

TN 02 – Downstream flow implications of the proposed Traveston Crossing dam and the draft Mary Basin Water Resource Plan

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Executive Summary

The proposed dam at Traveston Crossing will have significant adverse effects on stream flows in the Mary River downstream from the proposed dam site well past the city of Gympie.

- *This statement is supported by the Integrated Quantity and Quality Model (IQQM) analysis used by the State Government to formulate the draft Mary Basin Water Resource Plan (WRP) which regulates the allowable flow regime in the river.*
- *As it currently stands (1st June 2006), the draft Mary Basin WRP legislation allows for an extreme alteration of downstream flows in the Mary River for a distance of more than 100 km downstream from the proposed dam site at Traveston Crossing.*
- *Public statements that downstream flows will not be significantly affected because the estimated Mean Annual Flow Volumes are expected to be maintained at 85% of the natural flow volumes, misrepresent the effect of the proposed water infrastructure on downstream flows. The State Government's own IQQM modelling of stream flows predicts that annual flow volumes at Fisherman's Pocket (downstream from Gympie) will be reduced to less than 57% of pre-development flows in 55 of the 110 study years.*
- *In its natural state, typical daily flows at Fisherman's Pocket in the driest month of the year (November) are in the order of 171ML. The draft WRP legislation allows the building of a dam that could reduce total flow in the river at Fisherman's pocket to less than 1ML per day for 18% of the time and stop all flow in the river for continuous periods of up to 6 months.*
- *All data and modelling analysis used in this report come directly from the publicly available results of the IQQM modelling used to formulate the draft WRP legislation and from the Department of Natural Resources, Mines and Water (NRMW) streamflow records of the Mary River*



Effect on Total Flow Volumes

The IQQM modelling used in the environmental flow study of the proposed dam at Traveston Crossing predicts that after the proposed dam is in place yearly flow volumes at Fisherman’s Pocket (just downstream of Gympie) will be less than 57% of the natural flow volume for 55 years of the 110 year study period. (Mary Basin Draft WRP Environmental Flow Assessment Framework and Scenario Implications)

This is consistent with a statement that the Mean Annual Flow Volume(MAFV) at the mouth of the river can be maintained at 85% of the pre-development level after the dam is in place. The calculation of Mean Annual Flow Volume at the river mouth gives almost no information about the effect of the proposed dam at Traveston Crossing on the flow regime of the Mary (Edward 2006). It is calculated from the total volume of water that the IQQM computer model predicts would have flowed at the river mouth between 1890 and 1999 if the proposed dam and existing infrastructure had been in place for that period of time. This number is then divided by 110 to convert it to an annual figure. This figure is hugely influenced by the major historic flood events on the Mary, such as the 1893, 1974 and 1999 floods.

As an illustration, at the proposed dam site it would be possible to remove absolutely all flow from the river for 82% of the time and still achieve a Mean Annual Flow Volume of approximately 85% (Edward 2006).

Schedule 6, Table 6 of the Draft WRP legislation would allow construction of a dam that would reduce the Mean Annual Flow Volume at Fisherman’s Pocket to 70% of pre-development MAFV.

Location of monitoring points

The WRP lists the places in the river (nodes) where river flows must be measured and managed to comply with the legislation. The closest point to the proposed dam where river flows need to be comply with the draft legislation is at Fisherman’s Pocket (node 3 – 170.4 km from river mouth). (Schedule 5 of draft WRP legislation). This is approximately 35 km downstream from the dam wall, and after significant inflows from the major sub-catchments of Amamoor Creek, Six Mile Creek, Deep Creek and Pie/Eel creeks. This location does not provide any direct monitoring or isolation of the downstream flows directly attributable to the proposed dam.

Furthermore, for monitoring of the effects of the dam on seasonal flow patterns, the closest monitoring and regulation point is at Home Park (node 2), which is approximately 116 km downstream from the dam site. (Schedule 6, Table 3 of draft WRP legislation.)

Effects on duration of non-flow events

In the natural state, there are no predicted cease-to-flow periods longer than one month at Fisherman’s Pocket.. (Mary Basin draft Water Resource Plan Environmental Conditions Report 2004)

Schedule 6, Table 5 of the WRP legislation allows the building of a dam that would cease all flow in the river at Fisherman’s pocket for a continuous period of up to 3 months, 16 times in the 110 year study period. The same schedule allows for the construction of a dam that will cease all flow in the river at the same place for a continuous period of up to 6 months, 3 times in the 110 year study period.

Effects on extreme low-flow events

In the natural state, typical daily flows at Fisherman’s Pocket in the driest month of the year (November) are in the order of 171ML.

Schedule 6, Table 1 of the WRP legislation allows the building of a dam that could reduce total flow in the river at Fisherman’s pocket to less than 1ML per day for 18% of the time. 1 ML is approximately one third the volume of a public swimming pool.



Effect on shallow flows

In the natural state, stream depth only falls below 10cm (4 inches) at Fisherman’s Pocket for approximately 2% of the time. (Mary Basin draft Water Resource Plan Environmental Conditions Report 2004). Schedule 6 of the WRP legislation allows the building of a dam that will reduce stream depth to less than 10cm at Fisherman’s Pocket for up to 20% of the time

The same schedule of the WRP legislation allows the building of a dam that will reduce stream depth to less than 30cm (1 foot) at Fisherman’s Pocket for up to 38% of the time. In the natural state, stream depth only falls below 30cm at Fisherman’s Pocket for 20% of the time. (Mary Basin draft Water Resource Plan Environmental Conditions Report 2004)

Effect on seasonal patterns of flow

Schedule 6, Tables 2, 3 & 4 of the WRP provide for no regulation or monitoring of the seasonal pattern of flow at any point in the river closer than Home Park - 116 km from proposed dam wall. This allows the construction of a dam that could totally disrupt seasonal patterns of flow in the river for a considerable distance downstream, until the effect is masked by inflows from a number of major sub-catchments. This raises the very serious question of whether downstream water allocations in the catchment will be available at the time that they are needed.

Effect on the volume of minor ‘flushing’ events.

Schedule 6, Table 6 of the WRP allows for the construction of a dam that could reduce the volume of minor ‘flushing’ flows or ‘freshes’ (ARI 1.5 events) in the river to 68% of what they would be in the natural state. These flows are important for maintaining water quality in the river and ecosystem flow requirements of native fish species.

Conclusion

- *As it currently stands (1st June 2006), the draft WRP legislation allows for considerable alteration of the downstream flows in the Mary River for a distance of more than 100 km downstream from the proposed dam site at Traveston Crossing.*
- *The IQQM modelling of the proposed water infrastructure predicts that, within this region, river flows will be significantly altered.*
- *Any suggestion by public officials that the proposed dam will not have significant downstream flow effects is effectively misrepresenting to the public the information at their disposal, and as such, is in direct breach of their code of conduct and acting against the intent of the Public Service Act 1996 and the Public Sector Ethics Act 1994.*
- *In addition, we submit that the draft Mary Basin WRP legislation is severely flawed because it does not provide adequate protection of river flows down stream from the proposed dam, particularly between Traveston Crossing and Fisherman’s Pocket, just downstream from the City of Gympie.*



References

Queensland Department of Natural Resources & Mines. (2005) **Mary River Basin Draft Water Resources Plan**. November 2005.

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