

# **Roads and Traffic Authority**

Pacific Highway Upgrade -  
Oxley Highway to Kempsey  
Flora and Fauna Working Paper

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## 7. Conclusions

### 7.1 Summary of key findings

The study area contained a range of habitats based mainly on varying topography in different areas. These ranged from low-lying flat floodplain areas that tended to be moist or swampy, to gently undulating or steeper undulating terrain with deep gullies. The floodplain areas contained moderate to large patches of swamp vegetation and smaller patches of freshwater wetlands. The fringes of major creeks supported riparian vegetation, some of which contained distinct rainforest elements, particularly on the edges of Barrys Creek and its tributaries.

Approximately 21.6 per cent of the Proposal footprint was found to be cleared, and now supports artificial pasture much of which is currently grazed, mainly by cattle or horses. The balance of the Proposal footprint contained natural or partially disturbed (under-scrubbed) vegetation. Approximately 12.8 per cent of the area of intact vegetation (represented by six vegetation communities) in the Proposal footprint would qualify as four endangered ecological communities (EECs) listed under the NSW TSC Act. These are “Swamp Sclerophyll Forest on Coastal Floodplains”, “Swamp Oak Floodplain Forest”, “Subtropical Coastal Floodplain Forest”, and “Freshwater Wetlands”. The condition of these EECs varies, with some riparian, swamp and wetland areas subject to significant disturbances in the form of partial clearing or underscrubbing, grazing and weed invasion. Given the scale of clearing required, there would be a substantial removal of EECs at the local level as a result of the Proposal, however at the regional level this loss would be insignificant and there would still be substantial areas of each EEC remaining in the region.

No threatened flora species were recorded during the terrestrial field surveys, although seven are considered to have at least some potential to occur within the study area. These are scented acronychia, hairy-joint grass, biconvex paperbark, maundia, milky silkpod, swamp orchid and southern swamp orchid on the basis of the findings of the Part 3A assessment, no threatened plants are considered likely to be impacted to the extent that they could be placed at risk of extinction as a result of the Proposal.

Several species of noxious and environmental weeds were found to be common and abundant within the study area, particularly lantana for which management and control would need to be an integral part of construction and operation phase management to prevent invasion of the species into and consequent degradation of adjoining habitat.

Eighteen threatened fauna species listed on the TSC Act were positively recorded within the study area between November 2005 and November 2007. A number of other listed threatened fauna species are expected to occur or are considered to have some potential to occur or occasionally visit the study area.

Potential impacts of the Proposal on threatened fauna are likely to be of most concern for the less mobile species (small home range) and for those reliant on specific or scarce habitat features such as hollow-bearing trees, hollow logs, dense ground cover or particular food tree species. Other potential impacts include the loss of a large area of foraging habitat for a number of threatened fauna species. This is unlikely to result in the local extinction of any threatened fauna species, but does contribute to key threatening processes and the cumulative loss of habitat affecting threatened fauna in the region.

For the majority of fauna species, the main area of impact is expected to be where the Proposal deviates through the northern end of Cairncross State Forest and cuts through currently intact bushland. A large number of hollow-bearing trees would be lost in this area and an 80 hectare area of bushland would be left isolated between the existing highway and the proposed alignment. For threatened fauna species in this area, this is expected to result in a reduction in habitat availability and period of disruption while home territories are redefined.

The Proposal is expected to result in the loss and modification of some permanent and ephemeral water bodies, including a potential green-thighed frog breeding pool in Maria River State Forest. Provided appropriate ameliorative measures are implemented, bridge and culvert crossings at watercourses within the Proposal footprint are unlikely to greatly affect threatened fauna species, though there is some potential for some deaths to occur during construction works, particularly roosting bats and individual giant barred frogs. Detailed mitigation measures would be required to be developed at the detailed design phase in consultation with DECCW and species specialists to minimise impacts on the green-thighed and giant-barred frogs and their habitat in Maria River State Forest and other potential habitat at major freshwater creek crossings including Cooperabung, Barrys, Smiths and Pipers Creeks.

Although not consistently found along the whole of the proposed route, a large number of hollow-bearing trees are expected to be lost as a result of the Proposal, particularly in the vicinity of Barrys Creek in Ballengarra State Forest and the swamp forests of Cairncross State Forest. However, given the presence of large areas of bushland in state forests, nature reserves and national parks adjoining the study area, it is expected that this would represent a small fraction of the number of hollow-bearing trees within the study locality. The loss of these trees is considered unlikely to result in the local extinction of any threatened fauna species, though it would contribute to this key threatening process and is likely to restrict roosting, nesting and breeding site availability for some species. Targeted pre-clearing tree-hollow surveys and staged clearing protocols would be important to minimise the potential for mortality of hollow-roosting species during the construction phase of the Proposal.

The Proposal would result in an additional barrier to fauna movement, particularly where the proposed route passes through currently intact habitat in the north of Cairncross State Forest. While the existing highway already presents a barrier to fauna movement for less mobile species such as the koala, the proposed widening of the road corridor may result in an increased risk of road death for these species as animals attempt to cross the new highway. The koala is expected to occur along the entire length of the study area. The inclusion of floppy top fencing and fauna underpasses at suitable locations along the Proposal would be an important element of the detailed design to minimise the potential for adverse impacts by facilitating safe fauna movements and potentially reducing the road death toll on terrestrial fauna including koala.

For gliding species (in particular the squirrel glider and yellow-bellied glider), the proposed widening of the road corridor may prevent or greatly restrict movement across the highway along much of the length of the study area. Proposed mitigative measures (such as glider poles and aerial rope ladders) would be important for maintaining habitat connectivity.

## 7.2 Key thresholds

Pursuant to the Draft Guidelines for Threatened Species Assessment under Part 3A of the EP&A Act (DEC/DPI 2005), development applications being assessed under Part 3A must address the following key thresholds.

**Whether or not the proposal, including actions to avoid or mitigate impacts or compensate to prevent unavoidable impacts will maintain or improve biodiversity values.**

A detailed planning and route selection process has been undertaken to avoid and minimise impacts on threatened species and ecological communities within the study area. Specific impact mitigation measures have been incorporated into the Proposal design and would be implemented during the construction and operational stages of the Proposal to increase the certainty of the long term maintenance of the biodiversity values of the study area. Environmental management measures to further minimise impacts on threatened species and their habitats and local biodiversity values have been proposed. A comprehensive offset package would be developed in consultation with DECCW and DII to offset any residual impacts and would contribute to the maintenance and improvement of local and regional biodiversity values.

**Whether or not the proposal is likely to reduce the long-term viability of a local population of any threatened species, population or ecological community.**

The study area contains high biodiversity values and the Proposal would inevitably involve the loss of native vegetation, including areas of endangered ecological communities and habitat features for threatened species. However, the Proposal is unlikely to reduce the long-term viability of a local population of any threatened species or community given the approach of avoiding and minimising impacts undertaken at the route selection and design phases and the proposed implementation of a range of mitigation and management measures during the construction and operational stages. Assessments of the likely significance of impacts of the Proposal have concluded there would not be a significant impact on local populations of threatened species and endangered ecological communities provided that proposed impact mitigation measures are implemented.

**Whether or not the proposal is likely to accelerate the extinction of any species, population or ecological community or place it at risk of extinction.**

The Proposal would not reduce the viability of local populations (as described above) and is considered unlikely to result in impacts of a magnitude that would accelerate the extinction of species populations or communities given the following considerations:

- The linear strip of vegetation/habitat to be cleared in relation to the extensive tracts of habitat within state forests and conservation reserves in the locality and region.
- The maintenance of connectivity through the study area and with extensive areas of key habitat and regional corridors located to the east and west of the Proposal.
- The implementation of specific mitigation and environmental management measures to minimise adverse impacts on threatened species and ecological communities and to manage potential threatening processes of relevance during the construction and operational phases of the development.
- The development of an offset strategy to mitigate residual impacts of the Proposal on threatened species and communities and their habitats and to contribute to the maintenance and improvement of local and regional biodiversity values.

**Whether or not the proposal will adversely affect critical habitat.**

Critical habitats are listed under both the NSW TSC Act and the Commonwealth EPBC Act. No listed critical habitat would be removed or adversely affected as a result of the Proposal.

### 7.3 Concluding statement

This Working Paper addresses the terrestrial and aquatic ecology impacts associated with the upgrade of the Pacific Highway from the Oxley Highway to Kempsey (the Proposal) and has been prepared as a technical document to support the Environmental Assessment.

The objective of the Working Paper is to provide an ecological assessment of the impact of the Proposal pursuant to Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The working paper also provides an assessment of the significance of impacts on matters of national environmental significance pursuant to the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). As a result of this assessment, particular areas where mitigation may be required have been identified and ameliorative measures proposed so as to minimise the impacts of the Proposal.

There is the potential for a number of direct and indirect impacts to occur on biodiversity values as a consequence of the Proposal. While many of these impacts have either been avoided, minimised through route option selection and design development or could be adequately mitigated or managed, there are some impacts that could not be adequately mitigated. To address these residual impacts of the Proposal, the RTA would implement an offset strategy and package which would be developed in consultation with Department of Environment, Climate Change and Water (DECCW) and Department of Industry and Investment (DII). This strategy would complement the specific mitigation measures incorporated into the Proposal and which would be implemented during the construction and operational phases to further mitigate residual impacts and contribute to the maintenance and improvement of local and regional biodiversity values.

An assessment of the potential significance of impacts on threatened species and ecological communities has been prepared in accordance with the assessment criteria identified in the Guidelines for Threatened Species Assessment under Part 3A of the EP&A Act (DEC and DPI 2005). Based on the assessments undertaken, the Proposal is not considered likely to result in impacts of a magnitude that would cause a local population of threatened flora or fauna or a local occurrence of an EEC to become extinct. The significance assessments have concluded that there is unlikely to be a significant impact on threatened species or ecological communities provided that proposed mitigation and management measures are developed and implemented. Appropriate mitigation would be particularly important to minimise impacts on local populations of the koala, green-thighed frog and giant-barred frog, which have been identified as species' particularly vulnerable to potential impacts associated with the Proposal.

The Proposal incorporates measures to minimise the clearing of vegetation, loss of habitat and drainage and sedimentation controls to manage runoff during both the construction and operation phases. On the basis of the assessments undertaken, it is concluded that the Proposal would not result in a significant impact on any matter of national environmental significance under the EPBC Act, including threatened and migratory species. Accordingly, the Proposal has not been referred to the Commonwealth Department of the Environment, Water, Heritage and the Arts.