b/total area of landscape)*100
Potential habitat for 1-3 species/TECs	2,868.01 ha	1,010,328.70 ha	0.28 %	11,335.81 ha	25.30 %	17.20 %
Potential habitat for 4-6 species/TECs	1,392.70 ha	984,391.30 ha	0.14 %	11,335.81 ha	12.29 %	16.76 %
Potential habitat for 7-10 species/TECs	580.59 ha	273,715.53 ha	0.21 %	11,335.81 ha	5.12 %	4.66 %
Potential habitat for >10 species/TECs	4.95 ha	1,179.88 ha	0.42%	11,335.81 ha	0.04 %	0.02 %

# - 'landscape' is the landscape surrounding the rail study area (within the Brigalow Belt and Desert Uplands bioregions) as depicted on a map sheet at a scale of 1:500,000)



**Table 4 Quantification of Direct Impacts to MNES Potential Threatened Species Habitat and Threatened Ecological Communities (Mine)**

	A	B	C	D	E	F
	Direct impact - number of hectares of potential habitat and TECs (overlaid)	Number of hectares of potential habitat and TECs (overlaid) – landscape#	% potential habitat and TECs (overlaid) in landscape# directly impacted i.e. (a/b)*100	Direct impact footprint area (Mine)	% Direct impact footprint area that is potential habitat and TECs (overlaid) (i.e. a/d)*100	% potential habitat and TECs (overlaid) in landscape# i.e. (b/total area of landscape)*100
Potential habitat for 1-3 species/TECs	9,882.17 ha	561,925.38 ha	1.76 %	20,618.20 ha	47.93 %	24.47 %
Potential habitat for 4-6 species/TECs	317.96 ha	97,742.82 ha	0.33 %	20,618.20 ha	1.54 %	4.26 %
Potential habitat for 7-10 species/TECs	0 ha	10,565.94 ha	0 %	20,618.20 ha	0 %	0.46 %
Potential habitat for >10 species/TECs	0 ha	0 ha	0 %	20,618.20 ha	0 %	0 %

# - 'landscape' is the landscape surrounding the mine study area (within the Brigalow Belt and Desert Uplands bioregions) as depicted on a map sheet at a scale of 1:500,000)



**Table 5 Quantification of Indirect Impacts to MNES Potential Threatened Species Habitat and Threatened Ecological Communities (Mine)**

	A	B	C	D	E	F
	Indirect impact - number of hectares of potential habitat and TECs (overlaid)	Number of hectares of potential habitat and TECs (overlaid) – landscape#	% potential habitat and TECs (overlaid) in landscape# indirectly impacted i.e. (a/b)*100	Indirect impact footprint area (Mine)	% indirect impact footprint area that is potential habitat and TECs (overlaid) (i.e. a/d)*100	% potential habitat and TECs (overlaid) in landscape# i.e. (b/total area of landscape)*100
Potential habitat for 1-3 species/TECs	2,725.20 ha	561,925.38 ha	0.48 %	5,971.89 ha	45.63 %	24.47 %
Potential habitat for 4-6 species/TECs	171.81 ha	97,742.82 ha	0.18 %	5,971.89 ha	2.88 %	4.26 %
Potential habitat for 7-10 species/TECs	0 ha	10,565.94 ha	0 %	5,971.89 ha	0 %	0.46 %
Potential habitat for >10 species/TECs	0 ha	0 ha	0%	5,971.89 ha	0 %	0 %

# - 'landscape' is the landscape surrounding the mine study area (within the Brigalow Belt and Desert Uplands bioregions) as depicted on a map sheet at a scale of 1:500,000)

As the modeling process was undertaken using a conservative approach and for the Project's impact assessment, the areas identified as potentially being impacted are an overestimate of what will likely be the final unavoidable impact. Further refinement of the model (including validation using additional field data) will be required to obtain a greater understanding of the actual impact and is outlined in Section 3.4.

### 3.3 Offset Options

#### 3.3.1 Overview

The potential direct and indirect impacts associated with the Project have been assessed against Commonwealth and State government offsets policies and relevant regional vegetation management codes, to identify the Project's offset requirements. Due to the extent of the impact and the provisions of the relevant legislation and regulations, offsets are required for the Project.

Where residual impacts associated with the Project are anticipated, offsets will be provided as a means of reducing the Project impacts on the environment and complying with approval conditions under the EPBC Act, SP Act, VM Act and *Fisheries Act 1994*.

Offset packages typically require the delivery of either direct or indirect offsets, or a combination of the two. Direct or 'in-kind' offsets aim to provide similar values, function, habitat and other attributes to those being lost or impacted by the adverse activity. Indirect or 'out of kind' offsets refer to offsetting activities that come in the form of either management, research, or financial contributions and are aimed at promoting gains for those values lost as a result of the impacting activity. DERM's current Policy for Vegetation Management Offsets no longer specifies ratios for calculating offset areas. Ratios (also referred to as 'mitigation ratios') establish how much every unit lost (e.g. ha of an endangered RE) at a Project site must be offset with gains elsewhere (e.g., 1 unit of loss: 3 units of compensation). Based on current policy trends, it is expected that the minimum offset requirement may be three times the area cleared. The offset ratio is also dependent on the results of biocondition assessments (see Section 3.4).

Location and size of offsets are also key determinants in an offsets package. Offset policies typically favour offsets which are located in close proximity to the impacted site, however balancing spatial relationships with conservation needs often poses challenges. In selecting the location of offsets one should take into account that the location of individuals, populations and communities will significantly affect their interactions and persistence.

The options analysis undertaken to date for the Project and summarised in this report seeks to achieve compliance with both the Commonwealth and State vegetation offset requirements primarily in the form of providing direct offsets, at a relevant ratio, in close proximity to the impacted site. The provision of these vegetation offsets will also assist in offsetting impacts on protected species, as it will replace lost habitat. Three offset options have been investigated to date. Investigations have been undertaken through a desktop analysis based on the clearing extents detailed in the Terrestrial Ecology Report (GHD 2010). Details of the methodology and results of the desktop analysis are provided in Section 3.3.2 below.

Other options under development to supplement direct offsets include the strategies listed below. These items will be developed into specific commitments as part of final plans for securing the offsets.

- Research into MNES in the Galilee Basin to expand the current amount of field validated data
- Development of longer term monitoring plans across the project (mine and rail) from which data can be used to inform land management activities in order to address longer term MNES and biodiversity threats



- Investigation into linking offsets into wider scale solutions, such as enhancement of vegetation corridors in order to ameliorate impacts arising from habitat fragmentation, and (particularly in the mining areas) how the initiatives can be linked with other Galilee Basin mining developments

### 3.3.2 Desktop Analysis

The first stage of the offset site selection process has been undertaken through a desktop analysis. Geospatial analysis was used to identify sites that have the potential of meeting the requirements of the offsets policies. At this stage of the site selection process, efforts have been focussed at sites within close proximity to the Project area, either being intersected by or adjoining the proposed rail alignment.

Potential offset sites were identified according to how they fulfilled the following criteria:

- ▶ Not covered by an existing mining lease or mineral development license
- ▶ Not declared protected area
- ▶ Suitable pre-clear vegetation
- ▶ Non-remnant vegetation present on the property and available for offsetting.

From this preliminary selection potential sites were classed according to their suitability. Three separate categories were developed to classify each potential offset site. The three primary options for offsets have been investigated through a desktop analysis and include:

- ▶ **Option 1:** assessment of properties that offer potential areas suitable for offsetting - restricted to small portions of properties intersected by the proposed rail alignment that are being considered for purchase
- ▶ **Option 2:** assessment of properties that offer potential areas suitable for offsetting – limited to properties intersected by the proposed rail alignment where the parcel size is less than 10, 000 ha.
- ▶ **Option 3:** assessment of two properties (in addition to those considered for Option 1 and 2) that occur adjacent to National Parks that are being considered for purchase

The output of these analyses provided a list of properties with areas potentially suitable for provision of vegetation offsets for each environmental offset criterion. The total number of properties identified for each option comprised:

- ▶ **Option 1:** 12 properties
- ▶ **Option 2:** 42 properties
- ▶ **Option 3:** 2 properties

For each of the three options, preliminary analysis indicates that option two provides the quantum of vegetation that could be potentially used to offset the project:

- ▶ **Option 1:** 1,415 ha
- ▶ **Option 2:** 6,796 ha
- ▶ **Option 3:** 150 ha

Further analysis is required (including field surveys) to understand whether this option could meet the offset requirement. The number of suitable properties may be further refined through analysis based on aerial imagery. This process is resource intensive and for the purposes of this preliminary assessment



has not been included here but should be considered at a later stage of analysis. Further studies, including field investigations are required to confirm whether the potential sites over each of these properties are suitable and will meet offset policy requirements. This is discussed further in Section 3.4.

While there is some merit in the approach above, consideration should also be given to finding a strategic offset of an appropriate quantum (direct offset) in combination with other factors such as location in the landscape, vegetation rehabilitation and research (indirect).



## 3.4 Outstanding and Ongoing Actions

### 3.4.1 Overview

A number of remaining tasks are either currently being undertaken or are yet to be undertaken as part of the offset process for the Project. In summary, such items include:

- ▶ Further refinement of the threatened species habitat modelling that was undertaken as part of the EPBC reports (URS 2011, GHD 2011a), including field validation of models, incorporation of additional field data, to determine actual impact to MNES (rather than potential impact for impact assessment purposes)
- ▶ Identification of large-scale strategic offset sites (properties of several thousand hectares that might be suitable as a strategic offset for the project)
- ▶ Development of rehabilitation strategies to link areas of high ecological value in the landscape (to offset fragmentation effects on regional corridors)
- ▶ Development of supporting strategies including wider scale MNES research in the Galilee Basin and monitoring plans to assist with mitigating long term MNES and biodiversity threats
- ▶ Identifying opportunities for ameliorating direct and indirect impacts arising from habitat fragmentation in both project specific and regional contexts
- ▶ Identification of suitable offset areas over the properties where preliminary analysis has been undertaken (ongoing)
- ▶ Field assessment of identified offset areas to determine the suitability offset extent and condition of vegetation
- ▶ Landholder liaison and negotiation to secure required offsets
- ▶ preparation of Biodiversity Offset Management Plan(s) to ensure the long-term viability of offset areas; including but not limited to:
  - pest and weed management
  - fencing for live-stock exclusion
  - fire management
  - rehabilitation and planting
  - monitoring and maintenance activities.
- ▶ Liaison with regulatory bodies and landowners to finalise contractual arrangements and covenants.

Where applicable, these items are discussed further in Sections 3.3.1 to Section 3.3.3 below.

### 3.4.2 Refinement of direct and indirect impact to MNES

The modelling and mapping process used to determine the potential impact to MNES does not take into account localised features, previous disturbance (other than remnant vegetation current extent), relationships with introduced species, local habitat condition or current land use. It takes key habitat features at a regional scale that can be spatially represented to describe potential habitat. For this reason, the mapping outputs of potential habitat do not reflect current distribution or predict occurrence of a species and indeed provides an overestimate of where species actually occur, and therefore an



overestimate of unavoidable impact to MNES. Likewise, while potential habitat has been mapped, it is not considered that all potential habitat is occupied. Therefore any quantification of potential direct and indirect impact is relevant only to potential habitat, and not occupied habitat.

To understand the offset obligation, refinement of the direct and indirect impact associated with the Project needs to be more clearly defined, particularly given the assumptions that underpin the methodology (see GHD 2011a).

In general, the modelling and mapping exercise sought to identify where potential habitat occurred for each species over an extent of several thousand square kilometres. While the actual occurrence and value of potential habitat 'on the ground' may not be reflected by the mapping in some instances (i.e. where vegetation mapping inaccuracies occur or where habitat value is diminished due to localised degrading processes), the conservative approach applied and the model validation indicate that the process will allow for a more realistic assessment of impacts of the Project to threatened species and TECs upon further refinement.

Further refinement and review of the habitat mapping, including assessment of additional site specific information, will be undertaken as part of planned ongoing studies. The updates will be available to inform the assessment of direct and indirect impacts, and finalisation of the Offsets Strategy.

Model validation following additional detailed field investigations will be required to refine the model and determine the unavoidable direct and indirect impacts associated with the Project so that the offset obligation can be determined.

### **3.4.3 Refinement of Offset Options**

The preliminary investigations undertaken for each of the three options is limited in its ability to provide areas that may be suitable as a like for like offset. In instances where the policy cannot be met through like for like offsets, the provision of a different vegetation type than that being cleared can be considered Under the Policy for Vegetation Management Offsets (DERM, 2009). In these circumstances the offset provided must be of the same or higher conservation status. This will require further investigation to determine the broad vegetation group (BVG) of the vegetation on the ground.

As stipulated in the Policy for Vegetation Management Offsets (DERM, 2009), an offset area must be the same BVG and be a RE of equal or higher conservation value than the RE being cleared. As such any area proposed as an offset must be the same BVG and be of similar or higher VM Class than areas to be cleared. Further studies are required to confirm whether the potential sites over each of these properties are suitable and to further determine any additional areas that may suit offset obligations for REs not met through the desktop investigations.

Bio-condition assessments (as per the methodology in Neldner *et al.* (version 2, 2010) at each of the proposed offset sites will need be undertaken to assess the function and condition of biodiversity values and confirm that each potential offset site fits the requirements necessary for approval under its' respective regulations. In summary, field studies are required to confirm whether:

- ▶ The regrowth vegetation on the property is of the same RE types as vegetation being cleared
- ▶ The size and quality of the regrowth area is suitable
- ▶ Connectivity is maintained with existing remnant patches
- ▶ Land owners would be willing to use these as offset sites



#### **3.4.4 Consultation with Regulatory Bodies and Offset Brokers**

It is proposed that consultation with relevant government agencies (i.e. SEWPAC, DERM and DEEDI) and Hancock should be undertaken to identify the appropriateness of the preferred offset solution – Option 1. This meeting will provide an indication of what additional areas may be required to meet offset obligations and whether environmental brokers are required in addition to what has been identified by Option 1.

GHD has a working relationship with environmental brokers such as Earthtrade (a subsidiary of the Burnett Mary Regional Group) and Ecofund (Queensland Government). These brokers can assist with providing offset options and securing offsets in Queensland as they have established relationships with landholders and have knowledge of those interested in being involved in securing offsets for major projects in the region.

Offset sites for marine habitat have not yet been identified or secured, as discussions with the Department of Employment, Economic Development and Innovation (DEEDI) must take place to ensure that offsets identified will meet policy requirements. A forum between key stakeholders including, Hancock, relevant government agencies (ie. DERM, DEEDI, DSEWPC), and potential environmental brokers should be facilitated to discuss offset requirements, identify suitable offset options, and make progress towards securing and delivering offsets.

#### **3.4.5 Securing the Offset**

In order to legally secure the offset options proposed in this plan, a contractual agreement between all parties (i.e. government agencies, proponent and landholder) is required. This agreement will be consistent with the provisions of the QGEOP and the Policy for Vegetation Management Offsets.

The QGEOP states that an offset agreement is a formal document between the regulator and proponent that describes arrangements for providing an environmental offset. These arrangements must satisfy the offset requirement for a particular impact.

The Policy for Vegetation Management Offsets states that offset areas must be legally secured. For an offset area to be legally secured, the vegetation within the offset area must be provided additional protection from clearing, using a legally binding mechanism, and supported by an offset area management plan.

An offset must be legally secured:

- ▶ By a legally binding mechanism that secures the offset area within four months of the development approval being issued; and
- ▶ Consistent with the timeframes identified in a legally binding agreement.

#### **3.4.6 The Next Steps**

Hancock will continue working with the Commonwealth and State agencies, and other affected and interested stakeholders, in the finalisation and formal approval of this Offset Strategy.

Hancock aims to have the Offset Strategy finalised in conjunction with finalisation of the Queensland Coordinator General's report, following which the Commonwealth Minister's approval under the EPBC Act will be requested in accordance with the principles of the Bilateral Agreement between the State and Commonwealth Governments.



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