



Habitat

The Coordinator-General has completed his evaluation report for the Traveston Crossing Dam Stage 1. This information sheet has been prepared as a brief summary and guide only. It is not a complete re-statement of the report. For the full report, visit www.dip.qld.gov.au. For further information about the project visit www.qldwi.com.au.

For over 150 years, the Mary River Catchment has been modified through the timber, horticulture, grazing, and river mining (gold, sand and gravel) industries. An ever growing portion of the catchment is now used for rural–residential development. These intensive developments have had a significant impact on the Mary River and its catchment, particularly through vegetation clearing.

At the time of European settlement, the area contained dense subtropical rainforest and eucalypt woodlands. The high rainfall, deep soils and complex habitat contributed to abundant and diverse native flora and fauna. Since European settlement, the wellbeing of the greater community has been supported by economic development. However, the impacts of timber gathering, agriculture development and other activities have significantly altered and diminished the landscape and the area’s native environment.

The area’s original vegetation has been largely cleared with the exception of some narrow strips along waterways and in steep areas. The project’s Environmental Impact Statement reports that 85 per cent of the study area is cleared. As a result of rural and residential development, exotic species have been introduced, some of which are now significant weeds and pests.

The development of this land has also led to significant vegetation clearing. Consequently, local wildlife are vulnerable to bushfires, disease and inbreeding. Without mitigation and offsetting activities, the Traveston Crossing Dam Stage 1 project would result in further landscape change and increased pressures that would further impact local ecosystems and species.

The Coordinator-General has considered the potential impacts of the project on native fauna and the current degraded and worsening ecological situation in the Mary River catchment. Particular considerations include:

- the actions required to mitigate impacts created by the project
- how to stabilise the current ongoing ecological decline
- what further actions are required to reverse the decline and address uncertainty that may remain regarding the future viability of native species resulting from the project.

All species in the project area—including native fauna—depend upon and are part of complex ecosystems. Despite the level of past and ongoing disturbance, the project area includes endangered riparian regional ecosystems and riparian vegetation types which have demonstrated an ability to successfully regenerate when given appropriate protection and support. Also, actions of the project can ensure currently degraded wildlife corridors in the project area are improved, to more fully restore the areas of fauna habitat.



Some of the key conditionsⁱ the Coordinator-General has imposed on the project are aimed at creating, preserving and restoring the habitat in the project area. Restoration will be achieved by:

- excluding livestock and erecting fences in the relevant areas
- replanting vegetation, where necessary, to support natural regeneration of native vegetation common to the area
- placing large logs within streams at key locations
- controlling weeds and pest animal species.

Restoration of the ecosystem will be regularly monitored over 20 years and periodically assessed against specific benchmarks to ensure the restoration remains on track.

Under the conditions imposed by the Coordinator-General, remaining riparian and other land-based ecosystems which may be lost as a result of the project will be offset and increased almost eight-fold, from an estimated 260 hectares to over 2 000 hectares.

In establishing conditions for creating ‘protected riparian habitat’—which generally requires vegetated buffers at least 60 meters wide on each side of the waterway within the habitat (creating an effective 120 meter wide corridor in the river-like parts of the dam)—the Coordinator-General particularly noted research indicating:

- Vegetated riparian buffers between 30 and 60 meters wide are effective at removing nutrients, faecal coli forms and organic pollution, pesticides and sediment. Wider buffers are needed to protect water quality during severe storms, when a large amount of sediment and pollutants can enter the waterways.
- Most effects, such as increased light and air movement, generally extend up to or greater than 60 meters from a forest edge, so 30 metre-wide buffers are not sufficient to provide habitat for interior forest fauna. Wider buffers, of 60 meters or more, can reduce weed invasion and have potential to reduce management and weed maintenance costs.
- Woody vegetation buffers in riparian areas provide large amounts of woody debris and smaller organic matter which, along with fallen insects, provide food for aquatic species. The vegetation also shades streams, providing shelter for fish species and keeping water temperature down. This in turn increases dissolved oxygen and provides conditions for a greater diversity of aquatic species.
- While native woody vegetation buffers provide the greatest benefit for biodiversity, grassed buffers—where grazing and other land uses are excluded—can provide benefits to water quality in the area. However, woody vegetation buffers:
 - have important advantages over grassed buffers for bank stability
 - are better able to remove pollutants from shallow groundwater due to the deeper root zone of trees
 - provide greater biodiversity benefits due to their more complex structure and supply of large woody debris.
- A 60 meter buffer is considered to be the minimum width required to provide suitable habitat for the adults of the endangered giant barred frog *Mixophyes iterates*
- Revegetating riparian buffers can provide large economic savings for public water treatment due to reduced sediment load and less pollutants entering the water treatment plant. An annual saving of up to \$60 million in water treatment costs was estimated in a buffer restoration model for the Brisbane River catchment.



As well as the direct loss of habitat available for native flora and fauna as a result of prior clearing, the quality of the in-stream conditions for other native aquatic flora and fauna is significantly affected by the severely degraded native riparian vegetation. This deprives aquatic flora and fauna of the valuable benefits of a healthy ecosystem. For example, a healthy riparian zone can improve water quality through its runoff filtration and by limiting erosion and stabilising waterway banks. Healthy riparian vegetation also provides food and shading at the waterway edge and generates large woody debris in adjacent waterways. Riparian vegetation cover must be maintained to ensure continued supply of this large woody debris.

Large woody debris provides a range of environmental values to waterways:

- diversity of the physical habitat and a rich and complex ecosystem for aquatic organisms
- nutrient cycling
- stabilisation of the sediments in stream channels and river-beds
- fine particulate organic matter for biological processing
- stabilisation of substrate to help biofilm (algae, bacteria and fungi) and invertebrates colonise—important elements of the food chain
- refuge areas for fish to avoid predators, sunlight and fast-flowing water and use as spawning sites or territory markers
- re-oxygenation of water flowing over large woody debris and preventing stagnation
- points for terrestrial organisms to rest, perch and forage, including lookout and crossing points.

The Coordinator-General has imposed conditions on the project to create, preserve and restore land and water habitat. The protected areas are indicated on the attached map, which highlights the extent of habitat protection around the dam. The protected riparian habitat zones are located:

- upstream of the inundation area in the Mary River and its tributaries—with a minimum width of 60 metres from either full supply level or the waterway edge in areas upstream of the inundation area
- west of the inundation area—covering 80 per cent of this part of the inundation area buffer including a wildlife corridor at least 100 metres wide to connect downstream and upstream riparian habitat areas
- east of the inundation area—covering 30 per cent of this part of the inundation area buffer to allow for future alignment of the Bruce Highway and ensuring highway users have views across the dam
- immediately downstream of the dam—with a minimum width of 60 metres from the waterway edge on both banks of the Mary River and from the dam wall, to one kilometre downstream, with no significant interruption to connectivity.

The Coordinator-General also requires the proponent to reintroduce substantial quantities of woody debris within these protected habitat areas.

The availability of woody debris appears to be particularly important for species such as the endangered Mary River cod and Mary River turtle.

ⁱ Conditions 4, 5, 7 & 21, Schedule C, Appendix 1

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