



Water

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.

The Mary River

The Mary River flows over 300 km from its source to the ocean. The Traveston Crossing Dam Stage 1 project is located on the Mary River, 207.6 km from the mouth of the river. Most of the catchment (78.5 per cent) lies downstream of the project, leaving the rest (21.5 per cent) of the catchment upstream. At its full supply level, the dam's inundation area will cover 36.5 km (approximately 4 per cent) of the Mary River.

Flow changes

Because the dam will store water, the water flow regime downstream will change. The Coordinator-General has required for any downstream flow changes, resulting from the project, to be managed in a way that maintains and further enhances existing environmental features and water supply requirements while providing additional water supplies for South East Queensland.

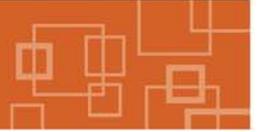
Legislation and water allocation

The *Water Resource (Mary Basin) Plan 2006* is the legislation under which water as a resource is managed within the Mary Basin. The water resource plan includes objectives for water allocation security and environmental flows for specific locations within the catchment. These objectives are designed to ensure water is sustainably managed to protect the river's environmental values whilst providing for urban, agricultural and industrial needs. The project will provide 70 000 megalitres of water per year to the South East Queensland Water Grid. This will be supplied from the 150 000-megalitre-per-year reserve of water identified in the water resource plan as being available for extraction from the Mary River for urban use.

Downstream flow and flow conditions

The dam is designed to allow downstream flows to be released over the spillway, through the outlet works and the fishway and turtle-bypass systems. Each of these mechanisms can be operated either independently or in combination, depending on the dam's water level.

Protecting and enhancing the aquatic habitat downstream depends heavily on providing best possible flow conditions which will support important aquatic ecological outcomes.



Following a review of all the materials presented during the environmental impact statement (EIS) assessment, the Coordinator-General has set specific flow conditions for achieving desirable ecological outcomes regarding water quality and movement and breeding opportunities for aquatic animals. The Coordinator-General's specific flow conditions are consistent with and improve on the desired outcomes that are identified in the environmental flow performance objectives and outcomes of the water resource plan. To ensure these conditions are met, the project's operational strategy has been refined.

Flow performance indicators

Conditions for the project set by the Coordinator-General require that 'flow performance indicators' are observed at Dagon Pocket to protect the aquatic habitat and native species. Modelling that has been done for the project supports the conclusions made in the EIS and supplementary EIS about the ability of the project to successfully manage environmental flows all year round, particularly if flow performance indicators are observed effectively. Ensuring the Coordinator-General's indicators are met will also improve upon environmental flow conditions currently experienced within the Dagon Pocket section of the Mary River.

Managing the ecological health of the water

The project's contribution toward the ecological health of the water can be measured by observing:

- how water quality is being maintained
- what opportunities are available for fish movement and breeding
- how connections between riffle and pool habitats are being maintained

Achieving success in these areas can be determined by setting key flow depth indicators in the Mary River at Dagon Pocket:

- flows more than 10 cm above the 'cease-to-flow' point—indicator for maintenance of water quality
- flows more than 30 cm above the 'cease-to-flow' point—indicator for maintenance of large-bodied fish movement
- flows more than 2 m above the 'cease-to-flow' point—appropriate indicator of a flushing flow in Mary River.

Modelling undertaken for the EIS assessment process, which reviewed ways to improve the results of each flow performance indicator, showed that the following outcomes could be achieved:

- the proposed 70 000 megalitre yield will be maintained and meet the 'high reliability' requirements of the water resource plan—demonstrating a secure water supply for South East Queensland



- existing users of the water downstream will maintain their entitlements (as required under the water resource plan)—demonstrating that downstream water users will not be affected by the project
- all downstream mandatory environmental flow objectives will be compliant with the water resource plan
- outcomes for all non-mandatory environmental flow objectives will be improved—demonstrating the project’s flexibility in successfully managing flows for environmental requirements.

Seasonal flows

Modelling shows that implementing the Coordinator-General’s flow performance indicators at Dagon Pocket will mean flows during July, August, September and October will improve from the flow pattern currently being experienced at this location. Releases from the dam will be managed to produce greater stability of the water level in the Mary River from Dagon Pocket to Fisherman’s Pocket during the key lower-flow months of July through to January. This part of the Mary River contains breeding habitats for species such as lungfish, and nesting sites for the Mary River turtle.

To sustain and generate macrophyte coverage and general aquatic life, it is important for flows in winter and spring to be lower and more stable while summer and autumn should allow for ongoing, periodic and large flows. Stable base flows during winter and spring (without unnecessary extraordinary large flows) provide ideal conditions for lungfish, Mary River cod and the broader fish community. Overall, flows downstream of the project through to Fisherman’s Pocket will reduce, which will increase the percentage of combined ‘riffle’ and ‘pool’ habitat, at the expense of some ‘run’ habitat.

Modelling indicates that the project will have minimal impact on the flow regime at Fisherman’s Pocket and water levels will be similar to what they are currently. This is due to water flowing in from other parts of the Mary River catchment downstream from the dam. Compared to current flows in the Mary River, once the dam is complete, it is predicted that approximately 90 per cent will pass Fisherman’s Pocket and approximately 96 per cent will reach the ocean.

More measures to further enhance flow conditions will be determined during the detailed design of the project and as part of a submission to the resource operations plan. The resource operations plan sets a framework for effectively using the Mary River’s water to achieve the objectives and outcomes of the *Water Resource (Mary Basin) Plan 2006*.

No changes to the current river flow situation are proposed during construction. A modified sub-set of the flow performance indicators have been set by the Coordinator-General for use during the first filling of the dam.



Flood flows

The project will balance flood flows, resulting in lower peak flows and greater flow durations downstream of the dam. Flows are most-reduced immediately downstream of the dam, though the level of reduction decreases further downstream from the dam. When the dam is operational, downstream flooding will reduce, particularly in Gympie. However, impacts of flood in areas upstream of the dam may increase.

Balancing the effects of a flood, upstream and downstream of the project, requires careful consideration and consultation with all directly affected individuals and organisations. The design and operation of the dam, including the proposed flood gates, must be carefully considered during the detailed design process in accordance with the *Queensland Dam Safety Management Guidelines*. The final operating strategy must be approved by the Coordinator-General and the Dam Safety Regulator before construction begins.

Climate change

The effects of climate change have also been incorporated into the project planning. This was done to address downstream environmental requirements, maintain entitlements for existing users and provide additional urban water supplies to South East Queensland. The Coordinator-General has also found the presence of the dam will provide an opportunity to improve the downstream ecological processes under changed climate conditions and that the project remains viable under the predicted impacts of climate change.

Groundwater impacts

As a precautionary measure, monitoring bores will be installed within the alluvium downstream of the dam wall (adjacent to the reservoir), to assess any impacts on local groundwater resources. This is to ensure that there are no significant groundwater issues associated with the project. If monitoring shows adjacent landholders experience adverse groundwater impacts due to the project, actions must be taken to reduce or correct those impacts.

Water quality

Water quality objectives for the Mary River catchment are regulated under the *Environmental Protection Act 1994* and associated legislation. They are specified in the *Mary River Environmental Values and Water Quality Objectives* as published by the Environmental Protection Agency in March 2007.

Under conditions set by the Coordinator-General, the objectives must be observed, monitored and reported upon. Requirements have also been set for metals and metalloids, pesticides, herbicides and fungicides.

In response to existing water quality issues—and to ensure the project's catchment contributes to high water quality—conditions have been set to improve water quality within the catchment and particularly within the dam area. These requirements include specifications for a catchment enhancement program and an integrated project water quality program. The requirements encourage the proponent to work together with land owners and community groups to improve the water quality of the Mary River. Conditions have also been set to manage water quality during the initial filling of the dam.



Impacts on Mary River at the ocean estuary, the Great Sandy Strait and Fraser Island

The project will improve the quality of water downstream by reducing sediment loads and nutrient levels in the water. This will be possible through a program of extensive habitat rehabilitation, enhancement and protection around the dam's inundation area. However, it is not possible to measure such improvements at the point where the river meets the ocean due to increased levels of sediments and nutrients which enter the river from existing activities on land downstream of the dam.

The project is expected to only marginally reduce fresh water input to the ocean. The impact on the ecological characteristics of the estuary (where the river meets the ocean) from this marginally reduced fresh water input is predicted to be so small it can't be measured.

The project is also predicted to have no measureable impact upon Fraser Island or the Great Sandy Strait. However, to take a precautionary approach, the Coordinator-General requires an estuarine monitoring program to be developed which will involve monitoring to confirm expectations of minimal degrading impacts.

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