Modification Application

Request to Modify Project Approval (#10_0094).

Removal of Condition C9 – Squirrel Glider Crossing Zone

Upper Hunter Valley Alliance – Nundah Bank Third Track Project

Details of revisions:

Rev	Date	Description	Approved
Rev A	15.02.2013	1st Revision	Stuart Pigott
Rev B	06.03.2013	Update to Figure 1.2	Stuart Pigott

Document Change Control

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1 Introduction

The Hunter Valley Rail Network is a collection of rail lines which service the rail transport needs of the Hunter Valley region in NSW. The Australian Rail and Track Corporation (ARTC) leases and operates the network and has created the Upper Hunter Valley Alliance (UHVA) to undertake a program of works to upgrade the network.

The Nundah Bank Third Track Project (the Project) forms one part of the UHVA program of works and involves the construction of an approximately 4 kilometre section of new third track and ancillary infrastructure adjacent to the existing Main North Line between the towns of Singleton and Camberwell in the NSW Hunter Valley.

The Project was approved as a Part 3A Project under Section 75B(1)(a) of the *Environmental Planning and Assessment Act 1979* (EP&A Act) by the NSW Minister of Planning and Infrastructure on 23 September 2011.

The Project approval includes a condition to install a Squirrel Glider Crossing Zone (condition C9) to mitigate potential impacts to fauna movement due to the Project. A review of the Squirrel Glider Crossing Zone set out by C9 has shown that installation will not provide an effective fauna crossing zone and an alternative model can be delivered to maintain fauna connectivity.

This document is an assessment of the ecological impacts of not installing the Squirrel Glider Crossing Zone as set out by approval condition C9 and it forms the basis of the Project Modification Application to remove condition C9 via approval by the Director General (as permitted by C9).

The cornerstone for this proposal is the action taken on site during the construction phase of the Project to retain a corridor of native vegetation in the area of identified habitat to maintain the arboreal connectivity across the site and in addition, the development of a Biodiversity Offset Strategy and Package to maintain and improve suitable Squirrel Glider habitat elsewhere in the nearby bioregion.

1.1 Overview of Approved Project

The proposal is located in a rural area north of Singleton n the NSW Hunter Valley. The site location is shown in **Figure 1.1 and 1.2.**

Figure 1.3 shows the property boundary and approved extent of clearing in the specific area on site that was identified as Squirrel Glider habitat.

The regional context of land use generally agricultural, however the local area adjacent to the Project also includes significant heavy industry comprising of the Rix's Creek Coal Mine (open cut) to the west and associated infrastructure, and the Integra Coal Mine (open cut) to the east and its associated infrastructure. The significant majority of the Project site is comprised of the industrial land use of the ARTC rail corridor (the Main North Line).

The land to which this proposal applies is wholly owned by the ARTC and this proposal does not require any alteration to the approved premises, or require additional offsite vegetation clearing.

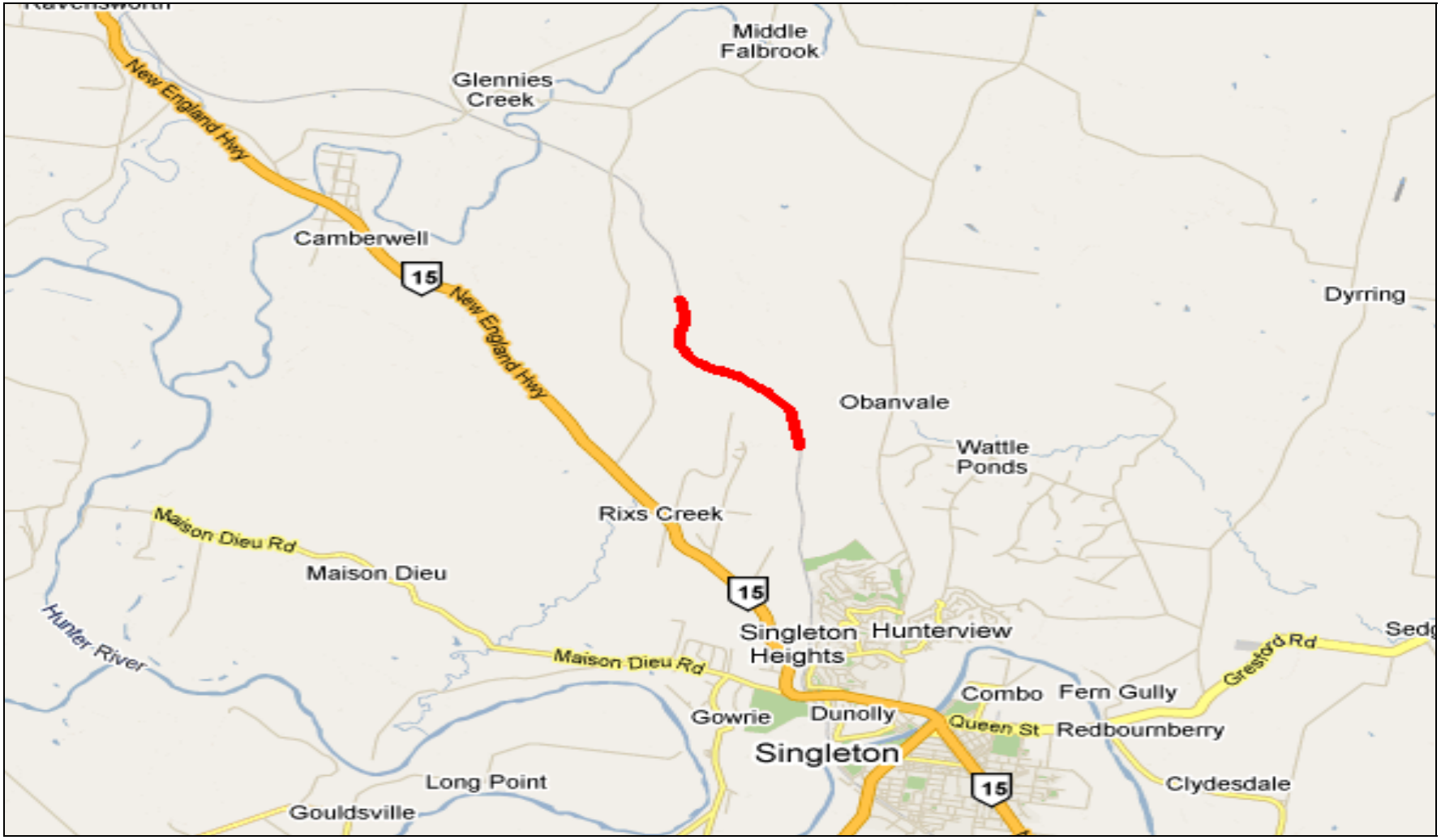


Figure 1.1: Nundah Bank - Local Area

Figure 1.2 Recent Aerial Photo of Site and Adjoining Land Use.

Note the rail line is the black line. The Squirrel Glider crossing zone is circled in red.

Note: the second option determined not to be feasible is circled in green. The amount of vegetation clearing required results in this location being unusable for the fauna crossing.

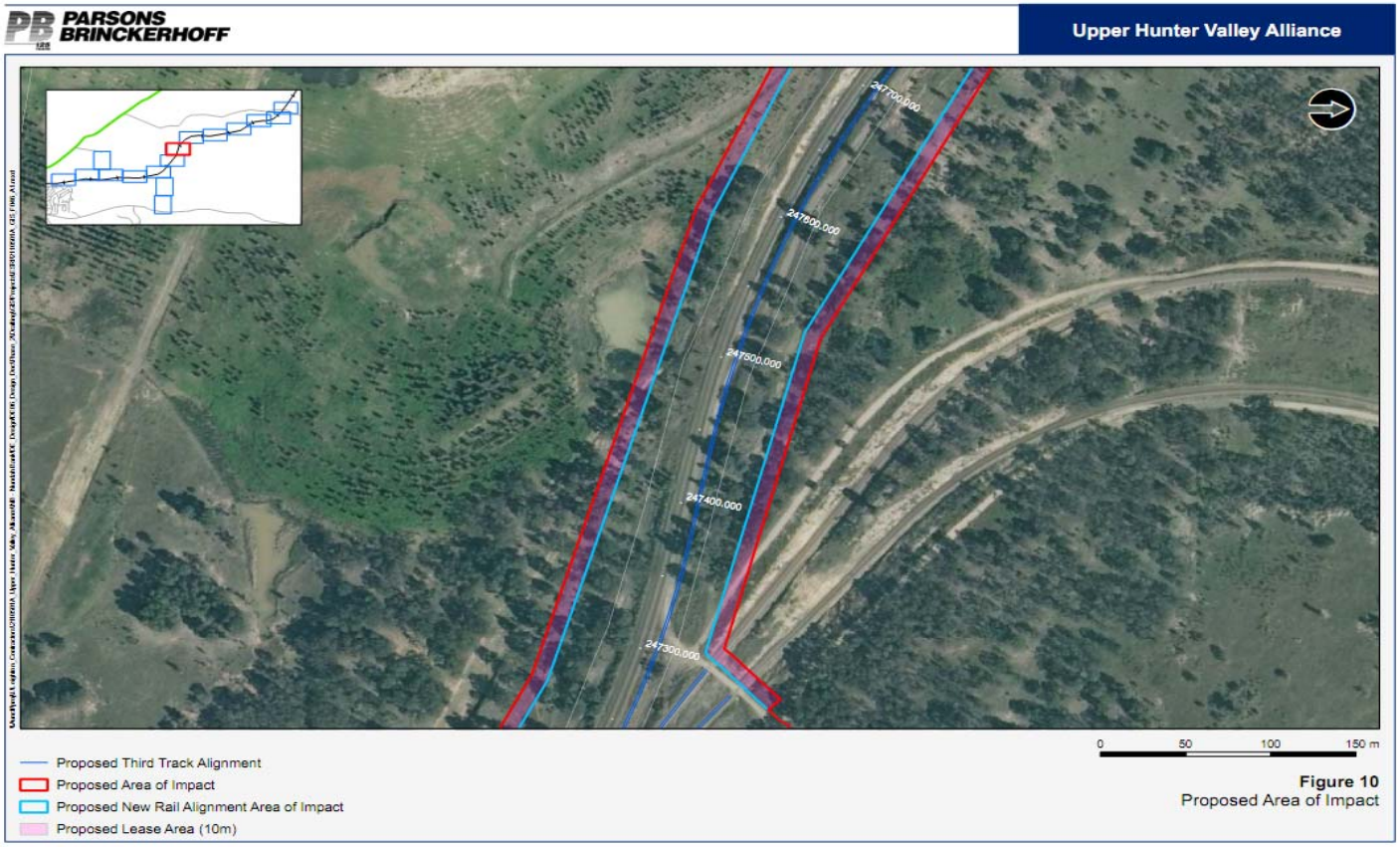


Figure 1.3. Area of Squirrel Glider Habitat.

Key points to note are the adjacent “Integra Coal loop” to the right of the main north line, the existing rail corridor outlined by blue lines and the approved Project boundary outlined by the red lines. This figure demonstrates the lineal nature of the Project and the total width of approved clearing which is the zone between the blue and red lines on both sides of the track.

2 Description of Proposal to Modify the Project Approval

The proposed change seeks the removal of the Ministers Condition of Approval C9.

Condition C9 is shown below.

C9 – "The squirrel Glider Crossing Zone in the vicinity of the Integra Coal loop shall be established prior to works which effect the identified Squirrel Glider habitat, unless otherwise agreed by the Director General. The crossing zone shall consist of untreated hardwood power poles 30cm in diameter and stand 12 m above the ground (henceforth "glider poles"). The spacing and location of the glider poles and the provision of artificial refuges and at least one horizontal cross bar for use as a launching site on each glider pole shall follow the methodology of Ball and Goldingay (2008). Any variation to this requirement shall be undertaken in consultation with OEH and approved by the Director General"

The outcome of the removal of Condition C9 will be that the Project will not install the *"Glider Pole".*

3 Options Assessment for fauna crossing

3.1 Retention of suitable existing vegetation

Upper canopy vegetation suitable for an arboreal fauna crossing exists on corresponding sides of the track in one patch in middle of the Project area (approximately chainage 247000) and is shown in photos 3.7 and Figure 1.2. This area has two discrete locations where existing vegetation extends to a point where the distance across the pre-works rail corridor could provide a viable fauna crossing zone.

The first of the possible crossing points was required to be cleared on one side of the corridor to facilitate the filling of an area to provide the final vehicle access road. The vegetation clearing results in this location being unusable for fauna crossing.

The second possible crossing point is located within the area containing the best quality vegetation on the site and adjoining properties (*in the vicinity of the Integra Coal loop).* The retention of vegetation in this area will provide access and connectivity to suitable habitat on either side of the rail corridor and provide a gliding distance that is less that the maximum (refer to Appendix A) and has compatible canopy elevations.

Due to the suitable location, vegetation type, and elevations, the retention of existing vegetation is considered to be the most suitable option for a fauna crossing.

3.2 Surface level culverts

Ground surface drainage culverts exist on the pre-works site to convey surface water from one side of the rail formation to the other.

The general design of the Project involves the addition of third track immediately adjacent to onto the existing twin track and underlying earthen formation. Due to this design, the existing culverts are simply being extended (to replicate the size, construction, material). The original culverts are not adequately sized or located to facilitate the installation of fauna furniture to enable fauna passage through them.

Due to the character of the existing culverts, they are not suitable for arboreal fauna crossings.

3.3 Fauna crossing zone(s) in other locations

Native vegetation in the site and surrounding area is fragmented and has been cleared for previous rail transport, agricultural and open cut mining land uses. The removal of native vegetation limits the locations where suitable fauna crossing zones can be located See photo 3.12 – 3.14

The topography of the site represented as undulating hills. The civil activity requires multiple cut and fill installations to maintain a stable longitudinal track gradient. Changes in elevation from one site of the track to the other result in changes in tree canopy height. The changes in topography limit the ability of Squirrel Gliders to glide between the pre-works fragmented pockets of vegetation.

Due to the pre-works changes in elevation and the fragmented suitable vegetation, the location of the fauna crossing zone is limited to the single area identified in the EA (*in the vicinity of the Integra Coal rail loop).*

3.4 Other types of over- track fauna crossing structures

The options for overhead structures are limited to rigid structures due to the live rail environment dissecting the site. Any elevated structure is required to be designed to have a 100 year lifespan and include multiple horizontal layers to provide protection from predation from both within and above the structure.

The trains that operate on the track are diesel powered locomotives. The uphill grade of the track with the Project area (the Nundah Bank) requires the locomotives to operate at full power due to the load resistance and results in locomotives developing maximum exhaust emissions and hot air throughout the Project area. The emissions from the locomotives require any overhead structure to be designed and constructed at a height sufficient (7-10m) to avoid emissions and provide a favourable fauna crossing zone.

Fixed overhead structures typically involve a monitoring period following construction. Monitoring of over track structures introduces a safety risk for the personnel undertaking it and may be restricted to periods of “track possessions’. The effectiveness of overhead crossings over lineal infrastructure remains unproven for Squirrel Gliders. Monitoring programs fauna crossing structures over new road construction Project have produced mixed results regarding there effectiveness.

Due to the above complexities in the design, construction, monitoring and effectiveness of other types of over–track fauna crossing structures they are not considered viable to span the track at the Project.

4 Environmental Assessment:

4.1 Pre works ecological condition of the site (as relevant to the Squirrel Glider):

The significant majority of the Project area comprises of a lineal operational rail corridor. The Project has acquired additional land where the margins of site extend into surrounding land uses for a distance of an approximate average of 10m. These areas on the margins of the lineal Project area present land uses which are typically modified landscapes cleared of native vegetation. The replacement for the cleared native vegetation is grasslands used for agricultural grazing purposes.

Parsons Brinkerhoff completed an Environmental Assessment (EA) (PB 2011) for the Project and identified that the area on the margin of the Project area contains fragmented and moderately/highly disturbed native vegetation comprising of a dry open forest (canopy species include *Corymbia maculata*, *Eucalyptus moluccana* and *Eucalyptus crebra)*. The assessment categorises the vegetation type as Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Sydney Basin. The EA (and revisions contained the Project Submission Report) details the extent of the vegetation to be 9.1ha of moderate quality habitat vegetation and 14.3ha of low quality habitat vegetation. The 9.1 ha of moderate quality vegetation exists in the middle section of the Project in an area described as the Integra Coal loop as it is where a small balloon rail loop junctions off the main line to serve one of the adjacent open cut coal mines and reconnects in the same area. Due to the condition of the vegetation, only the 9.1ha of moderate quality vegetation provides potential habitat for the Squirrel Glider. The threat-listed Squirrel Glider was recorded on the eastern side of the rail corridor within this area of habitat.

Other vegetation in the area includes areas completely cleared for grazing purposes and some areas of re-vegetated monoculture plantations undertaken by the surrounding open cut coal mines. Refer to photos below for representations of the pre-works condition of the site.

Land cleared of native vegetation provides limited habitat for fauna. The photos reveal an ecology of either cleared or scattered trees with a managed understorey, effectively removing native ground cover and understory which provides both foraging resources and shelter. Cleared or maintained land lacks a range of habitat features such as tree hollows of varying size classes, leaf litter, fallen timber and moderate shrub layer that would support potentially a diverse fauna. The condition of this fragmented habitat is considered poor due to the removal of microhabitat structures through clearing and maintenance practices. The Project EA assessed fragmentation and connectivity issues (below) and identified that the Project:

" may effectively inhibit this species from accessing vegetation occurring to the south" and that the increased separation distance… *"is likely to hinder dispersal".*

The EA identified that the existing fauna connectivity at the site around the Integra Coal loop was fragmented and the remnant vegetation was of moderate quality. The distance between the vegetation from one side from the track to the other side of the track in the Squirrel Glider habitat area is 30m, and this is less that the maximum Squirrel Glider gliding distances which are reported to be 50m in PB June 2012 Memorandum (refer to Appendix A).

Photo 3.1 - Rail corridor is behind the electricity pole in the mid-ground of this photo. Adjoining land uses in this section of the Project consist of highly disturbed mining land in the foreground (exotic grass cover and weeds) and an open cut mine pit and over burden stockpile in the back ground.

Photo 3.2 - This photo shows a typical section of the southern end of the site with tree planting on the right denoting the boundary of the rail corridor and the mine, the vehicle access track with the corridor, and the rail track to the left (coal wagons on the track). Note the distances between existing immature upper canopy vegetation, exotic grasses in the rail corridor and the changes in elevation of the rolling topography.

Photo 3.3 - This photo displays the surrounding adjacent land use at the Northern end of the site which is agricultural/grazing land. The native upper canopy is fragmented and does not provide suitable glider habitat.

Photo 3.4 - Shows the Northern end of the Project (western side of track and southerly aspect).The fence line to the right of the photo is the boundary between the agricultural land and the rail corridor. The vehicle access track is pre-works as is the condition of the site.

Photo 3.5 - This photo (Northerly aspect. Eastern side of track) shows the centre section of the site which has suitable glider habitat. This area commences and extends for approximately 800m north of the location of the photo. This is the area referred to the Project EA/C9/Modification Application as the “Integra Coal loop”. The trees in the mid ground are the specific specimens that were within the approved clearing limits and needed to be replaced with “Glider Poles” to maintain fauna connectivity. It is important to note that these trees either side of the track are the trees that were later retained to provide a natural Squirrel Glider crossing zone.

Photo 3.5 - This photo (southerly aspect. Eastern side of track) also shows the Squirrel Glider habitat area. Note the multi-stemmed tree to the left of the photo as this is the specific specimen that was retained on eastern side of the track to later establish the extent of the natural Squirrel Glider crossing zone. All the vegetation between the multi-stemmed tree and the person in the orange vest (15m wide) and another lineal band of approximately 10m east of the tree (to the Project boundary) was removed to facilitate the works and is also represented in **Figure 1.3**.

Photo 3.6 - This photo (northerly aspect. Eastern side of track) also shows the Squirrel Glider habitat area. Note the tallest tree on the western side of the track. This tree provided the most suitable pre-works Squirrel Glider crossing point. The approved Project included the clearing of this tree; however it was later retained to provide for the natural Squirrel Glider Crossing zone on the western side of the track.

Photo 3.7 - This photo (southerly aspect. Eastern side of track) also shows the Squirrel Glider habitat area and is the most suitable pre-works crossing zone. The pre-works distance between the trees (and hence the glide distance is 30m). The specific tree later retained for the natural Squirrel Glider crossing zone is the tall specimen on the opposite (western) side of the track.

Photo 3.8 - This photo (southerly aspect. Eastern side of track) also shows the Squirrel Glider habitat area and is the most suitable pre-works crossing zone. It is a panoramic photo which has used 3 photos which are merged by the hand held camera (note different light exposure from left to right). It combines a view contained in photos 3.5 and 3.7. Building from the caption from photo 3.5, this photo shows the broader context of the pre-works habitat and the pre-works crossing zone.

4.2 Post works ecological condition of the site and ecological mitigation measure applied as relevant to the Squirrel Glider:

Clearing of native vegetation is listed as a Key Threatening Process under both the NSW Threatened Species Conservation Act 1995 (The NSW TSC Act) and the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 (the EPBC Act). Under the TSC Act, native vegetation is made up of plant communities, comprising primarily indigenous species. Clearing is defined as the destruction of a sufficient proportion of one or more strata layers within a stand or stands of native vegetation so as to result in the loss, or long-term modification, of the structure, composition and ecological function of a stand or stands (NSW Scientific Committee 2001).

Refer to photos above for representations of the pre-works condition of the site.

UHVA has actively reduced the extent of vegetation clearing further that what was provided in the Project approval. The general principles adopted by the Project to minimise impacts to biodiversity, have, in order of consideration, included:

- To avoid impacts on habitat, through the planning process
- To minimise impacts on habitat, through the planning process
- To mitigate impacts on habitat, though the use of a range of mitigation measures.

The Project has actively avoided impacts through effective planning and construction management. The final route of the third track was chosen to adjoin the existing rail alignment, minimising ecological disturbance and reduce cost of infrastructure. Ancillary facilities such as vehicle access roads and works compounds were designed to adjoin to the existing rail formation or sited away from native vegetation areas where possible, to limit clearing extents.

The Project undertook a continuous process of revising and reducing the limits of clearing during both planning and construction, however the final alignment and footprint are subject to engineering standards and safety constraints. Planning and staging of the civil works was constantly re-assessed to limit clearing of vegetation and construction footprint.

The Project minimised ecological impact though the effective planning and supervision of day to day plant and materials movement which has resulted in a reduction of the amount of clearing from what was permitted by the Project approval. Boundary-to-boundary clearing extents have been reduced and pockets of vegetation have been retained in drainage lines, on steeper slopes of where highly erodible (sodic soils) were present.

Mitigation measures planned and implemented on the Project have further minimised impacts to Squirrel Glider movements, including:

a) Installation of habitat boxes. 30 Squirrel Glider specific habitat boxes have been installed within the Project area to offset the 7 potentially hollow bearing trees cleared. Project approval included the removal of up to 12 hollow bearing trees.

b) Use of non barbed wire was used for the top two strands of the rural type (cattle resistant) boundary fencing installed in the area of potential Squirrel Glider habitat. This was completed as per the Environmental Impact Statement (EIS) and serves to prevent the Squirrel Gliders from hooking onto barbs if they choose to land/launch off the fence.

c) Retention of a vegetation corridor comprising of mature canopy trees was retained in the area of potential habitat and crossed the rail formation at an angle of 90 degrees. This corridor required the redesign of a permanent vehicle access road and lengthy negotiation with ARTC regarding safety issues, however the outcome enabled the retention of canopy trees. The specific canopy trees were selected as they were the specific specimens that provided the most suitable pre-works fauna crossing zone and hence shall provide the most effective post-works crossing zone. Due to the canopy of the tree, the green corridor is considered to be superior than the anthropogenic installation as it provides better launch/landing options and provides predation protection. The retention of the existing upper canopy trees which provides the shortest glide distance and highest launch level results in the Project mitigating impact and "maintaining or no net loss" of fauna connectivity

d) Development of a BioBanking Strategy and Package to mitigate and off set the vegetation clearing needed to facilitate the Project. The Offset site is located within the same bioregion and it is suitable Squirrel Glider habitat as it contains mature and hollow bearing flora (including *Corymbia maculata*, *Eucalyptus moluccana* and *Eucalyptus crebra*)

e) Site restoration using ground cover seed mix including a mix of sterile cover crop seed and a number of native grasses. This will prevent weed and exotic ground cover dominance which could inhibit surface level movement of Squirrel Gliders. Additionally, site restoration has gone over and above approved plans to included surface habitats such as the retention and arrangement of woody debris and placement of rock into outcrops formations. These are intended to provide predation protection for the surface movement of mammals.

Utilising the avoid – reduce – mitigate concept, the final condition of the post works site is in general accordance with the concept of 'improve or maintain' as defined in the draft *Guidelines for Threatened Species Assessment under Part 3A of the EP&A Act* 1979. Although there has been negligible loss of fragmented moderate quality habitat, the post works condition of the Project shall not significantly impact on the long term viability of the population or communities of the Squirrel Gliders.

The EA (and revisions contained the Project Submission Report) detail the total vegetation clearance of the Grey Ironbark - Spotted Gum - Grey Box open forest shall be a maximum of 23.4ha. Whilst no metrics area available, it is approximated that the extent of clearing has been reduced to 15-20 ha.

The post works condition of the area of identified habitat and the related Squirrel Glider crossing zone have seen an increase in the post works gliding distance. The pre-works gliding distance of 30m was in excess of the Ball and Goldingay standard (22m) required by C9. The post works gliding distance is now 45m and this is below the 50m highlighted in the PB June 2012 Memorandum (refer to Appendix A)

The Project EA included Significance Assessments required under the TSC Act and/or the EPBC Act. The EA and the later PB assessments states that it is not likely that the local Squirrel Glider population would be significantly affected by the Project or by the removal of C9.

Photo 3.8. and **3.9** These photos (Eastern side of track) shows the Squirrel Glider habitat area following civil works. This photo can be directly compared with photo 3.7 which displays the same multi-stemmed tree on the eastern side of the track and the tree on adjacent to the rail formation on the western side of the track. This mature upper canopy trees form the post works Squirrel Glider crossing zone. Note the new third track in the mid ground photo that is set at a lower level that the original track on the western side of it.

Photo 3.9

Photo 3.10 - This photo (Eastern side of track. Northerly aspect) shows the Squirrel Glider habitat area following civil works in the area. This demonstrates the post works span over the track and vehicle access road and represents the post works glide distance at the Squirrel Glider crossing zone (45m). This photo also highlights that the retention of natural upper canopy vegetation is a more suitable outcome that the “Glider Poles” as the existing vegetation provided greater launch/land opportunities and protection from predation when compared to the Glider Poles design described in C9.

Photo 3.11 - This photo (Eastern side of track. Northerly aspect) shows the Squirrel Glider habitat area following civil works in the area and it is the view adjacent (east) of photo 3.10. The Project boundary is the eastern side of the predominant access road and the line of mature vegetation is located in the adjacent property. The distance from the off site vegetation to the multi-stemmed tree is 10m.

Photo 3.12 - This photo (Eastern side of track. Southerly aspect) shows the area to the south of the Squirrel Glider habitat area and shows the Integra Coal loop branching to the left of the main line with is the track on the right side of this photo. This photo highlights the condition of the site during works and the approved construction extent from boundary to boundary. This also demonstrates the lack of options for a suitable location for a Squirrel Glider crossing zone due to excessive distances between vegetation with access to suitable habitat.

Photo 3.13 - This photo (Eastern side of track. Northerly aspect) shows the area to the north of the Squirrel Glider habitat area and highlights unsuitable elevations and distances to establish a Squirrel Glider crossing zone.

Photo 3.14 - This photo (Eastern side of track. Southerly aspect) shows the area at the northern end of the site and can be cross referenced with photo 3.4 (photo 3.4 is the area of the same chainage on the Western side of the track). The fence line in the centre of the photo is the Project boundary. Note that no trees were within the Project boundary in this area prior to works. This photo highlights the commencement of revegetation to the right and the removal and restoration of a temporary haul road in the centre of the photo. This photo is typical of the southern end of the site during construction and highlights the fragmented character of the upper canopy vegetation in the area and the grazing land use which result in a lack of options to location a Squirrel Glider crossing zone.

5 Assessment of Impacts Associated With the Removal of C9 and the Subsequent Omission of Glider Poles (as per C9):

In the case where condition C9 is removed from the Project approval, there will be not be a significant impact to the local or regional viability of the Squirrel Glider population of community due to the Project's mitigation measure and the retention of a native vegetation to facilitate a suitable Squirrel Glider crossing zone.

The distance of aerial glide has been increased 15m (from 30m pre-works up top 45m post –works) as is within the 50m maximum glide distance for the Squirrel Glider (refer to Appendix A for advice on Suitable glide distances).

The removal of C9 and the corresponding action of not installing the Glider Poles will not require any alteration to the approved Project boundary, nor require additional clearance as all associated activities are consistent with the approved Project (with the exception of C9).

Due to the retention of an effective arboreal fauna crossing zone, there shall be no significant fragmentation of habitat or hindrance to Squirrel Glider dispersal subsequent to the removal of C9.

6 Offsetting Project Impacts to Biodiversity and the Project Biodiversity Strategy and Package

The Project has committed to mitigating impact to biodiversity via both beneficial on site planning and construction measures, and also by offsetting the Project impacts via the implementation of the NSW BioBanking Scheme

The Project has developed a BioBanking Strategy and Package to detail the process of assessing, securing and managing a suitable biodiversity offset under the NSW BioBanking Scheme.

Impacts on biodiversity values have been comprehensively assessed and documented within the Proposed New Rail Track at Nundah Bank Ecological Assessment (Parsons Brinckerhoff 2011b). Whilst the impacts on biodiversity values are not considered to be significant, the Project requires the removal of native vegetation and potential habitat for threatened plants and animals. The offset package has been developed to compensate for the identified impacts on biodiversity values and potentially improve ecological outcomes, in accordance with the conditions of approval and the “improve and maintain” principle of the BioBanking Scheme.

The assessment process has referenced the NSW Office of Environment and Heritage (the NSW OEH) interim policy on assessing and offsetting biodiversity impacts of Part 3A Projects, State Significant Development (SSD) and State Significant Infrastructure (SSI) projects (OEH interim offsetting policy) (Office of Environment and Heritage 2011), which provides a framework for the integration of the BioBanking Scheme with transitional Part 3A projects.

A suitable offset site has been located and the Project is currently entering into a legal agreement with the private landholder to secure use of the offset site and the corresponding BioBanking credits the site contains. The site is known as the “Sherbin property” (Lot 11, DP1160191) and is located in the same bioregion as the Project (approximately 50kms distance from the Project).

The detailed BioBanking Ecological Assessment has determined that both the Project site and the offset site contain corresponding vegetation, generally described as dry sclerophyll forest (the assessment details the vegetation type as Grey Ironbark - Spotted Gum - Grey Box open forest on hills of the Hunter Valley, Sydney Basin (HU556)) The Project has to offset the clearing of 23.4 ha of this vegetation type and the offset site contains 82.56 ha of the vegetation site. A letter of intent to secure sole access for the required 23.4 ha has been given in-principle endorsement by the Proponent and the landholder, and shall be formally signed in the near future.

Further to this UHVA is entering into BioBanking agreements with the landholder without commercial partnering with the Hunter 8 (Maitland to Minimbah Third Track Project). It also should be noted that the Sherbin site has a significant surplus of 556 credits after both UHVA and Hunter8 have satisfied their Project credit requirements. The Nundah Bank Project is nearing operational completion and shall not be changing the approved extent of clearing or requiring additional offset credits.

The outcome of the BioBanking Package and the related conservation agreement will be the Projects adherence to the BioBanking Scheme principle of “maintain or improve”. This principle is reflected by the Project site largely containing low quality vegetation described as type 556, however the significant majority of this is fragmented grassland and immature upper canopy habitat for the Squirrel Glider, whereas the offset site contains dense virgin mature stands of 556 which provides high quality Squirrel Glider habitat. The outcome of biodiversity offsetting for the Project and the associated conservation agreement will result in securing a net increase of high quality habitat for Squirrel Glider in the area and bioregion.

7 Public interest

Public interest regarding the Squirrel Glider can be summarised in the Hunter Environment Lobby comments contained the Project Submissions Report. Their feasible comments include the limiting of vegetation clearance, installation of habitat boxes, clearing protocols, and the installation of glider poles.

All the above items have been addressed during the planning of construction of the Project, with the exception of the installation of the Glider Poles. The retention of the native vegetation to facilitate a Squirrel Glider crossing zone effectively addresses the public interest request surrounding the glider poles and the removal of C9 will not be contrary to this item of public interest.

8 Ecologically Sustainable Development

Ecologically Sustainable Development (ESD) can be expressed by the four basic principles of ESD which are:

- The precautionary principle
- Inter-generational equity
- Conservation of biological diversity and ecological integrity, and
- Improved valuation, pricing and incentive mechanisms.

The proposal to remove C9 is consistent with ESD principles when considered in-light of the onsite planning and construction mitigation measures undertaken such as:

- reduced clearing extents (during planning and construction),
- the precautionary high ratio of nest boxes installed per hollow tree removed,
- the retention of an effective Squirrel Glider crossing zone
- offsetting impacts via BioBanking (a pricing and incentive mechanism) which will secure the ecological integrity of the region for future generations

9 Summary of Impacts to Environmental Aspects (EP&A Regs. cl 228 summary).

Relevant question	Impacts
Based on a review and understanding of the Approved Project and the proposed change, is there a transformation of the Project?	No – the proposed removal is consistent with the Approved Project
Is the Project as modified consistent with the objectives and functions of the Approved Project as a whole?	Yes – the proposed removal is consistent with the Approved Project
Is the Project as modified consistent with the objectives and functions of elements of the Approved Project?	Yes – the proposed removal is generally consistent with the Approved Project
Are there any new significant environmental impacts as a result of the proposed change?	No – the proposed removal is consistent with the Approved Project
Are the impacts of the proposed activity/works known and understood?	Yes – the proposed removal is consistent with the Approved Project.
Are the impacts of the proposed activity/works able to be managed so as not to have an adverse impact?	Yes – the impacts are able to be managed so as not to have an adverse impact

The EPA Regulation Clause 228 Assessment is provided below to summarise the impacts to environmental aspects subsequent to the removal of C9.

	Clause 228 Factors	***Impact***	
a	Any Environmental Impact on a Community	-ve Nil +ve	☐ ☒ ☐
b	Any Transformation of a Locality	-ve Nil +ve	☐ ☒ ☐
c	Any Environmental Impact on the Ecosystems of the Locality Comments: The Proposal would not have a significant impact on the Squirrel Glider as a green corridor of vegetation has been retained in a location containing suitable habitat to serve as a fauna crossing zone.	-ve Nil +ve	☐ ☒ ☐
d	Any Reduction of the Aesthetic, Recreational, Scientific or Other Environmental Quality or Value of a Locality	-ve Nil +ve	☐ ☒ ☐
e	Any Effect on a Locality, Place or Building Having Aesthetic, Anthropological, Archaeological, Architectural, Cultural, Historical, Scientific or Social Significance or other Special Value for Present or Future Generations	-ve Nil +ve	☐ ☒ ☐

	Clause 228 Factors	***Impact***	
f	Any Impact on The Habitat of Protected Fauna (Within The Meaning of the *National Parks and Wildlife Act 1974*) Comments: The Proposal would not have an impact the Squirrel Glider as a green corridor of vegetation has been retained in a location containing suitable habitat to serve as a fauna crossing zone.	-ve Nil +ve	☐ ☒ ☐
g	Any Endangering of any Species of Animal, Plant or other Form of Life Whether Living on Land, in Water or in the Air Comments: The Proposal would not have a significant impact the Squirrel Glider as a green corridor of vegetation has been retained in a location containing suitable habitat to serve as a fauna crossing zone.	-ve Nil +ve	☐ ☒ ☐
h	Any Long Term Effects on the Environment	-ve Nil +ve	☐ ☒ ☐
i	Any Degradation of the Quality of the Environment .	-ve Nil +ve	☐ ☒ ☐
j	Any Risk to the Safety of the Environment	-ve Nil +ve	☐ ☒ ☐
k	Any Reduction in the Range of Beneficial uses of the Environment .	-ve Nil +ve	☐ ☒ ☐
l	Any Pollution of the Environment	-ve Nil +ve	☐ ☒ ☐
m	Any Environmental Problems Associated with the Disposal of Waste	-ve Nil +ve	☐ ☒ ☐
n	Any Increased Demands on Resources (Natural or Otherwise) that are or are Likely to Become in Short Supply	-ve Nil +ve	☐ ☒ ☐
o	Any Cumulative Environmental Effect with other Existing or Likely Future Activities	-ve Nil +ve	☐ ☒ ☐

10 Correspondence

10.1 Previous Correspondence with Department Planning & Infrastructure

The following table provides a summary of correspondence regarding the proposal

Date	From	Type	Representing	Topic	Outcome
3.8.12	D.Mosman	Letter	UHVA	Submit application for the removal of C9	nil
10.9.12	S.Pigott	Email	UHVA	Submit additional info (letter from Project ecologist) at request of D.Sarkis	nil
5.10.12	D.Sarkis	Email	DPI	General endorsement of written application, and request to submit online application	UHVA to submit online application
1.11.12	n/a	Email	DPI	Acknowledgement of receipt of online application	nil
12.11.12	A.Cook	Email	DPI	Message of file type error and a request to resend information using a different file type	UHVA to resend info
21.11.12	A.Cook	Email	DPI	Acknowledgement of receipt of info and correct file type	nil
21.11.12	S.Pigott	Email	UHVA	Resend info in different file type	Resend info in different file type
11.12.12	D.White	Letter	DPI	Request for more information	UHVA to update Application

11 Conclusion

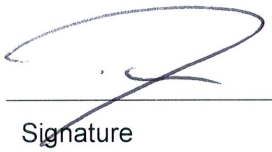
It is considered that the impacts of the proposed change to remove Condition C9 from the Project approval for the Nundah Bank Project would not introduce any significant alteration to the pre-works habitat and connectivity for Squirrel Glider and would have negligible consequences beyond those approved in the original Ministers determination.

Consequently, the Upper Hunter Valley Alliance recommends that the Department approve this request for the removal of Condition C9.

12 Certification

I certify that to the best of my knowledge, this Modification Application:

- Examines and takes into account to the fullest extent possible all matters affecting or likely to affect the environment as a result of activities associated with the proposed modification
- Examines the impacts of the proposed activity/modification against the Approved Project; and
- Is accurate in all material respects and does not omit any material information.

Stuart Pigott		15/02/2013
Environment and Community Manager UHVA	Signature	Date
Darren Mosman		20/2/13
Senior Project Manager ARTC	Signature	Date

Appendix A – PB June 2012 Memorandum - Nundah Bank Biodiversity Offset Package Extension and Glider Pole Installation

Note: The clearance distances in the PB June 2012 Memorandum are not indicative of the current vegetation distances as at February 2013. This is as a result of more vegetation being retained than initially forecast creating shorter distances between trees in the Squirrel Glider Crossing Zone as discussed in this Modification Application.

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A+ GRI Rating: Sustainability Report 2010

15 June 2012

Our ref: 2110501B/LT_0307

Stuart Pigott
Upper Hunter Valley Alliance
Environment and Community Manager
20 Newton Street,
BROADMEADOW NSW 2292.

Dear Stuart

Nundah Bank Biodiversity Offset Package Extension and Glider Pole Installation

In reference to an email dated 15 May 2012, the Nundah Bank project currently has two non-compliances to the project approval (#10_0094) and consequently requires the lodgement of a Modification Application to the project approval to have the current conditions altered. The two outstanding issues refer to the Biodiversity Offset Package and the installation of a squirrel glider crossing.

1. MCoA C10 - Biodiversity Offset Package

The current consent conditions require that a Biodiversity Offset Package to be submitted to the Department of Planning and Infrastructure (DoPI) within six months of construction. A formal request for an extension to the submission time is consequently required to be provided to the DoPI within this time period to avoid project non-compliance.

Australian Rail Track Corporation's (ARTC) have a demonstrated recent history of fulfilling and working with the regulators to develop beneficial biodiversity offset packages for their projects impacts. This is particularly evident by the establishment of the first biodiversity offset site under the NSW Biobanking Scheme by an Aboriginal Group for the Minimbah Bank Third Track project near Singleton in the Hunter Valley.

A Biodiversity Offset Package for the Upper Hunter Valley Alliance's (UHVA) Nundah Bank project has been unable to be provided to DoPI within the allocated time frame principally due to the need to find and progress with a second offset site after the landowner withdrew from entering into an agreement on the initial offset site and package after considerable progress (90%) of the offset package. Progress with the offset package has also been compounded by the limited availability of suitable offset sites available on the market.

UHVA have been in regular consultation with Office of Environment and Heritage (OEH) Newcastle Branch regarding the progress and status of the Nundah Bank Biodiversity Offset Package. Throughout the development of the package, OEH have indicated they support the effort and progress to date.

The following steps provide an indication of the progress to date with the development of the offset package:

1. On the 24 November 2010, a meeting with OEH (Emma Coombs, Mitchell Bennett), was held to discuss potential offset strategies ad sites, in particular.

a) To discuss potential of combining offsets for this project with other ARTC projects in the Hunter Valley, namely Hunter8 alliance project.

b) Discussions with OEH were completed to identify any priority sites for conservation that would be suitable as an offset for the project. This included priority sites for inclusion in their reserve system.

c) To get feedback on this preliminary offset strategy paper and the strategies presented.

2. The offset strategy was refined based on further OEH discussions and the Biobanking was determined n as the preferred offset strategy and mechanism for delivering the offset package.

3. Considered listing the BioBanking credits required for the project on the Department of Environment, Climate Change and Water credits wanted list.

4. A review of the BioBanking EOI register was completed with no suitable sites available.

5. Nov-Dec 2010 - Investigated potential of BioBanking with Aboriginal Land Councils (such as Wanaruah and Mindaribba) and Land Alive program. This included:

   a) Discussion with Land Alive project team to determine potential for this strategy, relevant stakeholders.

   b) Identification of potential lands through desktop assessment, mapping vegetation communities and Aboriginal Land Council property boundaries.

6. Identify areas for further investigation for suitability as offset sites. This would focus on properties that contain Central Hunter Spotted Gum- Ironbark – Grey Box Forest. Based on current mapping, in order of preference, this includes land:

   - Adjacent to Belford National Park.
   - Adjacent to Singleton Military area.
   - Adjacent to Pokolbin State Forest.
   - In larger remnants to the north east of Singleton or south east of Muswellbrook.

Each of these sites were assessed against the assessment criteria. A priority list was prepared. The current ownership and location would inform the best strategy to be used. For example,

   a) On 4 April 2011 ARTC directed that Hunter8 and UHVA look at potential for a consolidated offset site.

   b) A preferred offset site was identified within the Mindaribba Land Council property at Pelaw Main (within The HEZ).

7. Mindaribba agreed to in principle enter in the site in to the Biobanking offset scheme and detail Biobanking calculation.

8. Undertake detailed assessment of offset sites (including BioBanking assessments).

9. Offset packages were completed for the site.

10. Mindaribba protracted the formal agreement process, and ARTC agreed to investigate alternative offset site in parallel with progressing with Mindaribba on the Pelaw Main offset site.

11. On the 17 January 2012 Mindaribba pulled out of the offset agreement for the Pelaw Main site.

12. An alternative offset site at Dunns Creek (Shirbin and Garvey properties) were identified for offsetting both the Hunter8, Maitland to Minbar and UHVA Nundah Bank projects.

13. Conduct joint site inspection in 24 February 2012 with OEH (Steve Lewer) on Dunns Creek offsets and agree on potential suitability for the Nundah Bank project.

14. Hunter8 provided on 10 April 2012 draft Biobanking credit calculations report identifying the Shirbin and Garvey properties have the desired type and quantum required by the Nundah Bank project.

15. Met on 7 May with OEH Newcastle (Steve Lewer and Richard Bath) and received verbal approval and support for the planned request for extension of time for the Nundah Bank offset package and removal of the Squirrel Glider crossing from the Nundah Bank project.

16. UHVA to finalise the Nundah Bank biodiversity offset package by 30 August 2012 using the Hunte8r Biobanking calculations for the Shirbin and Garvey properties.

It is therefore proposed that a three month extension to the delivery date of the Nundah Bank biodiversity offset package be provided to avoid project non-compliance.

2. MCoA C9 - Squirrel Glider Crossing

The threat-listed Squirrel Glider was recorded on the eastern side of the rail corridor within the Project Boundary of the Nundah Bank project (BIA 2011), which is currently under construction. Within the detailed EA and BIA (PB 2011) the project assessed fragmentation and connectivity issues and identified that the project.

' may effectively inhibit this species from accessing vegetation occurring to the south' and that the increased separation distance… is likely to hinder dispersal'.

The BIA report identified the existing connectivity around the Integra Coal rail loop was fragmented and the fragmented remnant vegetation either side of the existing rail corridor was separated by a distance of approximately 35 m. This assessment identified that the project would result in the separation distance being increased to approximately 75 m in the area. This assessment of was based on aerial interpretation of the Figure 3C of the BIA (PB 2011) and as such did not consider the vertical gradient associated with the separation. It is highly unlikely that considering the condition of remnant vegetation, operational use of the existing rail corridor, vertical gradients and fragmented nature of the remnants that any existing connectivity between the east and western remnants of the rail corridor would be limited.

As part of the Minister' Conditions of approval, a Squirrel Glider crossing zone was to be established in the vicinity of the Integra rail loop prior to works affecting identified habitat as stated below:

'C9. *The Squirrel Glider crossing zone* ***in the vicinity of the Integra Coal rail loop*** *shall be established prior to works which affect identified Squirrel Glider habitat, unless otherwise agreed by the Director-General. The crossing zone shall consist of untreated hardwood power poles 30cm diameter and stand 12m above the*

ground (henceforth 'glider poles'). The spacing and location of the glider poles and the provision of artificial refuges and at least one horizontal crossbar for use as a launching site on each glider pole shall ***follow the methodology of Ball and Goldingay (2008)****. Any variation to this requirement shall be undertaken in consultation with the OEH and approved by the Director-General*.'

In accordance with this condition the Project investigated two potential options for the locations for the Squirrel Glider crossing zone '*in the vicinity of the Integra Coal rail loop'* associated with areas where the minimal separation distance is <100 m.

A discussion of each of these options is provided below:

The first proposed location at chainage 247.1 km was not feasible due to:

- The extensive construction and track works which will be completed under the Nundah Bank Third Track project in this area including underground services and vehicle access roads shall result in the area not being suitable for the installation of glider poles.
- The associated crossing distance between the nearest two glider poles at chainage 247.1 km equated to approximately 68 m. (greater than the accepted minimal fauna glide distance of <50 m).
- The vertical gradients resulting from cut and fills between the nearest glider poles was approximately 5 m, decreasing the likelihood of gliders using the crossing in both directions.
- The nearest vegetation adjoining the proposed glider pole locations is largely regrowth in poor condition with very limited canopy cover.

The alterative location at chainage 247.4 km was also deemed not feasible due to:

- The crossing distance between the nearest two glider poles equated to approximately >70 m. (greater than the accepted minimal glide <50 m).
- The nearest vegetation adjoining the proposed glider pole locations is largely regrowth in poor condition and limited canopy.

Following a detailed site analysis it is considered the proposed site is not suitable for the practical construction of the proposed MCoA C9 - Squirrel Glider Crossing. The crossing zone is considered to be highly unlikely to be effective for encouraging fauna movements given the separation distance of the existing remnant vegetation, condition of retained vegetation and the significant existing gradients between cut and fill across the separation gaps.

While the establishment of the Squirrel Glider crossing is unlikely to be of significant ecological benefit the UHVA Nundah Bank Project is currently developing a biodiversity offset package that will directly provide for the offsets of the projects disturbance to the Squirrel Glider habitat in accordance with the NSW Biobanking Assessment methodology (BBAM). In addition the Nundah Bank Project has also provided supplementary habitat in the form of 30 Squirrel Glider nest boxes in the adjoining areas of retained habitat.

It is therefore requested that the Minister consider rescinding the specific condition MCoA C9 - Squirrel Glider Crossing.

Yours sincerely

Alex Cockerill
Hunter Environmental Team Manager
Parsons Brinckerhoff