

Environmental Offsets Strategy  
(Mahogany Glider)

Ingham to Tully 275/132kV Transmission Line  
Replacement Project

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# ENVIRONMENTAL OFFSETS STRATEGY – MAHOGANY GLIDER

## Ingham to Tully 275/132kV Transmission Line Replacement Project

### 1.0 Executive Summary

Powerlink Queensland is proposing to construct a 275/132kV dual voltage transmission line to replace the existing 132kV electricity transmission line between Ingham and Tully in North Queensland.

Following the completion of a comprehensive environmental impact assessment, the project will be implemented in accordance with detailed Environmental Work Plans, a Vegetation Management Plan and a Mahogany Glider Management Plan. This will ensure environmental impacts are avoided and minimised to the extent possible.

This Environmental Offset Strategy has been developed to satisfy a condition of approval for the project under the *Environmental Protection and Biodiversity Conservation Act 1999*. It is designed to offset the impacts of the proposed project on habitat of the mahogany glider which is listed as endangered under Commonwealth environmental legislation.

The replacement transmission line project will require clearing of 2.68 hectares (ha) of essential habitat for the mahogany glider. Through implementing the Environmental Offsets Strategy there will be greater habitat protection and a net gain of mahogany glider habitat in Far North Queensland of over 40 hectares. This is summarised in Table 1 below.

<b>Total Area of Impact on Mahogany Glider Habitat due to the Development (-)</b>	<b>Total Area of Direct Offset Measures (+)</b>	<b>Total Area of In-Direct Offset Measures (+)</b>	<b>Effective offset ratio (indirect + direct)</b>
2.68 ha	10 ha	42.7 ha	1 : 20

This significant habitat gain will provide substantial increases in food and den tree availability as well as increased habitat connectivity. It will be achieved through a comprehensive suite of direct and indirect offset actions including:

- (1) Securing 10ha of mahogany glider habitat as a direct offset by inclusion in the conservation estate or other similar protection of its conservation values
- (2) Rehabilitating 5.1 ha of glider habitat in a presently disturbed area away from the replacement transmission line corridor
- (3) Rehabilitating 37.5 ha of glider habitat through active management and natural regeneration of the replacement transmission line corridor (where no future clearing will be required due to the new towers being taller and spanning over the canopy)
- (4) Other measures including a substantial investment of more than \$200,000 towards mahogany glider research and cyclone recovery efforts

It is Powerlink's view that this offset strategy meets the suitability requirements of the draft *Environmental Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy* issued in August 2011.

## 2.0 Overview of Project Impact on the Mahogany Glider

The decommissioning of the existing 132kV transmission line, and construction, operation and maintenance of the 275/132kV dual voltage transmission line will result in some clearing of native vegetation.

The environmental impact assessment identified that a significant portion of the transmission line alignment traverses areas identified as essential habitat or potential habitat for the mahogany glider. Alternative alignments were considered. However, as the project is an asset replacement, construction of the new line on the pre-existing corridor was determined in most locations to result in the lowest overall impact.

Tower site and access track locations for the new line have been carefully selected in consultation with environmental specialists, including the Wet Tropics Management Authority. In environmentally sensitive areas, wherever possible, the towers and access tracks for the new line have been located in previously cleared areas.

Details of mahogany glider habitat, potential habitat impacts and strategies which have and will be used to avoid and minimise impacts on the mahogany glider are provided in the Glider Management Plan for the project.

Of particular note is the decision to construct taller towers for the new line where this provides environmental benefits. Higher structures allow the conductors (wires) to span over the existing canopy which avoids or minimises impacts on vegetation including key mahogany glider habitat. After allowing for this and other techniques to minimise new vegetation clearing, the area of mahogany glider habitat that will initially be impacted by the project was assessed.

The total area of new clearing of essential habitat for mahogany gliders is 2.68 hectares, and eight trees containing potential nest hollows were identified as requiring pruning (*Reference: Supplementary Study of Impacts on Vegetation. Biotropica April 2011*).

## 3.0 Environmental Offsets Strategy

To address the impact on the mahogany glider associated with its proposed replacement transmission line project between Ingham and Tully, Powerlink has developed an environmental offsets strategy comprising 7 direct and indirect components. The components include:

### Direct Offset

- (1) Securing no less than 10 ha of mahogany glider habitat for the protection of its conservation values

### Indirect Offset

- (2) Rehabilitating 0.1 ha of glider habitat using 6 glider poles within an identified movement corridor (including research component)

- (3) Rehabilitating 5.1 ha of glider habitat in a presently disturbed area away from the replacement transmission line corridor - approximate cost of \$50,000. This area has been repeatedly disturbed for more than 40 years.
- (4) Rehabilitating 37.5 ha of glider habitat through active management and natural regeneration of the replacement transmission line corridor (where no future clearing will be required due to the new towers being taller and spanning over the canopy). This will allow the re-establishment of important habitat linkages.
- (5) Targeted strengthening of glider habitat in three watercourse areas in the vicinity of tower sites in these areas.
- (6) Direct financial support of mahogany glider research initiatives totalling \$170,000, plus additional in-kind contribution to research activities and facilitation of the sharing of research findings and outcomes.
- (7) Direct financial support of mahogany glider recovery initiatives following Cyclone Yasi totalling \$50,000.

Further details of each of these components are provided in the following sections. Overall, it is expected that this offsets strategy will result in a large net habitat gain and a significant increase in the broader scientific knowledge of the mahogany glider species.

In addition to contributing to the conservation of the endangered mahogany glider, this Environmental Offset Strategy has been developed to satisfy the draft *Environmental Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*.

Specifically, it aims to meet the 7 suitability requirements outlined within the policy and included below:

*Suitable offsets must:*

- 1. Deliver an overall conservation outcome that improves or maintains the viability of the aspect of the environment that is protected by national environment law and affected by the proposed development*
- 2. Be efficient, effective, transparent, proportionate, scientifically robust and reasonable*
- 3. Be built around direct offsets but may include indirect offsets*
- 4. Be of a size and scale proportionate to the impacts being offset*
- 5. Be in proportion to the level of statutory protection that applies to the affected species or community*
- 6. Effectively manage the risks of the offset not succeeding*
- 7. Have transparent governance arrangements including being able to be readily measured, monitored, audited and enforced.*

*(from page 4 of the draft Environmental Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy)*

Powerlink is committed to the implementation of this environmental offsets strategy, in addition to environmental mitigation strategies adopted for the project.

### **3.1 Direct Offset Component**

As a direct offset for the habitat to be cleared, Powerlink will secure an area of approximately 10 ha of existing mahogany glider habitat of good or better quality than that being impacted by the development. The exact amount of land to be secured will be dependent on land parcel size but will be no less than 10 hectares. This equates to a direct offset ratio of approximately 1:4.

Powerlink commits to securing the habitat in perpetuity. Once a suitable area of habitat is identified, Powerlink will consult with Queensland Parks and Wildlife Service (QPWS) on the most appropriate protective mechanism i.e. National Park, Nature Refuge, covenants over private land etc.

A criterion will be used to inform the identification of the habitat to be secured as a direct offset. The criteria have been developed following consideration of the *Environmental Protection and Biodiversity Conservation Act 1999 Environmental Offsets Policy*, the associated *Environmental Offset Assessment Guide* and discussions with the Environment Assessment Branch (Department of Sustainability, Environment, Water, Population and Communities). The criterion includes:

- Proximity to conservation estate – preference for land immediately adjacent to land within the existing Queensland conservation estate
- Habitat condition – preference for land containing good quality habitat which requires limited or no habitat improvement actions.
- Location to Impact Site – preference for land close to the Ingham-Tully transmission line corridor and as a minimum within the bioregion
- Habitat type – preference for land containing habitat providing a link or contributing to a habitat corridor
- Land tenure – preference for freehold land

Powerlink commits to securing ownership (or other legal arrangement as relevant) of the relevant land parcel/s of mahogany glider habitat within 6 months from the approval of this Environmental Offsets Strategy. Powerlink will also endeavour to effect the protection in perpetuity of the habitat (ie transfer of the land into the conservation estate or establishment of other agreed protective mechanism) within six months of the commencement of any construction works impacting on mahogany glider habitat. The ability to finalise the protection mechanism is contingent on the availability of third party (eg - QPWS) resources.

### **3.2 Indirect Offsets**

#### **3.2.1 Rehabilitating 0.1 ha of glider habitat using 6 glider poles**

As part of its Glider Management Plan, Powerlink will be installing 'glider poles' as a strategy to provide improved habitat linkage across the widened easement corridor. This indirect offset will involve the rehabilitation of 0.1ha of glider habitat using 6 glider poles within an identified movement corridor, and includes research into the effectiveness of 'glider pole' arrays in achieving habitat linkage.

There is currently limited historical research available to support the design and effective implementation of glider pole arrays. To increase scientific knowledge of this potentially valuable habitat loss mitigation strategy, Powerlink intends to engage suitably qualified environmental specialists to conduct research work as part of the pole monitoring program as described in the Glider Management Plan. This research will gather data on the effectiveness of the glider poles in reconnecting fragmented habitat and will seek to identify patterns of utilisation. In addition to addressing the pole monitoring program, these studies will investigate other factors which will contribute to greater understanding of general habitat loss mitigation strategies. Powerlink's total funding commitment for this research initiative is estimated at \$50,000.

### **3.2.2 Establishment of 5.1 Hectares of Glider Habitat**

As part of the replacement transmission line project, the existing line will be dismantled and removed. In a small number of locations, there will be no ongoing infrastructure presence due to a decision to deviate the line to a new alignment.

It is Powerlink's usual practice when decommissioning and removing old lines through environmentally sensitive areas to undertake rehabilitation and vegetation restoration using natural regeneration processes. This involves a minimal intervention technique, focused predominately on weed suppression and natural seedling promotion. This technique is deemed most practical in two locations on the existing Ingham-Tully corridor where infrastructure will be entirely removed as the immediate area is dominated by fast growing primary succession species such as Yellow stringybark *Eucalyptus portuensis* and Northern wattle *Acacia flavescens*. The seed from these species will be distributed across areas through natural processes. It is less likely that non-native vegetation will become dominant during the regrowth phase due to relative naturalness of surrounding areas and distance from sources dominated by weed species. Powerlink's environmental consultants have used natural regeneration processes successfully at similar projects in North Queensland. Within the Wet Tropics Area, the previously undertaken rehabilitation projects for the decommissioned Kareeya to Innisfail and Kareeya to Chalumbin contain comparable soil types and vegetation species/characteristics consistent with the Ingham Tully line.

However, in one location where the existing line will be removed from an area of surrounding high quality mahogany glider habitat, and the replacement line will be deviated to a new location, Powerlink has identified the opportunity to undertake an offset through an active intervention technique.

This location is quite disturbed in character having been cleared for more than 40 years. The surrounding areas contain less sources of primary succession species than other areas where the existing infrastructure will be entirely removed. In this 5.1 hectare location, Powerlink will therefore undertake an offset to establish mahogany glider habitat in the presently cleared area by planting native tube stock. A three-year monitoring program will support continued improvement. Based on a review of similar techniques on recent Powerlink projects, including Kareeya to Innisfail, Kareeya to Chalumbin, Woree-Turkinje and Chalumbin rehabilitation plantings, the cost for the establishment of the tubestock is estimated to be approximately \$50,000. Powerlink is committed to this cost and a maintenance regime to ensure the long term viability of these works.

These processes are expected to have considerable benefits for the mahogany glider, through faster establishment of habitat linkages and advancing the replacement of historical habitat loss.

### **3.2.3 Rehabilitating 37.5 ha of glider habitat through active management of the replacement transmission line corridor (managed natural regeneration)**

The existing transmission line was built in the 1960s, so the existing corridor has been actively maintained as a cleared easement for more than 40 years.

In areas where Powerlink is investing in increasing the height of replacement towers so as to span the canopy in sensitive environmental areas, limited additional impact or habitat fragmentation will occur as a result of the proposed project.

As a component of this Environmental Offsets Strategy, Powerlink commits to continuing to monitor the existing easement corridor through these essential habitat areas for a period of three years. Active weed control will be carried out in accordance with the Environmental Management Plan and Vegetation Management Plan for the project as required. This will allow native vegetation to regenerate and lessen the likelihood of weed infestation.

This component of the offsets strategy will result in an estimated 37.5ha of additional mahogany glider habitat over the long term. This is a substantial increase, and shorter-term benefits of increasing connectivity across the easement will also occur as vegetation re-grows and habitat linkages are re-established. It is expected that this approach will have a positive impact in reducing the negative impacts of habitat fragmentation on the mahogany glider population in the area.

### **3.2.4 Targeted strengthening of riparian vegetation**

Powerlink has identified three locations where there is an opportunity to achieve strong gains in the habitat values of existing riparian vegetation corridors through targeted planting. In each of these locations (towers 37, 153 and 189), little or no pruning of riparian vegetation will be required for the new project due to overspanning of the canopy.

However, it is clear from aerial laser surveys and photography that historical thinning and/or fragmentation of the riparian vegetation corridor has occurred on and near the existing transmission line corridor in these areas.

Mitigation strategies will be implemented to ensure construction impacts on the riparian zone are minimised. However, as part of this offset strategy, Powerlink will also undertake targeted strengthening of the riparian vegetation at these three tower locations. The methodology adopted will be in accordance with the Vegetation Management Plan for the project, and will involve active planting of tubestock and initial maintenance to assist in vegetation establishment.

### **3.2.5 Financial Support of Mahogany Glider Research**

As an indirect offset for the transmission line project, Powerlink has committed significant funds towards research to increase understanding of the impacts of habitat loss and fragmentation on the Mahogany Glider and measures to reduce such impacts.

### Research Initiative #1 – Impact of Habitat Fragmentation on Mahogany Gliders

Undertaken by ecologists at the University of Queensland, primarily Dr Megan Brady, this research initiative is expected to increase scientific understanding of the impacts of fragmented habitat on glider behaviour. Using the pre-existing power line corridor as a case study, the research is examining issues including patterns of habitat usage in areas with different values of regenerating and remnant vegetation, tree species used for denning, foraging and gap crossing in proximity to a disturbed corridor, vegetation characteristics that typify corridor crossing locations by the mahogany glider and patterns of corridor crossing. Powerlink's total financial commitment to this research initiative to date is \$120,000. The research is underway with several months of field work already completed.

### Research Initiative #2 – Habitat Assessment Post-Cyclone Yasi

Tropical Cyclone Yasi crossed the North Queensland coast on February 3, 2011 causing considerable damage. A working group, led by the Department of Environment and Resource Management, was set up to review the impacts of the cyclone on the endangered Mahogany Glider. Powerlink responded with an immediate offer of funding support to assist the survival and recovery of this iconic species. A financial contribution of approximately \$25,000 was made towards on-ground assessments of the effect of the cyclone on known mahogany glider habitat in the cyclone impact area to drive recovery decisions in the field. This research initiative was complemented by support for direct cyclone recovery initiatives as outlined in the section 3.2.6.