

LIDDELL COAL OPERATIONS



Proposed Modification to DA 305-11-01

PRELIMINARY DOCUMENTATION

EPBC Act Referral 2013/6908

SUPPLEMENTARY INFORMATION

October 2014

Volume **4**

LIDDELL COAL
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Proposed Modification to DA 305-11-01

PRELIMINARY DOCUMENTATION

EPBC Act Referral 2013/6908

Volume 4 - Supplementary Information submitted to the Department of the Environment to support the Preliminary Documentation:

- Letter dated 28th August 2014 - clarification of biodiversity offset matters.
- Letter dated 26th September 2014 – further addressing biodiversity offset matters.

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28 August 2014

LCO 14/072

Mr James Tregurtha
Assistant Secretary
South Eastern Environmental Assessments
Department of the Environment
GPO Box 787
CANBERRA ACT 2601

Att: Mr Carl Zimmermann

**RE: Clarification of Biodiversity Offset Matters - Liddell Open Cut Mining Operations
Project EPBC 2013/6908**

Dear Carl,

We refer to the recent correspondence dated 4th August 2014 from the Department of Environment (DoE) outlining your assessment of the proposed biodiversity offset package submitted as part of the Revised Preliminary Documentation for the Liddell Open Cut Extension Project (Project). Specifically, your letter stated that *“Based on the information provided, the offsets provided for the Spotted-tailed Quoll do not meet 100% of the requirements of the Departments Offsets Policy. Sufficient offsets to meet the requirements of the policy will need to be provided. We request that you address this during the public comment period”*. Further information was provided by yourself with regards to this assessment, including copies of worked offset calculator results performed by the Department’s assessment team.

It is our opinion that the proposed offset package for the Project exceeds the requirements of the Departments Offsets Policy. The package was developed and prepared in line with Policy requirements, with the inputs to the calculator based on extensive site-based ecological survey and Glencore’s previous experience on other projects that have gained Commonwealth acceptance and approval of the offset package. We have calculated that 284% of spotted-tailed quoll (*Dasyurus maculatus maculatus*) offset needs would be met, based on the approach that we would need to offset impacts on both woodland and grassland. This, combined with the proposed financial contribution of \$200,000 to spotted-tailed quoll research project currently agreed with the NSW Government, creates a positive conservation outcome for the local spotted-tailed quoll population.

We thank the Department for the provision of the assessment data and appreciate the transparent process. We have reviewed the information supplied and provide the following

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clarification for the Department's consideration of the proposed offset package for the Project. This information follows on from the outcomes of discussions on the subject from the meeting held between yourself and Glencore on 14 August 2014. The information comes in part from review and feedback from our expert ecological consultants from Umwelt (Australia) Pty Limited.

1 Assessment of Mountain Block and Bowmans Creek Corridor as the same Entity

The Mountain Block and Bowmans Creek Corridor proposed offset areas have been assessed separately by Umwelt in the EPBC offset calculator to account for differences in current and historical land use, vegetation community condition and habitat values in both woodland and (in particular) grassland.

Umwelt staff attended a training session for the EPBC offset calculator (provided by DoE staff) in 2013. At this training, attendees were clearly advised that offsets should be assessed on a case by case basis in the calculator, rather than grouping multiple offset sites together. This approach was recommended in order to allow the calculator to reflect the likely differences in ecological features and conditions of individual offset areas.

Assessing multiple offsets as the same entity requires the provision of an average value for the required calculator inputs. This approach does not account for the differences in quality between sites, and these can be highly variable. Additionally, grouping offset areas in the assessment does not account for the differences between the likelihood of future loss of offsets, which can be highly variable as a result of surrounding land-use practices. Typical variable factors between sites include:

- topography (such as floodplain compared to hillside);
- vegetation type, quantity and condition;
- fauna habitat values (rocky outcropping compared to creeklines); and
- habitat connectivity;
- recovery potential, recovery effort required and monitoring.

For previous DoE offset calculator assessments completed by Umwelt, offsets have always been assessed as separate entities. This approach has proven acceptable to DoE for a number of previous Glencore projects, including the recent Bulga Optimisation Project. In our view offsets could only be assessed together where all variables are uniform, which is not the case for the proposed Bowmans Creek Corridor and Mountain Block offset sites.

2 Differing Approach to Quality Weightings

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DoE and Umwelt have differed in their approaches to quality weightings within the EPBC offset calculator. The differences between the weightings used are presented in **Table 1** below.

Table 1- Difference in Approach to Quality Weightings

Quality Factor	DoE	Umwelt
Condition	0.4	0.2
Context	0.4	0.4
Stocking Rate	0.2	0.4

The recorded presence of the spotted-tailed quoll is more important than perceived habitat condition. This approach is supported by the breeding record of this species in a part of the Bowmans Creek Corridor which has poor habitat complexity and is highly degraded in relation to ecological condition. Despite the presence of areas of good quality habitat for this species across the Hunter Valley floor, records are uncommon and as a result confirmed presence should be regarded much more highly than assumed habitat value.

Given the typically low population densities of this species, it is not likely that increasing the quality of habitat in the offset areas will substantially increase the quantity (i.e. stocking rate) of spotted-tailed quolls present. Instead, increasing the quality of habitat in the offset areas is more likely to improve the long-term sustainability of the known local population. As such, Umwelt considers that the weighting of the assessment should have greater emphasis on stocking rate than condition.

3 Risk of Loss

In the assessment, DoE has allocated values of 20 per cent for Grassland and 25 per cent for Woodland to risk of loss without offsetting (grouping both offsets). This differs from the Umwelt approach of 50 per cent for Mountain Block and 60 per cent for Bowmans Creek Corridor (Umwelt's risk of loss was the same for both Grassland and Woodland).

The DoE approach to risk of loss with offsetting was 15 per cent; this differed to the Umwelt approach was 5 per cent for Mountain Block and 10 per cent for Bowmans Creek Corridor.

Umwelt considers that DoE has significantly under-estimated the risk of loss without offsetting, particularly given that Bowmans Creek Corridor is surrounded by mining operations, and over-estimated the risk-of loss with offsetting.

Umwelt undertook a similar approach for the Bulga Optimisation Project (BOP – recently approved by DoE) which was accepted. For BOP the risk of loss with offsetting varied between 1 per cent and 10 per cent with an in perpetuity protection proposed; however with the actual mechanism yet to be defined in consultation with agencies.

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3.1 Infrastructure Impacts

Glencore has defined the boundary of the Bowmans Creek Corridor following detailed consideration of potential future strategic needs in the area (such as infrastructure creek crossings, roads and pipelines).

The final void at the Liddell open cut has potential to become a strategic overburden and tailings emplacement area for future expansions of existing adjacent mines owned by Glencore such as the Glendell or the Mt Owen mine complex. In this case a haul road bridge would be required across Bowmans Creek. Haul road bridges are typically substantial structures to accommodate haul trucks with capacities of 350 tonnes and gross weights in the order of 700 tonnes, and such bridge structures are up to approximately 40 metres wide plus associated earthworks.

Furthermore, potential exists for a realignment of nearby public roads also requiring a separate bridge across Bowmans Creek. In addition to these structures, demand is likely for pipeline crossings, powerlines and other associated infrastructure to support future projects to be constructed across Bowmans Creek. These future infrastructure developments represent real risks to the loss of habitat and biodiversity values that exist currently in the proposed Bowmans Creek conservation area.

In recognising this risk, the design of the proposed Bowmans Creek offset area has been developed to achieve a balance between optimal infrastructure locations for mining purposes, and biodiversity conservation outcomes. This strategic forward planning has reduced the risk of future modification to the proposed offset area from infrastructure needs. Should the offset area not be in place, a high risk exists that substantial infrastructure developments could be located in the proposed offset area.

It should be noted however, for clarity and transparency that there are two items of existing infrastructure within the proposed Bowmans Creek Corridor. As shown in **Figure 1**, these items of existing infrastructure are an aerial 11kV power line and a 10 metre wide pipeline corridor for water transfer with neighbouring coal mining operations. These items of infrastructure form part of current approved operations, and will be required for the life mining operations at Liddell. Management and maintenance requirements for this infrastructure will be included in the detailed management plan for the Bowmans Creek Corridor, and will generally involve vegetation control and access for maintenance repairs/replacement. We do not perceive this as a risk to the viability of the proposed offset, especially since habitat connectivity will not be affected.

3.2 Mineable Resources

Available data on in-situ coal resources shows that there is approximately 27.13 Million tonnes of mineable coal underneath the proposed Bowmans Creek offset corridor area. This is calculated based on the key resource recovery constraints of minimum thickness at 0.3m, max 35% ash and 7% moisture. Target seams known to be present include the Lemington, Arties, Pikes Gully, Liddell, Barrett and Hebden seams. From a resource recovery perspective this area

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represents a viable mining target, and therefore the risk of loss of this area to mining should be considered to be high.

The proposed Mountain Block offset area contains approximately 2.2 Million tonnes of in-situ minable coal (based on regional data). Whilst mining conditions are less favourable than in the proposed Bowmans Creek offset area, the presence of the resource means that the future mining risk to this area without the offset in place cannot be discounted and should therefore be considered to be medium.

Glencore recommends that the risk of the offsets should be also considered in the context of mine closure and future land uses in a post-mining landscape. In this context if lands were returned to agriculture, there would be a higher long-term risk of clearing in the absence of offsetting protection mechanisms.

The risk of loss in the presence of the offsets and under appropriate conservation mechanisms will substantially reduce the risk of loss of both proposed offsets. In NSW, most forms of Conservation Agreement are made with the Minister (Environment) under Section 69B of the *National Parks and Wildlife Act 1974* and append to the land title; affecting all successors in title to the land. Any changes to Conservation Agreements must be agreed to by the Minister and any future mining access must be agreed by the Minister in the plan of management, which would be contrary to the intent of these offsets.

4 Confidence in Risk Scores

The DoE approach to confidence in averted loss was 40 per cent, which differed to the 80 per cent that Umwelt applied for both Mountain Block and the Bowmans Creek Corridor. There is a high degree of confidence that these areas would be subject to the averted loss proposed by Umwelt.

For BOP, confidence in averted loss was assessed at 90 per cent which was accepted by DoE.

As noted previously, Glencore has defined the Bowmans Creek Corridor boundaries away from potential future strategic mining locations (such as infrastructure creek crossings), and away from areas adjacent to unmined coal resources, enabling high confidence in the calculation of averted loss.

The Bowmans Creek Corridor was defined with consideration of avoiding areas likely to be needed for potential future projects. Securing the area as an offset site minimises the likelihood of future disturbance of this offset site for mining-related purposes. The location of the proposed Bowmans Creek Corridor has been determined to specifically address the key residual ecological impacts of the Project, in particular, residual impacts on the spotted-tailed quoll. The location of the Bowmans Creek Corridor includes areas of known habitat, such as the confirmed breeding den, and seeks to link proximate areas of known and potential habitat in the local area, including known habitat in nearby Glencore conservation areas established by Ravensworth Surface Operations and the Mount Owen Complex. One of the key objectives of

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the Bowmans Creek Corridor is to provide a linkage between areas of known, conserved habitat for the spotted-tailed quoll.

While it is noted that the Corridor does not extend south of the Entrance Pit location, the southern portion of Bowmans Creek was not considered as vital to the ongoing persistence of the spotted-tailed quoll in the local area as the disjunct habitats to the north of the Referral Area. Focussing the Corridor in the area to the north of the Referral Area was also intended to facilitate movement to more secure habitats to the north (where the spotted-tailed quoll has also been recorded in an existing Glencore offset area), as opposed to operational (and unsecured) areas to the south. While this species has clearly existed in proximity to operational mining for a number of years, it is the intent to focus rehabilitation, revegetation and habitat augmentation works in areas away from the operating mine.

5 Time until Ecological Benefit

The DoE assessed the time until ecological benefit at 60 years for areas of grassland being regenerated into woodland. The rationale for this value was that it would take 60 years for the regenerating woodland to provide suitable habitat complexity for suitable spotted-tailed quoll prey species to be present. DoE also stated that regenerated grassland would only provide foraging habitat for this species and not denning habitat. This was in contrast to the five year timeframe Umwelt indicated that it would take for both Mountain Block and Bowmans Creek Corridor until an ecological benefit would be provided. This was considered reasonable by Umwelt because, as an ecological generalist the spotted-tailed quoll has a broad prey-base, many of which are present in grassland areas (evidenced by dietary analysis from scats at Mount Owen (Peter York) and Mountain Block and Bowmans Creek Corridor (Umwelt) such as grassland lizards, insects, northern brown bandicoot, antechinus spp. and rabbits).

The number of recent records of the spotted-tailed quoll in areas of mine rehabilitation and regenerating offset areas at nearby Mount Owen Mine suggests that 60 years until ecological benefit for this species is a significant over-estimation. Rehabilitation works have been undertaken progressively at Mount Owen since 1998, with the oldest rehabilitation being approximately 15 years old and the most recently seeded areas being established in 2013. These rehabilitation areas are subject to standard management practices of feral animal and weed control, cattle exclusion and fire management on a regular basis. Details of the Mount Owen rehabilitation are provided within the report *Assessment of the Ecological Outcomes of Mine Rehabilitation, Regeneration and Revegetation at Mount Owen Mine* (Umwelt 2013), with a summary of key outcomes of this report provided below:

The spotted-tailed quoll has been recorded relatively frequently over the period 1995 to 2013 in Ravensworth State Forest, rehabilitation sites and in regeneration sites and surrounds through hair tube sampling, predator scat searches, cage trapping, remote camera survey and radio-tracking. The results of the monitoring surveys indicate that the Mount Owen Complex and surrounding habitat areas, including Bowmans Creek to the west and Main Creek to the east, contain at least one female, two joeys and two

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males that form part of a breeding population that has persisted in the Mount Owen Complex since at least 1994 when the species was first identified on site.

Spotted-tailed quoll den sites in the northern portion of the Mount Owen Complex have been identified through the analysis of radio tracking data that shows two den sites located in mine rehabilitation areas. Stockpiled vegetation cleared as part of approved mining operations has been shown to provide den sites for at least two males that have been radio-collared and tracked between October 2012 and April 2013. The tracked spotted-tailed quolls have been shown to occupy large home ranges that include areas of rehabilitation and regeneration within Mount Owen Complex.

Six spotted-tailed quoll records have been obtained from the rehabilitation on Mt Owen between 2011 and 2013. In addition to this, a denning site has been recorded in a large constructed wood stockpile (not in a natural hollow) near an area of overburden. The spotted-tailed quoll has also been tracked to a den site that consisted of large overburden boulders at the side of an inactive haul road. The vegetation of the most mature areas of rehabilitation at Mount Owen (15 years old) varies between a sparse to mid-dense canopy dominated by spotted gum (*Corymbia maculata*) between 5 and 12 metres in height, interspersed with a tall acacia layer dominated by green wattle (*Acacia decurrens*) and cooba (*Acacia saligna*). The shrub and groundcover layers in this rehabilitation are both dominated by native species; however vary between being sparse to mid-dense with a relatively high abundance of introduced species.

An additional six spotted-tailed quoll records have been made in the Mt Owen regenerating woodland areas of the New Forest Area, which was generally devoid of native woodland and forest vegetation in 1994. This consisted of a combination of active management of grasslands through plantings and passive regeneration of grasslands. Active plantings as well as regeneration works commenced between 1996 and 1998. The revegetated and regenerated vegetation of the new Forest is thus in the order of 16-18 years of age and provides good condition habitat that the spotted-tailed quoll is using.

In addition to these, the spotted-tailed quoll has been recorded (via radio-tracking data) moving between the Forest East, Southeast and Southeast Corridor Offsets, all of which have been subject to a mix of active revegetation and passive regeneration which commenced in 2004.

The revegetation areas are typically of good condition and consistent with *Central Hunter Ironbark – Spotted Gum – Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions* Endangered Ecological Community. The canopy is typically sparse to mid-dense and is dominated by spotted gum (*Corymbia maculata*), grey gum (*Eucalyptus punctata*) and narrow-leaved ironbark (*Eucalyptus crebra*). The canopy ranges from 9 to 14 metres in height, with emergent mature eucalypts. A mid-storey comprising bullock (*Allocasuarina luehmannii*) and prickly-leaved tea tree (*Melaleuca styphelioides*) is often present. Common shrubs include silver-stemmed wattle (*Acacia parvipinnula*), gorse bitter pea (*Daviesia ulicifolia*) and bead bush (*Spartothamnella juncea*), which are typically sparse. The ground layer is typically mid-dense and is dominated by a variety

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of native herbs and grasses. Common native species include blue trumpet (*Brunoniella australis*), kidney weed (*Dichondra repens*), corrugated sida (*Sida corrugata*), poison rock fern (*Cheilanthes sieberi* subsp. *sieberi*), purple wiregrass (*Aristida ramosa*), tall chloris (*Chloris ventricosa*) and barbed wire grass (*Cymbopogon refractus*). Weed species are generally low across the revegetation areas in the New Forest Area, however the weed species paspalum (*Paspalum dilatatum*) was abundant in the revegetation in the Forest East Offset. The revegetation areas provide habitat for a variety of fauna species with the presence of mature eucalypts and dead stags with hollows. Nest boxes have been installed providing artificial habitat for hollow-dependent fauna. There is a moderate cover of fallen timber and a diverse and structurally mature understorey, providing habitat for a wide range of fauna species.

The regeneration areas contain a low (1 to 6 metres high), sparse to mid-dense canopy dominated by spotted gum (*Corymbia maculata*) and narrow-leaved ironbark (*Eucalyptus crebra*) and consistent with *Central Hunter Ironbark – Spotted Gum – Grey Box Forest in the NSW North Coast and Sydney Basin Bioregions* Endangered Ecological Community. Shrubs are typically very sparse, with frequent occurrences of gorse bitter pea (*Daviesia ulicifolia*) and blackthorn (*Bursaria spinosa*). The ground layer is typically mid-dense and is dominated by a variety of native herbs and grasses. Common native species include blue flax-lily (*Dianella revoluta* var. *revoluta*), yellow burr-daisy (*Calotis lappulacea*), poison rock fern (*Cheilanthes sieberi* subsp. *sieberi*), purple wiregrass (*Aristida ramosa*), tall chloris (*Chloris ventricosa*) and barbed wire grass (*Cymbopogon refractus*). Weed species are generally low in abundance, however at one site red Natal grass (*Melinis repens*) was abundant. The regeneration areas provide some fauna habitat, however this is limited by the young age of the canopy, absence of hollows, limited fallen timber on the ground and the lack of vegetation structural complexity.

A total of 29 threatened fauna species have been recorded across the Mount Owen Complex across many years of monitoring. Of these, 13 were recorded in the regeneration monitoring sites and 11 in rehabilitation sites. Further to this, spotted-tailed quoll captures/observations per annum in both rehabilitation and regeneration areas were at parity with benchmark targets. Outcomes of habitat monitoring undertaken (as reported on in Umwelt 2013) from 1996 to the present additionally clearly demonstrate that actively managed rehabilitation and regeneration can provide a provide a moderate to high quality habitat for native fauna species from each of the main vertebrate fauna groups, including threatened species, in a relatively short timeframe.

The woodland present in the Referral Area was virtually absent 45 years ago, with most of the regeneration occurring since 1983 (i.e. making the majority of the Referral Area vegetation approximately 30 years old). The progress of regenerating vegetation in the Referral Area is presented in **Plate 1 to Plate 6** below.

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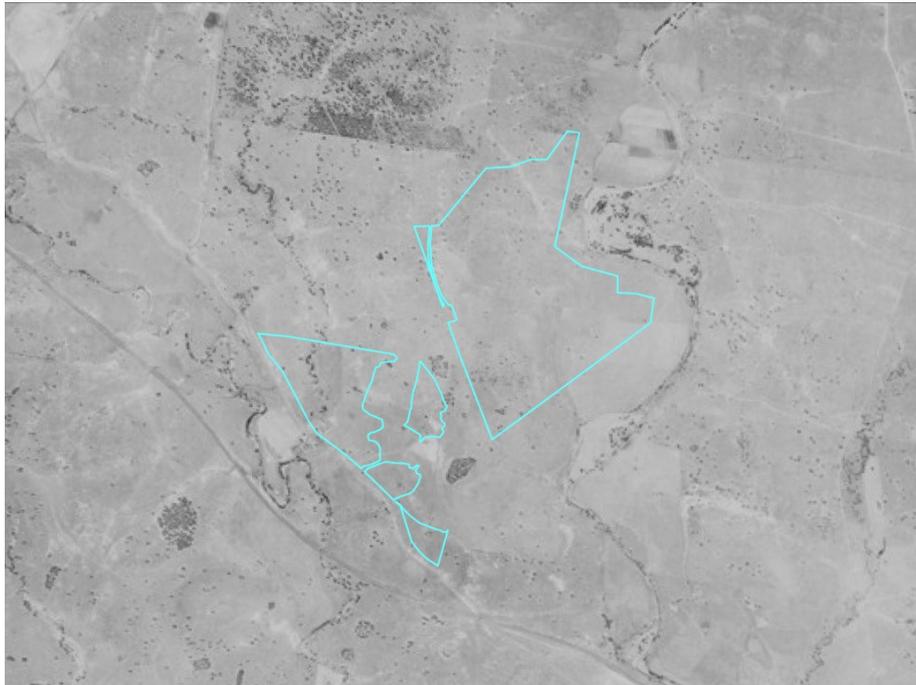


Plate 1 – Aerial Photograph of Vegetation of the Referral Area in 1958

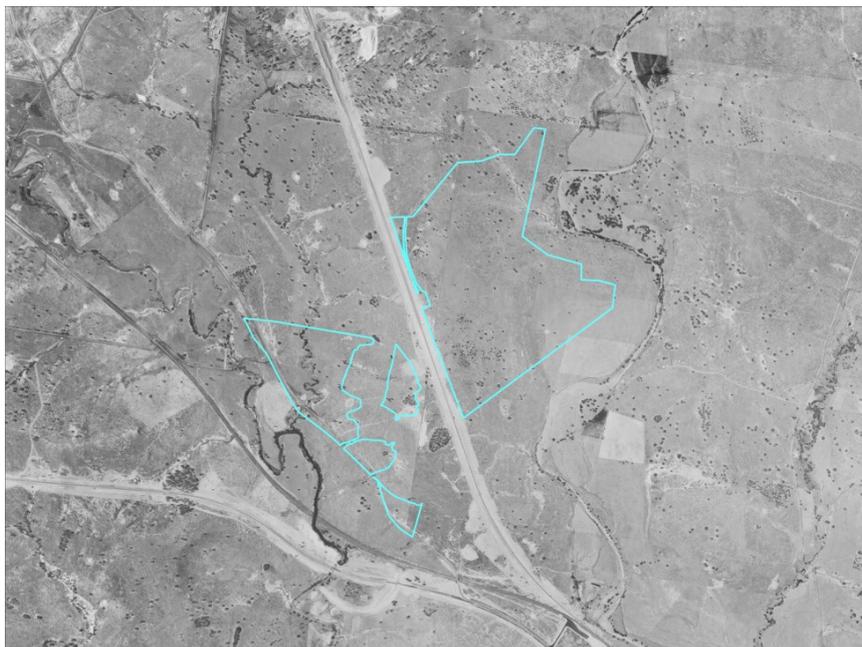


Plate 2 – Aerial Photograph of Vegetation of the Referral Area in 1967

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Plate 3 – Aerial Photograph of Vegetation of the Referral Area in 1974



Plate 4 – Aerial Photograph of Vegetation of the Referral Area in 1983

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Plate 5 – Aerial Photograph of Vegetation of the Referral Area in 2002



Plate 6 – Aerial Photograph of Vegetation of the Referral Area in 2013

This vegetation has regenerated from grassland, and with virtually no intervention or management action scored a 5/10 for spotted-tailed quoll quality from DoE, in contrast to Umwelt scoring it a 4/10. Umwelt considers that as the proposed offsets will be returning existing derived grasslands to woodlands through active management, that the regenerating

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vegetation of the offset areas will provide habitat for the spotted-tailed quoll more readily than if it were permitted to naturally regenerate, particularly given that offsets will be subject to habitat augmentation works specifically targeting the spotted-tailed quoll. This is evidenced in revegetation and regeneration works undertaken at Mt Owen over the past 16 years which now support known habitat for the spotted-tailed quoll and a range of other threatened terrestrial mammals, birds and micro-bats. Mt Owen regeneration communities provide appropriate levels of species diversity for the age of vegetation and the majority of target species and groups of fauna species are repeatedly achieving benchmark species diversity values. Of particular note are areas of derived native grassland at Mount Owen that have been revegetated with canopy species, which now provide high quality fauna habitat. These results are consistent across areas of Mount Owen regeneration and revegetation and it is subsequently considered that the likelihood of achieving similar quality outcomes at Liddell is high.

The approach undertaken for BOP for regenerating grassland was 20 years; however this approach was for species with specific habitat needs (such as the regent honeyeater (*Anthochaera phrygia*)) that are different to the spotted-tailed quoll. The spotted-tailed quoll is largely a generalist species that could extensively use regenerating vegetation.

As a consequence of the above evidence, 60 years is deemed to be unreasonable, and should be reduced to 20 years to reflect the current habitat areas being impacted and with the knowledge that mine rehabilitation, regeneration and revegetation in existing offset areas less than 20 years of age is already providing habitat for the spotted-tailed quoll at the neighbouring Mt Owen Mine. Regeneration and revegetation areas will be actively monitored.

6 Reference to Old Growth Vegetation

DoE have indicated that Umwelt referred to vegetation present in the Referral Area as *old growth*. *Old growth* vegetation refers to any vegetation that was present at the time of the European arrival in Australia that still remains in essentially similar condition. By contrast, the remaining extant woodland in the Referral Area is entirely regrowth vegetation. Regrowth is, ecologically, any native vegetation that has been cleared and has regrown since the time of clearing.

In **Section 5.4.1.3** of the Revised Preliminary Documentation, the description of Grassland Habitat contains a single reference to *old growth*, being:

A total of 59 hectares of grassland habitat was identified in the Referral Area. Canopy and shrub layers were generally absent from this community, although isolated paddock trees and areas of regenerating eucalypts and shrubs occasionally occurred. Most woody vegetation had been previously cleared for agricultural purposes. The large areas of open grassland provide a foraging resource for macropods and a hunting resource for owls and micro-bats. Small mammals such as antechinus (*Antechinus* spp.) are provided foraging habitat as well as refuge habitat within the dense grass layers. This habitat type also provides foraging and refuge habitat for a number of reptile

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species and amphibians. Few logs were present though hollows were usually present in the sparse large stags and remnant old growth trees. (Underlining added for emphasis).

The reference to *old growth* in the Revised Preliminary Documentation was intended to refer to paddock trees located in grasslands which were older than those within any of the Project Area Woodlands (i.e. isolated older trees were present, however these were infrequent and most of the vegetation present was much younger).

None of the woodland in the Referral Area is considered to be *old growth*, with woodland habitat referred to as:

Woodland vegetation typically consisted of middle-aged and regrowth trees that were generally too young to have developed hollows. Mature trees were generally scarce, however when present typically provided numerous hollow resources.

7 Confidence in Quality Gain

The DoE approach to confidence in quality gain was 40 per cent (a moderate degree of confidence in the improvement of quality with the proposed management actions). This was in contrast to the Umwelt approach of 80 per cent for both offsets at Liddell as well as the Umwelt approach of 90 per cent for BOP, which again was accepted by the Department.

Glencore considers that DoE have significantly under-estimated the confidence of the results, particularly given the success of rehabilitation at Mount Owen in providing habitat for the spotted-tailed quoll (as outlined in Section 5 above); and given that the Liddell Referral Area has regenerated to a quality of 5/10 for the spotted-tailed quoll in the absence of any specific management regimes within the last 30 years.

Evidence of confidence in quality gain is provided by the areas of Mount Owen revegetation and regeneration which were no older than 18 years in age and show evidence of natural recruitment, similar flora composition to reference sites, good abundance and diversity of native herbs and sub-shrubs, moderate mid-storeys, canopy species height variability between 1 metre to 6 metres in regeneration areas and 9 to 14 metres in revegetation areas (depending on age of works), generally low weed levels. These areas provide known habitat for a range of threatened fauna species including the spotted-tailed quoll, small terrestrial mammals, birds and micro-bats, which are appropriate for the age of vegetation and the majority of target species and groups of fauna species are repeatedly achieving benchmark species diversity values. Areas of derived native grassland in biodiversity offset areas that have been revegetated with canopy species provide high quality fauna habitat including several threatened fauna species.

Native plant species richness of revegetation areas varied between 16 to 29 species, and 13 to 26 species for regeneration areas compared to 41 to 43 for Reference Sites. Data collected on over-storey cover, mid storey cover native ground covers additionally indicated that revegetation and regeneration values were trending towards those of reference sites.

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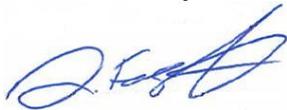
8 Other Compensatory Measures

DoE has requested clarification on the total cost of the offsets. The likely cost of implementing the management actions as part of the offset strategy has been estimated at \$2,150,084.30 (across both offset areas and including 30% contingency). The cost of the purchase of Mountain Block is estimated at \$498,000.00, and the estimated market value of the Bowmans Creek Corridor is \$910,000.00, based on local market evidence.

In addition to the above, Glencore has committed to contributing \$200,000 for recovery actions for the spotted-tailed quoll, as identified in the National Recovery Plan and OEH Saving Our Species Project Species Action Statement (required under NSW draft approval conditions). When considering the percentage contribution of the financial contribution to the overall value of the offset package (land value plus ongoing management costs), 5.6% is well below the 10% maximum contribution of the EPBC Environmental Offsets Policy.

We look forward to your reply and should you require any further information, please contact Ben de Somer (LCO Environment and Community Superintendent) on (02) 6570 9947.

Yours sincerely,



David Foster
Operations Manager
Liddell Coal Operations Pty Ltd

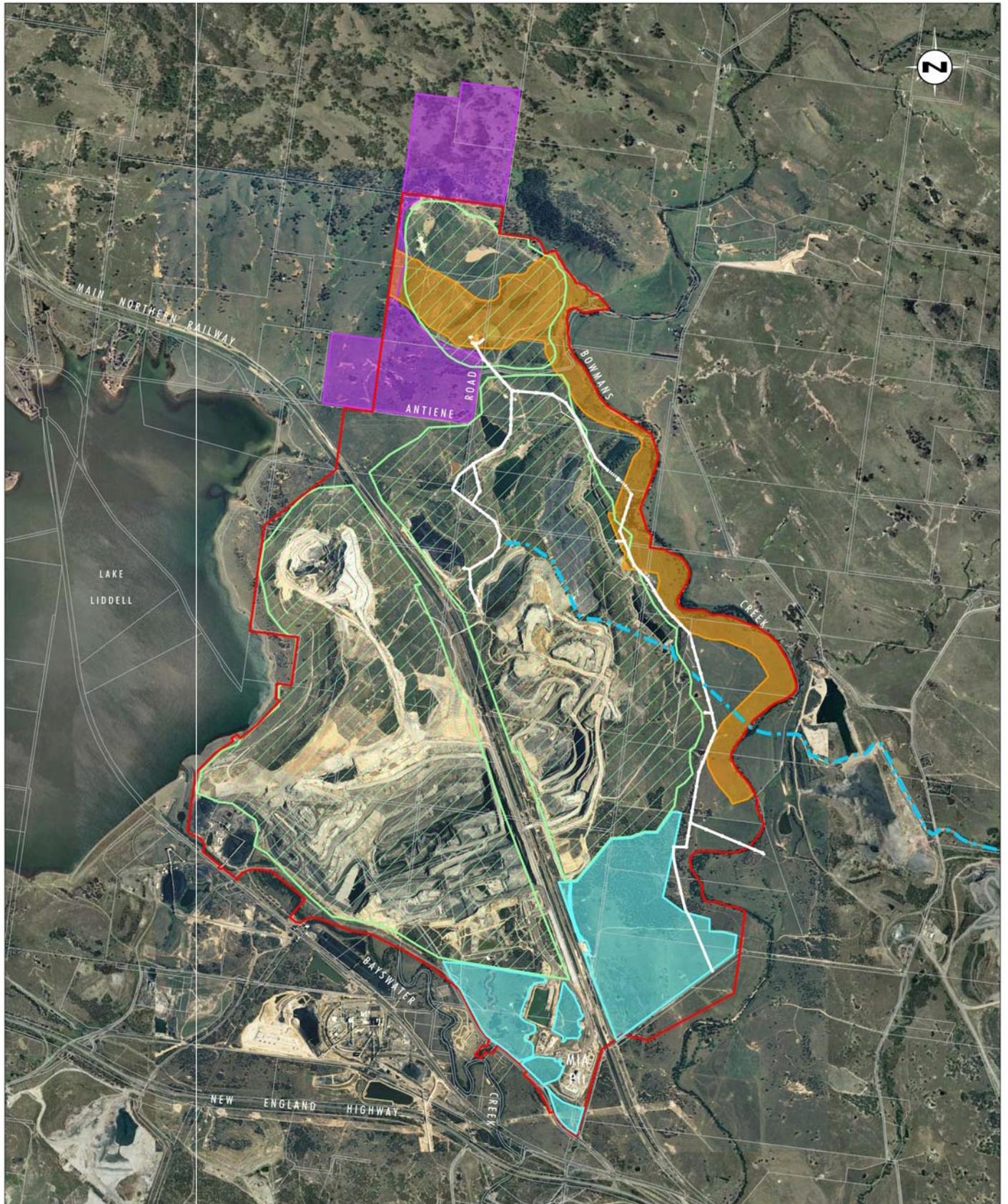


Image Source: Xstrotto (2013), Google Earth (2008)
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Legend

- Liddell Cool Operations Approved OA Boundary
- Approved Mining Footprint Relocation Area
- Mounloin Block Offset Site
- Bowmans Creek Riparian Corridor
- Electrical Service
- M1 Owen Supply - Stage 3 Relocation

FIGURE 1

**Infrastructure within
 Bowmans Creek Corridor**

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26 September 2014

LCO 14/090

Mr James Tregurtha
Assistant Secretary
South Eastern Environmental Assessments
Department of the Environment
GPO Box 787
CANBERRA ACT 2601

Att: Ms Caitlin Ellis

**RE: Biodiversity Offset Matters - Liddell Open Cut Mining Operations
Project EPBC 2013/6908**

Dear Caitlin,

We refer to the recent correspondence dated 23rd September 2014 from the Department of Environment (DoE) outlining your reassessment of the proposed biodiversity offset package submitted as part of the Revised Preliminary Documentation for the Liddell Open Cut Extension Project (Project). This reassessment was based on our clarification of a number of offsetting issues (dated 28 August 2014) in response to the initial adequacy assessment of the proposed biodiversity offset package for the Project.

We are pleased to receive notice that the Department has now revised its assessment (based on our further clarification) and that the Project now achieves 89.4% of the offsetting requirements for the spotted-tailed quoll.

We have addressed the remaining issues from your correspondence below.

Potential Additionality Issues within Bowmans Creek Corridor

We note your comment relating to potential 'additionality' issues within the Bowmans Creek Corridor. It is acknowledged that there are existing commitments to rehabilitation of parts of this corridor under the current NSW approval (and detailed within the current Landscape Management Plan, 2013 (LMP) which was provided to DoE as Appendix H of the Preliminary Documentation dated June 2014). We believe that the only area of additionality in relation to the current NSW approval is limited to a small area of previous habitat corridor commitment which intersects the proposed Bowmans Creek Corridor. This was overlooked in our calculations as we had based our analysis on existing vegetation types.

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Manager and Agent of the Liddell & Foybrook Joint Ventures

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Background

The Agency and community consultation completed as part of the 2002 NSW consent deemed the rehabilitation objectives for post-mining rehabilitation at the Liddell Colliery would be to return it to grazing purposes in order to reflect surrounding land use. Much of this rehabilitation of older parts of the mine to grasslands suitable for grazing has been completed. This was later modified to include areas of habitat connectivity/corridors in order to facilitate wildlife movement throughout the site. From the LMP, it is noted that:

The nominated end land use for Liddell Colliery is primarily grazing. However, because of the long history of clearing and the degradation of floristic diversity and fauna habitat in the central Hunter Valley, there is a strong commitment to rehabilitating the land with viable woodland as well as pasture land suitable for grazing.

Existing Commitments

The approved final landform designed to achieve these objectives consistent with the LMP is shown in **Figure 1**.

The LMP identifies the species proposed to be included in seed or planting mixes for the two post mining land uses being:

- Rehabilitation – Pasture and
- Rehabilitation – Habitat Corridor.

For the Rehabilitation – Pasture, the mix contains pasture grasses only, with no native forbs, herbs or shrubs included. Use of this (or a similar) mix has resulted in a rehabilitated grassland community comprised of traditional fodder species only, with little habitat complexity or species diversity.

Note: The Habitat Corridor referred to in the LMP, and shown on **Figure 1**, is not the proposed Bowmans Creek Corridor.

Since that time, the identification of the importance of Bowmans Creek to the spotted-tailed quoll has resulted in the current proposal to:

- revegetate the entire corridor with appropriate native tree, shrub and groundcover species to maximise the opportunity for this federally listed endangered species to continue to utilise the riparian habitat by increasing the amount and complexity of the vegetation within the corridor;
- augment this habitat with log and boulder piles to increase denning opportunities in this area of high usage; and

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- provide secure vegetated habitat linkage from the mining area north into the confirmed habitats of Mountain Block.

In addition, the dedication of the corridor as a formal biodiversity offset area (with an appropriate security mechanism) provides greater security and confidence in conservation outcomes to be achieved in this area. This status was not required as part of the 2002 NSW approval.

In your recent response, you state:

In accordance with the Department's Offsets Policy, offsets must be additional to what is already required under existing law or planning regulations. This includes the requirements of previous state approvals. Existing requirements for rehabilitation, regeneration or protection of any areas cannot be considered as part of an offset for this project.

The *Environment Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* (Commonwealth of Australia 2012) (the Offsets Policy) requires that suitable offsets must (as per Principle 6):

...be additional to what is already required, determined by law or planning regulations or agreed to under other schemes or programs (this does not preclude the recognition of state or territory offsets that may be suitable as offsets under the EPBC Act for the same action).

It goes on to state:

Offsets must deliver a conservation gain for the impacted protected matter, and that conservation gain must be new, or additional to what is already required...

and:

...if the proposed offset is for further activities that achieve additional conservation gain on the same piece of land, then those additional activities may be eligible for use as offsets.

In following the approach adopted by the Department in their offset calculator assessment, the existing Rehabilitation – Pasture required as part of the NSW approval will provide no value to the spotted-tailed quoll in terms of habitat except for its dispersal or movement. The current proposal for the Bowmans Creek Corridor is to return its currently degraded or disturbed areas to their benchmark vegetation communities, these being:

- Central Hunter Box – Ironbark Woodland;
- Narrow-leaved Ironbark Spotted Gum Woodland; and
- Hunter Valley River Oak Forest.

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In the post-revegetation landscape, these areas within the proposed Bowmans Creek Corridor will provide structural, habitat and species diversity comparable to their benchmark communities. As such, it is reasonable to assume that the proposed revegetation of Bowmans Creek Corridor to provide a more diverse habitat will provide conservation gain for the spotted-tailed quoll that is additional to that provided by those areas that have been returned to the Rehabilitation – Pasture. Thus, these areas and their associated conservation gains should be included in the consideration of offsetting outcomes for this Project.

In relation to the Rehabilitation – Habitat Corridor, the LMP requires that this area contain a variety of native tree and shrub species, with a selection of native grass and groundcover species also. A recommended list of species is provided in the LMP. It is accepted that (in terms of the definitions above) that the works proposed as part of the current Project (Bowmans Creek Corridor) would not provide additional conservation gain to the spotted-tailed quoll when comparing them to previous commitments, except for the formal recognition of the corridor as a secured offset. The area where the two corridors overlap is shown in **Figure 2**, and equates to an area of 9.6ha.

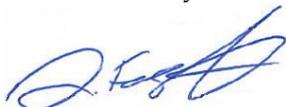
Summary

LCO advises that the proposed Bowmans Creek Corridor offset area should be modified to remove the 9.6 hectares of previous Rehabilitation – Habitat Corridor. The proposed Bowmans Creek Corridor area is now 172.4 hectares. We apologise for this oversight, and request that you revise the offset calculation to determine offset adequacy. We recognise that additional offsetting will be required to address this shortfall. We therefore commit to the provision of the outstanding offsets to achieve 100% offsetting (either additional direct or indirect) based on your revised assessment, prior to commencement of the action should it be approved.

Based on this commitment, we also request that the assessment clock for approval determination is commenced to allow a timely approval determination for the operation.

We look forward to your reply and should you require any further information, please contact Ben de Somer (LCO Environment and Community Superintendent) on (02) 6570 9947.

Yours sincerely,



David Foster
Operations Manager
Liddell Coal Operations Pty Ltd

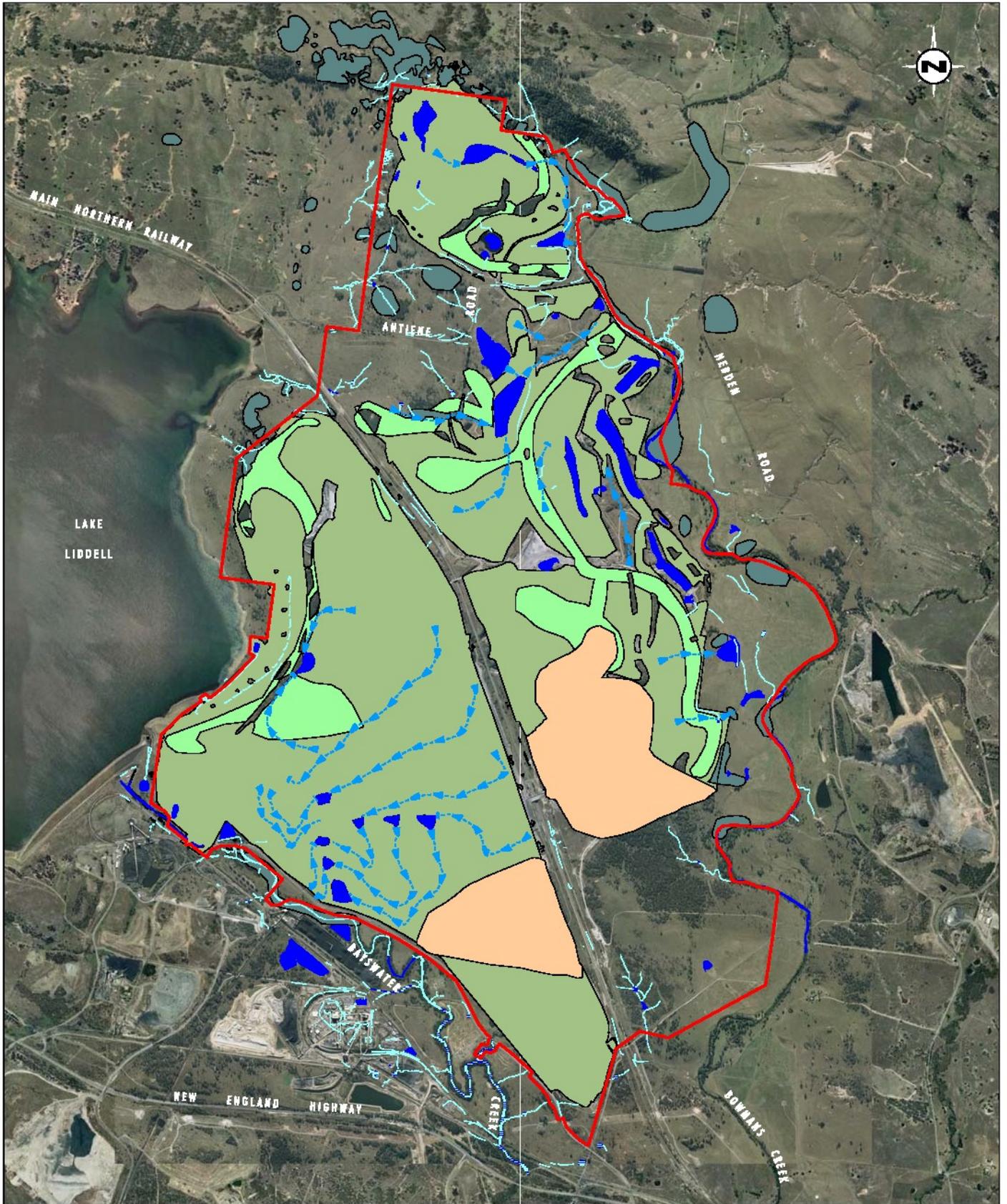


Image Source: Xstrata (2012)

0 0.5 1.0 2km
1:40 000

Legend

- DA Boundary
- Remnant Vegetation
- ▬ Rehabilitation Habitat Corridor
- ▬ Rehabilitation Pasture
- ▬ Final Void
- Clean Water Dam
- ▬ Stabilised Drainage Lin

FIGURE I

Existing NSW Approval
Rehabilitation Commitments

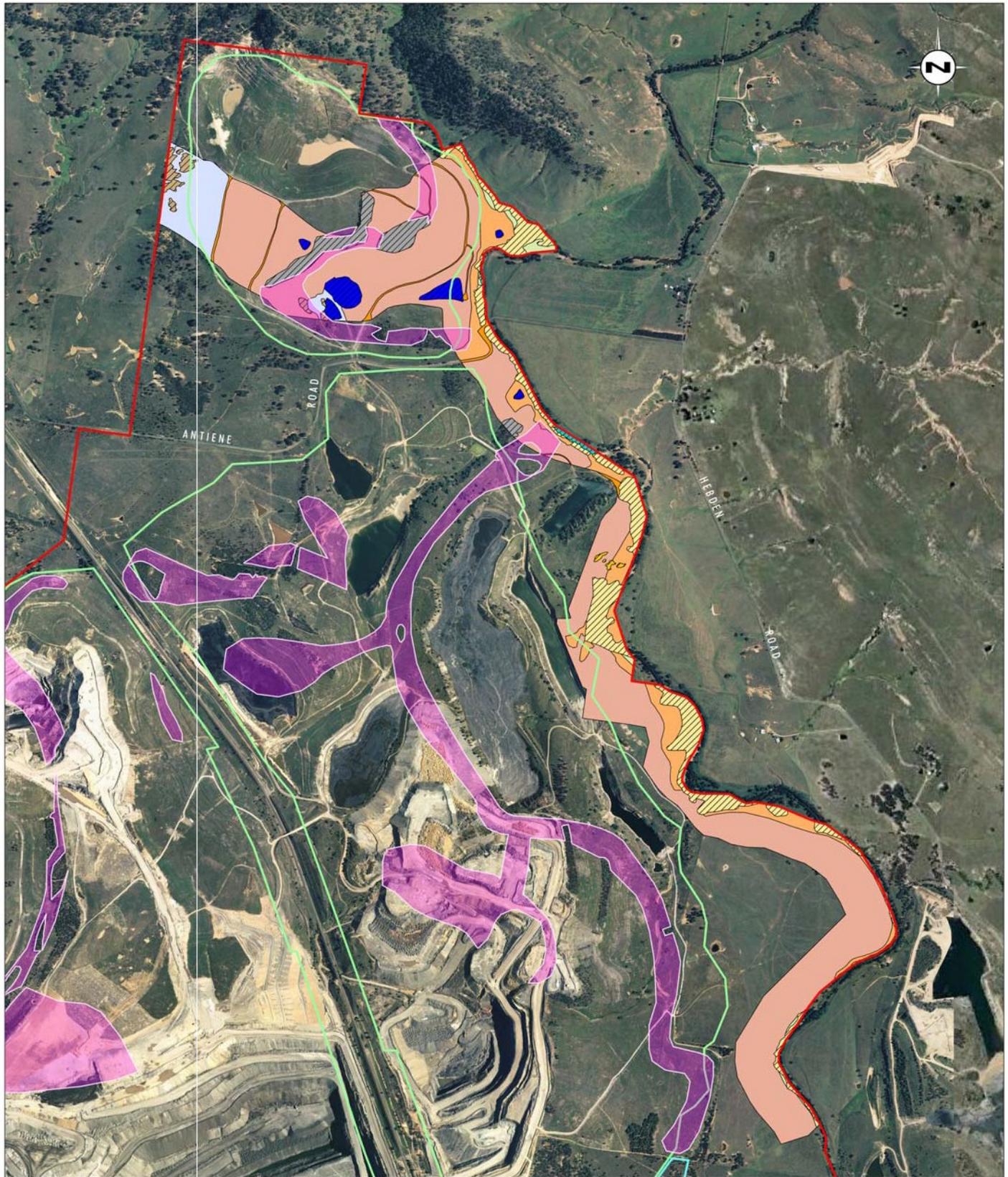


Image Source: Xstrata (2013), Google Earth (2008)
 Data Source: Xstrata (2012)

Legend

- Liddell Coal Operations Approved DA Boundary
- Approved Mining Footprint
- Refill Area
- Centrol Huntel Box - Ironbark - Angophora Dominated - Rehabilitation
- Centrol Huntel Box - Ironbark - Ironbark Dominated - Rehabilitation
- Centrol Huntel Box - Ironbark Woodland - Dam
- Disturbed Land
- Huntel Valley Rive Oak forest

- Huntel Valley Rive Oak forest - Revegetation
- Nallow-leaved Ironbark - Spotted Gum Woodland
- Nallow-leaved Ironbark - Spotted Gum Woodland - Rehabilitation
- Rehabilitation
- Wetland Body
- Unchanged Vegetation
- Rehabilitation Habitat Collidols

FIGURE 2

Bowmans Creek Corridor and NSW Approval Rehabilitation Habitat Corridor