APPENDIX 17A-1-SV1.4

WJV DRAFT BIODIVERSITY OFFSET STRATEGY

Biodiversity Offset Strategy

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Prepared By Joel May

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Change History

Version	Date	Name	Revision Description

Distribution List

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Related Documents

Document Title	Date	Revision	Project
Australian Government Biodiversity Offsets (EPBC Act) Policy	Draft December 2007		DEWR
Queensland Government Environmental Offsets Policy	August 2008		QEPA
Policy for Vegetation Management Offsets	September 2007		DNRW
Wandoan Coal Project Terms of Reference for an Environmental Impact Statement	November 2008?		DIP
Xstrata Sustainable Development Policy	December 2007		Xplc
XCQ Biodiversity Risk Assessment Report	June 2008		XCQ
Consultation Draft Policy for Biodiversity Offsets	December 2008		QEPA

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1. Introduction

The Wandoan Coal Project (Project) will comprise an open cut coal mine and related infrastructure of approximately 32,000 hectares located to the west of Wandoan, Queensland. The Project is owned by the Wandoan Joint Venture (WJV), whose joint venture partners are Xstrata Coal Queensland Pty Limited (XCQ), Itochu Coal Resources Australia (ICRA) Wandoan Pty Limited and Sumisho Coal Australia Pty Limited. The Project will be managed by XCQ.

The Project's Supplementary Environmental Impact Statement (SEIS) clarifies, builds on and, where required, amends sections of the Environmental Impact Statement (EIS) based on the submissions received and refinements/modifications made to the Project as it has progressed from pre-feasibility to the feasibility stage.

Of relevance to biodiversity, the mine and related infrastructure within the Mining Lease Application (MLA) areas are now estimated in the SEIS to result in a residual loss of approximately 319 ha of remnant vegetation and 472ha of regrowth (non-remnant vegetation) during Project operations (not taking into account progressive rehabilitation). This has reduced from the approximately 673 ha estimated of remnant vegetation and 502 ha of regrowth estimated in the EIS.

The Project SEIS also lists only two alternative raw water supply sources for operational requirements (as the Western CSM water supply is no longer under consideration). The two water supply options have different impacts on vegetation:

1. Southern CSM water supply pipeline – loss of approximately 93 ha of remnant vegetation and 64 ha of non-remnant vegetation
2. Glebe Weir raising and pipeline – loss of approximately 644 ha of remnant vegetation and 61 ha non-remnant vegetation (predominantly due to weir raising and inundation)

The WJV has committed to adopting Xstrata's global Sustainable Development Policy, which includes planning for biodiversity offsets. The WJV is committed to developing and maintaining responsible environmental management practices that meet or exceed industry best practice, through adopting a biodiversity offset strategy (Offset Strategy). The Offset Strategy:

- will be developed and implemented in consultation with key stakeholders and government authorities
- draws from the principles outlined in Xstrata's Sustainable Development Policy
- will compensate for the loss of habitat and vegetation identified in the territorial flora and fauna assessment and Matters of National Environmental Significance assessment undertaken as part of the environmental impact assessment for the Project.

The draft Offset Strategy has been prepared as the primary ameliorative measure to minimise the residual impacts of the Project on biodiversity. It has also been developed to meet the requirements under the Australian Government's *Environment Planning and Biodiversity Conservation Act 1999* (EPBC Act), the Queensland Government's *Environmental Offsets Policy* (QGEOP) and relevant specific issue policies.

The Offset Strategy does not cover offsets for greenhouse gas emissions. Greenhouse gas emissions will be covered by Australia's Carbon Pollution Reduction Scheme, which is proposed to begin in late 2011 at the earliest. This draft Biodiversity Offset Strategy succeeds the one presented in the original EIS.

2. Current Policy and Industry Practice Regarding Offset Strategies

An environmental offset is:

- According to the Queensland Government – an action taken to counterbalance unavoidable, negative environmental impacts that result from an activity or development – and may be located *within or outside* the geographic site of the impact.
- According to the Australian Government – an action taken *outside a development site* that compensates for the impacts of that development - including direct, indirect or consequential impacts

2.1 Draft Australian Government Biodiversity Offsets (EPBC Act) Policy

The Australian Government Department of the Environment, Water Heritage and the Arts (DEWHA) released a *Draft Policy Statement on the Use of Environment Offsets* under the EPBC Act in August 2007 (Draft EPBC Policy).

The Draft EPBC Policy states that:

- Offsets under the EPBC Act can be used to maintain or enhance the health, diversity and productivity of matters of national environmental significance (MNES) and the environment more broadly for actions involving the Commonwealth.
- Offsets can be applied as an approval condition under the EPBC Act.
- Offsets must take into account the scale and intensity of impact from the development and the potential for conservation outcomes. Offsets should not be applied where the impacts of a development are considered to be minor in nature or could reasonably be mitigated.

The Draft Policy identifies eight principles for the use of offsets under the EPBC Act, being:

1. 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 offsets to achieve long-term and certain conservation outcomes which are cost effective to the proponent
3. offsets should deliver a real conservation outcome

4. offsets should be developed as a package of actions – which may include both direct and indirect offsets
5. offsets should, as a minimum, be commensurate with the magnitude of impacts and ideally deliver a "like for like" outcome
6. offsets should be in the same general area as the development activity
7. offsets should be enforceable, monitored and audited.

The Offset Strategy will be developed taking into account the principles outlined above.

2.2 Queensland Government Environmental Offsets Policy

The QGEOP establishes the framework for using environmental offsets in Queensland, and sets out the principles and guidelines for the use of environmental offsets.

Under the QGEOP, an offset may be located *within* or *outside* the geographical site of the impact. The QGEOP states that offsets are only applicable where impacts cannot be avoided or minimized, and if all other Government standards have been met.

Queensland also has specific-issue offset policies under the framework of the QGEOP, which provide detailed direction for offsets that address specific environmental issues. Relevant specific-issue policies for the Project are:

- Vegetation Management – *Policy for Vegetation Management Offsets, September 2007,* Department of Natural Resources and Water (VM Policy)
- Koala Habitat – *Offsets for Net Benefit to Koalas and Koala Habitat, 2006*, Environmental Protection Agency

The QGEOP applies where State legislation triggers an assessment of impacts on environmental values and decisions on development approvals (including approvals, terms, conditions and requirements) under the *Integrated Planning Act 1997* (IPA), *State Development and Public Works Organisation Act 1971* (SDPWO Act) and the *Environmental Protection Act 1994* (EPA).

The QGEOP promotes coordination between state and the Australian Government's offset requirements under the EPBC Act. Where possible, the QGEOP will promote

coordination of Australian Government offset requirements in relation to MNES.

The QGEOP sets out seven specific principles, which are:

1. Principle 1 – 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.

2. Principle 2 – Environmental impacts must first be avoided, then minimized, before considering the use of offsets for any remaining impact.

3. Principle 3 – Offsets must achieve an equivalent or better environmental outcome.

4. Principle 4 – Offsets must provide environmental values as similar as possible to those being lost.

5. Principle 5 – Offset provision should minimize the time-lag between the impact and delivery of the offset.

6. Principle 6 – Offsets must provide additional protection to environmental values at risk, or additional management actions to improve environmental values.

7. Principle 7 - Offsets must be legally secured for the duration of the offset requirement.

In the case of significant projects, the QGEOP states that where there are likely to be environmental impacts that trigger a specific issue offset policy, the need for offsets should be considered during the EIS assessment stage. The project design considered in the EIS should aim to avoid and minimize environmental impacts. However, if there are remaining impacts covered by a specific issue offset policy (such as the VM Policy), the intention to provide offsets in line with the policy(s) should be signaled. The Coordinator-General's report should recommend the provision of offsets consistent with specific-issue offsets policy(s).

In the case of mining activities, the QGEOP states that consideration of specific-issue offsets policies should be included as one of the content requirements of an Environmental Management Plan for a *Level 1 mining or petroleum activity*. If the activity will have a remaining environmental impact on an environmental value that is addressed by a specific-issue offsets policy, an environmental offset should be required as a condition of the environmental authority. This should include the timeframe within which an offset agreement must be finalized.

An offset agreement is a formal document between the regulator and the proponent that describes arrangements for providing environmental offsets. An offset agreement can be a condition of an approved Environmental Management Plan.

2.3 Policy for Vegetation Management Offsets 2007 (DNRW)

The requirements for offsets under state legislation fall under the subordinate policies of the VM Act and NC Act, specifically the:

- Regional Vegetation Management Code (Department of Natural Resources and Water 2006)
- Policy for Vegetation Management Offsets (Department of Natural Resources and Water 2007)
- Policy 2 of the Nature Conservation (Koala) Conservation Plan 2006 and Management Program 2006-2016 (The Koala Plan) (Environmental Protection Agency & Queensland Parks and Wildlife Service 2005).

The Policy for Vegetation Management Offsets (2007) applies to an offset proposed to meet a performance requirement under the Regional Vegetation Management Code.

2.4 Consultation Draft Policy on Biodiversity Offsets 2008 (EPA)

The Queensland Government has developed a draft policy on biodiversity offsets for public consultation. The draft policy is not intended to replace offset programs already in place, such as those required under the Vegetation Management Act (Department of Natural Resources and Water 2007). At the time of developing the SEIS, no final Policy for Biodiversity Offsets had been released. Nonetheless, this draft policy has been considered in the SEIS and this Strategy.

2.5 Terms of Reference

The Coordinator-General's Terms of Reference for the Project require that the EIS and SEIS:

- address the *Policy for Vegetation Management Offsets* (DNRW 2007);

- discuss offsets relating to residual impacts with regard to the P*olicy for Vegetation Management Offsets* as well as the draft policy Statement on the use of environmental offsets under the *EPBC Act 1999*;

- identify measures to mitigate the impacts of the project on vegetation types identified as having high conservation values, listed species and sensitive habitat or the inhibition of propagation should be described. This should also include the identification of potential offset areas in an "Offset Strategy" to compensate for any loss of vegetation.

These matters are dealt with in detail in the Project terrestrial ecology impact assessments, and the terrestrial ecology chapters of each Volume (chapters 17A for volumes 1, 2 and 3, chapters 12 and 14 for volume 4). The Offsets Strategy draws from the environmental impact assessment contained in the EIS and SEIS.

2.6 Xstrata's Biodiversity Policies

Xstrata's Sustainable Development Policy sets out the following commitment by Xstrata:

"to preserve the long-term health, function and viability of the natural environment affected by our operations. We develop and implement scientifically sound technologies and procedures for the effective management and conservation of biodiversity and landscape functions in the areas affected by our operations"

Xstrata's aim is to avoid net losses or degradation of natural habitats, biodiversity and landscapes through its operations.

Biodiversity offset areas or nature reserves have been established at a number of Xstrata's operations to protect ecologically sensitive areas within mining or exploration leases or to compensate for potential impacts on biodiversity from mining operations.

Offsets have been established at a number of Xstrata Coal operations in Queensland, including the voluntary establishment of the Newlands Nature Refuge comprising 4,300 hectares of land in which a number of threatened ecological communities and species have been identified. Of the 4,300 hectares protected, 530 hectares was established to offset the new Wollombi coal mine.

3. Wandoan Coal Project Biodiversity Offset Strategy

The WJV is committed to establishing the Offsets Strategy to compensate for the loss of habitat and vegetation.

Development of the Offsets Strategy involves five key stages:

1. identification of potential impacts;
2. identify opportunities to avoid, and then minimise, potential impacts as part of Project development;
3. identification of potential offset areas for loss of habitat as a result of the Project;
4. development of objectives and assessment criteria; and
5. detailed assessment of each offset options to determine the biodiversity value of each area in providing effective compensatory habitat.

The Offsets Strategy will consider the relevant state and Commonwealth policies above, as well as Xstrata's global biodiversity policies.

The Offsets Strategy will be determined in consultation with key stakeholders (Department of Environment & Resource Management (DERM), DEWHA, and interested community groups) during the detailed design of the Project and based on the residual impacts once all reasonable alternatives to avoid impacts have been exhausted. This is also necessary in order to determine the minimum requirements for offsetting following the 'maintain existing extent' test for Regional Ecosystems (REs), essential habitat and conservation status thresholds under the Regional Vegetation Management Code for the Brigalow Belt and New England Tablelands Bioregions (Department of Natural Resources and Water 2006).

On a practical level, providing an offset will most often involve identifying a suitable area of land to be used to supply the offset.

This area may be on:

- land already owned by WJV;
- land held by an affected landholder but outside the required project area;

- land owned by another third party – either identified by the proponent or identified through an off-set exchange such as the Green Exchange being proposed by the Queensland government or through a broker.

Consideration will be given to the arrangements to be put in place in order to secure the land and have it available to offer for an offset and to secure the offset.

Conservation agreements and nature refuges under the Nature Conservation Act 1992 may be used, where appropriate.

3.1 Identification of Potential Impacts relevant to the Strategy

A number of terrestrial and aquatic ecological studies have been conducted as part of the development of the EIS and SEIS for the Wandoan Coal Project, which are located in Chapter 17 of volumes 1, 2 and 3 and Chapters 12 and 14 of Volume 4 of the EIS and SEIS.

While the chapters and associated technical reports provide detailed accounts of the ecology within the project areas, the following can be summarised:

- the Project is unlikely to affect known threatened aquatic communities or species
- the Project is likely to affect known threatened terrestrial communities and/or species

Table 1 provides a summary of potential impacts from the mining project's activities, and the potential activities of each of the water supply options.

Regional Ecosystems (REs) are vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil.

The table gives an indicative minimum and maximum amount of disturbance of each RE is likely to experience. Totals are also given for each RE and from each Project component. Please note that these are estimates and assume that there is no overlap of disturbance between Project components.

The table also estimates minimum and maximum amounts of non-remnant REs on the Mining Lease Application areas that are not planned to be disturbed during the life of the operation. These figures are expressed as a percentage of the equivalent remnant REs

that will be disturbed so to provide an indication of the amount of vegetation which can be potentially offered as offsets within the MLAs.

In summary:

- within the MLAs:
    - a total of 319 ha remnant and 472 ha of non-remnant predicted to be disturbed
    - The EEC species listed include Brigalow (RE 11.9.5, dominant co-dominant, 23 ha) and Semi Evergreen Vine Thicket (RE 11.9.4, SEVT, 13 ha)
    - Other REs classed as significant at a State level are predicted to be disturbed, most notable being 11.9.10 (5 ha)
- For the Southern CSM water pipeline:
    - Total of 93 ha remnant and 64 ha non-remnant has been predicted to be disturbed
    - The EEC species listed is Brigalow (RE 11.9.5 & 11.9.6, dominant co-dominant, 2 ha)
- For Glebe Weir raising and pipeline:
    - Total of 626 ha & 18 ha of remnant (weir raising and pipeline respectively) and 56 ha & 5 ha non-remnant
    - The EEC species is Brigalow (RE 11.3.1, 11.9.5 & 11.9.6, dominant co-dominant, 5 ha)
    - A "community of Native vegetation species dependent on natural discharge of groundwater from the Great Artesian Basin" listed as Endangered under the provisions of the EPBC Act. This community represents moist groundwater dependent habitats which are important refugia for flora and fauna species and are locally known as 'boggomoss' (mound springs) communities.
    - Other REs classed as significant at a State level are predicted to be disturbed, most notable being 11.3.3 (341 ha)
- Total disturbance to REs is predicted to be between 412 and 963 ha, of which up to 41 ha are predicted to be threatened ecological communities

In addition to the threatened communities predicted to be disturbed, some threatened species are also recorded in the potential Project disturbance area as described in the EIS

technical reports. Summarising from these reports:

- For the MLAs:
    - Two EPBC listed threatened species were recorded in the MLAs: one flora (Belsons Panic, *Homopholis belsonii*) and one fauna (Brigalow scaly-foot, *Paradelma orientalis*)
    - Other threatened species recorded in the MLAs include the Golden-tailed Gecko (*Strophurus taenicauda*), Glossy Black-cockatoo (*Calyptorhynchus lathami*), and Little-pied Bat (*Chalinolobus picatus*).
- For the Southern CSM water pipeline:
    - One EPBC listed threatened species was recorded in the MLAs: Brigalow scaly-foot (*Paradelma orientalis*)
    - Other threatened species recorded in the Golden-tailed Gecko (*Strophurus taenicauda*), Glossy Black-cockatoo (*Calyptorhynchus lathami*), Little-pied Bat (*Chalinolobus picatus*) and the Little Forest Bat (*Vespadelus vulturnus*).
- For Glebe Weir raising and pipeline:
    - No threatened species of plant were recorded during survey.
    - One EPBC Critically Endangered invertebrate species was recorded in the region: Boggomoss Snail (*Adclarkia dawsonensis*)
    - The following vertebrate species were found to be present during ground surveys:
        - Salmon-striped Frog (*Limnodynastes salmini*)
        - Rough Frog (*Cyclorana verrucosa*)
        - Cattle Egret *(Bubulcus ibis)*
        - Grey Falcon *(Falco hypoleucos)*
        - Squatter Pigeon (southern subspecies) *(Geophaps scripta scripta)*
        - White-throated Needletail *(Hirundapus caudacutus)*
        - Grey-crowned Babbler *(Pomatostomus temporalis)*
        - Greater Glider *(Petauroides volans)*
        - Common Brushtail Possum *(Trichosurus vulpecula)*
        - Hoary Wattled Bat *(Chalinolobus nigrogriseus)*

- Little Pied Bat *(Chalinolobus picatus)*
- Black-breasted Button-quail (*Turnix melanogaster*)
- Eastern Pebble-mound Mouse (*Pseudomys patrius*)

All associated technical reports for the Glebe Option indicate that with the appropriate mitigation measures, the Glebe Option is unlikely to significantly disturb these species. Results of flora and fauna surveys for the Glebe Option showed no nationally listed species were recorded in the works area. For those with a high likelihood of occurrence, mitigated impacts are assessed as minor or negligible and several migratory bird species were assessed as being positively impacted by the provision of the expanded water body, particularly the broad shallow area near Cockatoo Creek. Nevertheless, detailed assessment of potential offsets will include assessments for suitable habitats for these threatened species and for further mitigation strategies.

Table 1: Remnant Ecosystems (REs) and the extent in the Project's areas (combined from EIS & SEIS Ecology Reports) as well as estimated potential clearing due to its activities

Component	Status	Extent of each RE type directly affected (ha)																																	Total
		11.3.1	11.3.2	11.3.3	11.3.4	11.3.6	11.3.11	11.3.19	11.3.25	11.3.27c	11.3.25d	11.5.1	11.5.1a	11.5.4	11.5.21	11.7.2	11.7.4	11.7.6	11.7.7	11.9.4	11.9.5	11.9.6	11.9.7	11.9.10	11.10.1	11.10.7	11.10.9	11.10.13	11.12.1	Other	
EPBC Status		EEC	-	-	-			-	-	-		-	-	-	-	-	-	-	-	EEC	EEC	EEC	-	-	-	-	-			-	
VMA Status		E	OC	OC	OC	NOC	E	NOC	NOC	NOC	NOC	NOC	NOC	NOC	NOC	NOC	NOC	NOC	NOC	E	E	E	OC	OC	NOC	NOC	NOC	NOC	NOC	-	
Biodiversity Status		E	OC	OC	OC			NC	OC	OC		NC	NC	NC	NC	NC	NC	NC	NC	E	E	E	OC	E	NC	NC	NC			-	
Total MLA proposed disturbance	Remnant	0	0	0	0	0	0	0	291.5	0	0	0	0	0	0	0	0	0	0	0	22.6	0	0	5	0	0	0	0	0	0	319.1
	Non-remnant	0	6	0	0	0	0	0	0.3	0	0	0	0	0	0	0	0	0	0	13.1	214.4	0	23.5	194.1	0	0	1	0	0	19.3	471.7
Southern CSM water supply pipeline	Remnant	0	4.2	0	2.8			0	1.9	0.3		19.7	4.8	4	10.2	3.5	4	21.5	6.6	0	1.6	0	0	0	1.1	6.8	0			0	93
	Non-remnant	0	7.4	0	2.3			0.8	0	0		13.4	14.6	0.5	0.6	0	5.3	0	8.9	0	3	0	5.6	1	0.6	0	0			0	64
Glebe Weir	Remnant	3.92	110.08	341.44	5.18				164.96			0	0	0	0	0	0	0	0	0	0.29	0	0	0		0.25	0			0	626.12
	Non-remnant	0	0	0	0				0			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0			55.58	55.58
Glebe Pipeline	Remnant	0.3	1.54	0.83					3			0	0	0	0	0	0	0	0	0	0.78	0	8.44	2.33		0.82	0			0	18.04
	Non-remnant	0	0	0	0				0			0	0	0	0	0	0	0	0	0	0	0	0	0		0	0			4.87	4.87

1. EPBC Status refers to whether the vegetation community is on the Threatened Communities Listings under the *Environmental Protection and Biodiversity Conservation Act*
2. VMA Status refers to the Vegetation Management Act 1999 status of the vegetation community and is based on an assessment of the pre-clearing and remnant extent of a regional ecosystem.
3. Biodiversity Status refers to how the vegetation community is defined by the Environmental Protection Agency and is based on an assessment of the condition of remnant vegetation in addition to the pre-clearing and remnant extent of a regional ecosystem.of the vegetation community.
4. EEC: Endangered Ecological Community
5. E: Endangered
6. NOC: Not of Concern
7. OC: Of Concern
8. NC: No Concern at present

3.2 Identification of Opportunities to Avoid/Minimise Potential Impacts

All government and industry policies on offsetting require that potential impacts are avoided, and then minimised, as much as possible prior to considering offsetting the impact. Evidence of this approach can be seen during the EIS and subsequent SEIS stages where changes to mine planning has seen a decrease in overall mine disturbance and potential impacts to biodiversity.

This trend in reducing potential impacts is expected to continue into the detailed mine planning process where the mine and associated infrastructure footprint will be further defined and allowance for surplus area is no longer required.

The timing of detailed mine planning is expected to occur prior to approval for mining and will be done in conjunction with scoping studies aimed at identifying offset opportunities.

3.3 Identification of Offset Areas

The third stage in the development of the Strategy will involve the identification of potentially suitable areas in the surrounding area that could be used for long term and managed conservation purposes. Part of this process involves an assessment of the likelihood of coal resources beneath or in close proximity to offset options undertaken to allow for the exclusion of potential future mining areas.

Total disturbance to REs is predicted to be between 412 and 963 ha, of which up to 41 ha are predicted to be threatened ecological communities.

Table 1 identifies the predicted disturbance of the Project and also provides an indication of the potential amount of non-remnant REs located on the MLAs which could be used to offset the Project's impacts. While some REs can be accounted for with a ratio of 3:1 in terms of the vegetation protected in offsets compared with that disturbed by the Project's mining operations, others are in deficit and sourcing offset areas away from the Project is required.

A mixture of offsets is therefore required to provide immediate protection and later to provide additional conservation during development of the mine.

Preliminary desktop and field analysis of potential offset areas has been undertaken by the WJV. Three areas near the Wandoan Coal Project have been postulated as potential offset areas:

- Areas near the Lake Murphy Conservation Park, approximately 56 km north of the MLAs
- Areas near the Mt Organ State Forest, approximately 12 km southwest of the MLAs
- Areas near the Mt Lawton State Forest, approximately 25 km southeast of the MLAs

Additionally the WJV is also in early discussions with accredited "biobank" providers as an alternative to obtaining the offset ourselves. The provider's role would be to procure the offset with the appropriate development approvals for the WJV.

The chosen option and offset area(s) will be subject to further verification and consultation with key interest groups.

3.4 Objectives and Assessment Criteria

The overriding objective of the Offset Strategy is to:

"*to preserve the long-term conservation of threatened and endangered species and communities environment affected by our operations".*

The key principles of the Wandoan Coal Project's Biodiversity Offset Strategy are:

1. The provision of "like for like", where possible, in terms of habitat protected in offsets to that to be disturbed by mining and the water supply pipeline;
2. progressive rehabilitation of vegetation and habitat in the short to medium term; and
3. a net environmental improvement in the longer term.

The chosen option and offset area(s) will be subject to further verification and consultation with key interest groups.

Nevertheless this Strategy proposes a ratio of 3:1 offsets package in terms of the vegetation protected in offsets compared with that disturbed by the Project's mining operations and is to be composed of the following:

- Offset areas are proposed to be located both within and outside the Project area, but will include a 3:1 ratio of "like for like"

- It is proposed to actively increase the habitat value of the offset areas through appropriate means which may include planting of native species.

- An estimate of the area within each proposed offset suitable for active planting will be made based primarily on topography, as this heavily influences the ability to conduct planting.

As detailed in Chapter 9 of the EIS and SEIS, it is also proposed to rehabilitate some mining areas for nature conservation which will provide further habitat, further contributing to the long term ratio of conserved vegetation to vegetation disturbed by the project.

Detailed assessments for the characteristics and quality in terms of ecological value of the offsets compared with the area proposed to be disturbed will be undertaken. Such assessments will include reviews of foraging value, availability of habitat (eg. roost trees), and physiological characteristics such as topography and soil type.

3.5 Detailed assessment

The Offsets Strategy will depend on the final raw water supply and power supply options selected by the WJV.

Once a raw water supply and a power supply option is selected, a detailed strategy incorporating offsets for vegetation impacts associated with the selected water pipeline and related infrastructure (the subject of volumes 2, and 4) will be developed in consultation with key stakeholders and regulatory authorities, including the DERM and DEWHA. A detailed assessment of each offset options to determine the biodiversity value of each area in providing effective compensatory habitat will be undertaken.

4. Commitments

This Draft Biodiversity Offsets Strategy aims to provide a net improvement in ecological value as a result of the Project, including providing protection immediately for an equal or greater area of similar habitat as that lost through the Project.

Once a raw water supply and a power supply option is selected, the Strategy will incorporate offsets for vegetation impacts associated with the selected water pipeline and mine-related infrastructure (as detailed within the EIS and SEIS).

A mixture of offsets providing immediate protection and those produced to provide additional conservation during development of the mine is proposed. Subject to further verification and consultation with key interest groups, the Strategy proposes a ratio of 3:1 in terms of the vegetation protected in offsets compared with that disturbed by the Project's mining operations. Offset areas are proposed to be located both within and outside the Project area, but will include a 3:1 ratio of "like for like".

For a 41 ha disturbance to threatened ecological communities mentioned above WJV will commit to an offset of 123 ha to meet a 3:1 ratio.

Subject to determining the preferred raw water supply option and the preferred power supply option, and further refinement of actual disturbance as calculated in the Project's detailed design, the WJV will ensure an offset to meet a 3:1 ratio for Project-related disturbance of protected vegetation, deemed by current legislation as requiring an offset on unavoidable impacts. These unavoidable impacts include:

- no more than 41 ha of protected vegetation within the MLAs and supporting infrastructure;

- no more than 58 ha of protected vegetation relating to the CSM Southern Water Supply option (if this water supply option is selected); and/or

- no more than 643 ha of remnant vegetation relating to the Glebe Water Supply option (if this water

supply option is selected).

It is proposed to actively increase the habitat value of the offset areas through appropriate means which may include planting of native species. An estimate of the area within each proposed offset suitable for active planting will be made based primarily on topography, as this heavily influences the ability to conduct planting.

A pest management plan and biodiversity & land management plan are being developed and implemented for the Project, and where appropriate will be applied to offset areas. The pest management and biodiversity & land management plans will incorporate measures relating to:

- preventing the spread of weeds
- control of feral animals
- preventing stock access

As detailed in Chapter 9 of the EIS and SEIS, it is also proposed to rehabilitate some mining areas for nature conservation which will provide further habitat, further contributing to the long term ratio of conserved vegetation to vegetation disturbed by the project.

Detailed assessments for the characteristics and quality in terms of ecological value of the offsets compared with the area proposed to be disturbed will be undertaken. Such assessments will include reviews of foraging value, availability of habitat (eg. roost trees), and physiological characteristics such as topography and soil type.

This draft Strategy is viewed as the starting point for a Green Offsets Package for the Project to be developed in consultation with DERM, DEWHA and interested community groups giving consideration to relevant State and Commonwealth policies relating to offsets.

5. References:

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