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MARY RIVER
CATCHMENT
COORDINATING COMMITTEE



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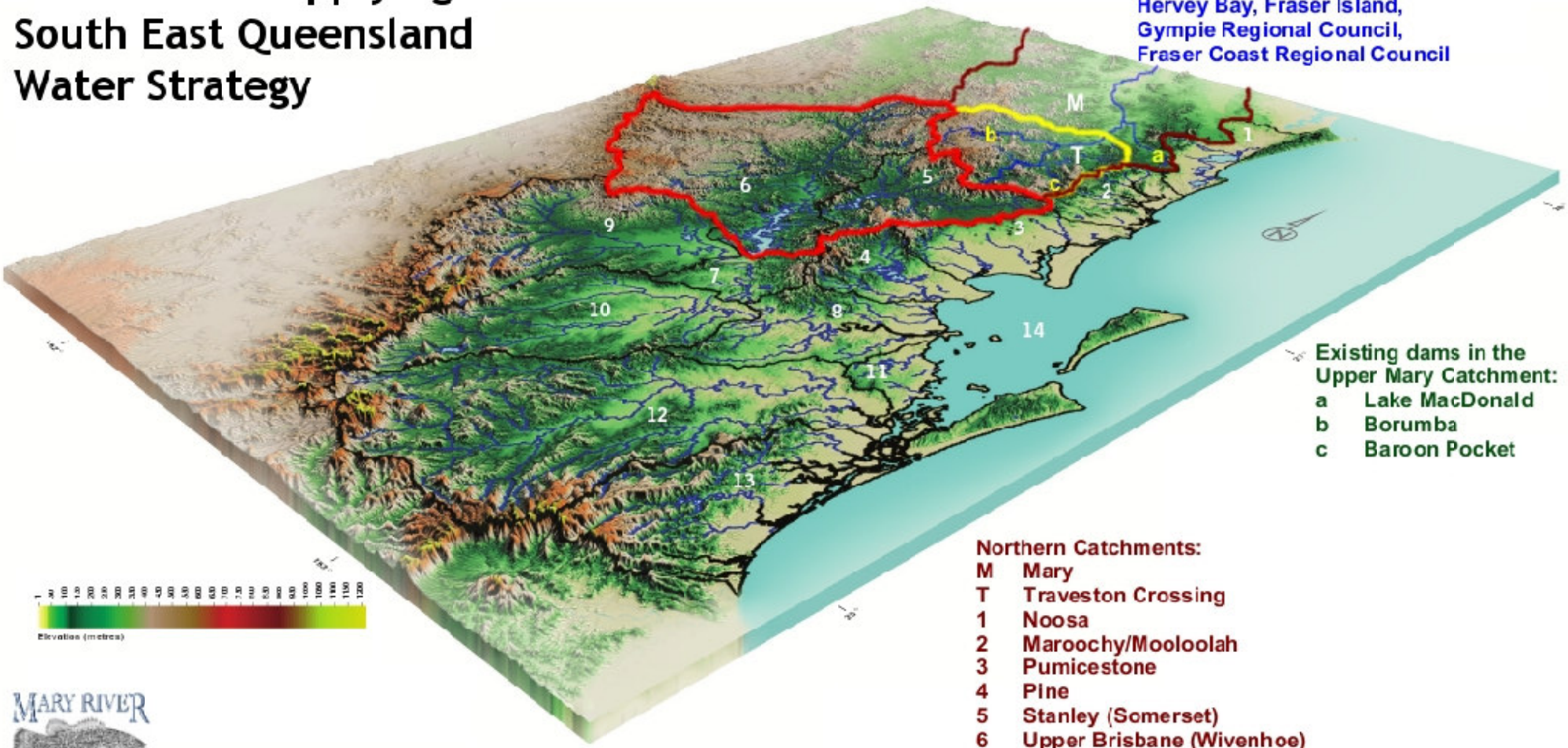
COMMENTS ON THE DRAFT SOUTH EAST QUEENSLAND WATER STRATEGY

July 2008

Catchments supplying water to the South East Queensland Water Strategy



MARY RIVER CATCHMENT COORDINATING COMMITTEE

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INTEGRATED CATCHMENT MANAGEMENT

Resource Centre – Tozer Park Rd, Gympie.
Postal - PO Box 1027, Gympie, Qld. 4570
Telephone (07) 5482 4766;
Fax (07) 5482 5642
E- mail mrccc@ozwide.net.au
Website www.mrccc.org.au

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COMMENTS ON THE DRAFT SOUTH EAST QUEENSLAND WATER STRATEGY
July 2008

Synopsis

- The Mary River Catchment Coordinating Committee (MRCCC) is the recognized peak community stakeholder body for decisions regarding the sustainable management of the Mary catchment.
- The MRCCC strongly supports the Queensland Water Commission's (QWC) Total Water Cycle planning approach underlying much of the SEQ Water Strategy.
- The MRCCC strongly supports the way in which the Strategy plans for a flexible process of adaptive management of supply and demand.
- However, the MRCCC considers that the greatly increased interbasin transfer from the Mary Catchment inherent in the draft SEQ Water Strategy as it stands is in conflict with the aims of the Mary River Catchment Strategy, the Mary River and Tributaries Rehabilitation Plan and the National Water Initiative.
- This conflict relates to the high ecological, social and economic risks associated with the construction and operation of the proposed Traveston Crossing Dam, Northern Pipeline Interconnector and the associated major relocations of community infrastructure combined with the lack of community consultation regarding these aspects of the Strategy during the Mary River water resource planning process conducted under the Water Act 2000.
- The MRCCC believes that a successful strategy could be developed from other progressive components outlined in the draft strategy that could provide an even more reliable, ecologically sustainable and financially responsible urban water supply for SEQ without requiring the proposed level of interbasin transfer.
- Regardless of the contents of final strategy, the MRCCC wishes to develop an effective and cooperative partnership with the QWC to work towards the shared objective of the sustainable management of water resources of the Mary River Catchment.

The MRCCC gratefully acknowledges the support of
The Sunshine Coast Council, Gympie Regional Council and Fraser Coast Regional Council,
the Burnett Mary Regional Group, the National Landcare Programme, the Department of Environment and Water,
the Australian Government Envirofund, the Department of Main Roads,
the Gambling Community Benefit Fund, and Powerlink.

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Report compiled by S. Burgess. (Catchment officer)
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Summary of Comments

The Mary River Catchment Coordination Association is a very active Integrated Catchment Management organization with a committee representing 25 government, industry and community sectors within the Mary Catchment (the MRCCC). The MRCCC has been nationally recognized for the development and ongoing successful implementation of the Mary Catchment Strategy and the Mary River and Tributaries Rehabilitation Plan. These documents outline a 50 year strategic vision and planning framework for creating a sustainable and productive future for the river system and were developed in active partnership with the Queensland Government, local communities and industry. Throughout a long history of working with the national and international scientific community the MRCCC has amassed considerable technical and scientific knowledge about the Mary Catchment, and has built a strong network of active community support throughout the region.

Although not in the South East Queensland (SEQ) Region, the water resources of the Mary catchment now form a major component of the Queensland Water Commission's (QWC) draft water strategy for SEQ, via inter-basin transfer from the Mary to the Moreton basin. Under these circumstances, the MRCCC expects to be a major stakeholder in any consultation process regarding the Strategy and would like to foster an effective working relationship with the QWC to continue to work towards the sustainable management of the water resources of the Mary catchment.

The MRCCC maintains that such an inter-basin transfer of water resources is an option of last resort, only to be considered after all less risk-prone options have been fully implemented. This is in keeping with current international understanding of ecologically sustainable water development. We refer to the 2007 International Declaration on Environmental Flows ("the Brisbane Declaration") and the WWF 2007 paper on Inter Basin transfers in support of this stance. Even the very first stage of this increased interbasin transfer, the extra extraction from Obi Obi Creek via Stage 1 of the Northern Pipeline Interconnector, is predicted to have major adverse environmental impacts on the nationally protected high environmental values of Obi Obi Creek.

The MRCCC is wholly supportive of the QWC's "Total Water Cycle" planning approach, which suggests that many excellent supply alternatives and adaptive management proposals are available within the Strategy framework which *could* be used to produce an economically efficient and ecologically sustainable strategy for both the SEQ region and the Mary catchment. However, the MRCCC considers that the potential for stormwater harvesting and roof rainwater collection in synergy with waste water recycling schemes in coastal urban areas is not fully recognized in the draft strategy.

The major flaw in the QWC draft strategy is that it does not investigate *any* alternatives to the proposed interbasin transfer from the Mary Catchment, when the information available to the QWC throughout preparation of the Strategy suggests many viable alternatives to this inherently risky and potentially destructive option. It amounts to an admission that the QWC has failed (or has not been given the political freedom) to provide a truly sustainable and self-reliant strategy for the management of water resources within the Moreton basin itself.

The information about the future demand/supply balance presented in the Strategy for 'non-drought' conditions confirms the major conclusion drawn from the 2007 ISF/Cardno study commissioned by the Mary Valley Council of Mayors; that once the Western Corridor recycling scheme and the Tugun desalination plant come on line, yield from the proposed Traveston Crossing Dam would do nothing but provide a useless surplus for more than a quarter of a century. Under such circumstances, it is remarkable that alternatives to such a financially, socially and environmentally costly project are not investigated in the draft strategy.

Under drought conditions, however, the MRCCC is concerned that the technical data used by the QWC pertaining to drought resilient yields from the Mary catchment do not agree with up-to date measured stream flow data or with the extensive hydrological modeling of the catchment conducted for the Mary Basin Water Resource Plan and the EIS for the proposed Traveston Crossing Dam. The document also portrays a false impression of the relative hydrological performance of the upper Mary catchment in comparison to the Somerset/Wivenhoe catchment that is not supported by either the yield data or the geography of the catchments. Some of this information has already been published by the MRCCC in technical reports and submissions (MRCCC 2008), and some of it is clear in evidence submitted to the 2007 Senate Inquiry by the Queensland State Government.

The MRCCC also maintains that allowing for only a 10% reduction in surface water storage yields in response to climate change is likely to underestimate the true effect. Preliminary work by the MRCCC suggests that allowing for a 30% decline in streamflow in the Mary over the 50 year life of the Strategy would be more prudent, in the light of current knowledge. Already, measured streamflow at the Traveston Crossing dam site

over the last decade (which includes major flood events) is less than 60% of the long-term averages used to develop the Mary Basin Water Resource Plan. Of particular concern is the assumption inherent in the data presented that the yield from stage 1of the proposed Traveston Crossing Dam (and the proposed Wyaralong dam) will not be reduced under the climate change scenario in the Strategy. Hopefully this is an oversight that will be rectified in the final document.

The assertion that the Strategy will result in an additional 10GL/annum allocation of water for rural use in the Mary Valley is misleading, because it does not account for the loss of at least 11GL/annum of allocations that are directly associated with the property resumptions required for the proposed Traveston Crossing Dam. On these grounds alone the proposed strategy would therefore result in a net loss of water allocations in the Mary Valley. In addition, it is impossible to account for the effects on the relative reliability of high and medium priority water allocations in the Mary system without knowing the water-sharing rules in the Resource Operating Plan for the Mary – which has not yet been released.

It is surprising that the 288 GL of additional drought contingency storage that will become available in Wivenhoe Dam when it is compulsorily upgraded to comply with ANCOLD guidelines is not accounted for in the Strategy. This amount of additional storage is far greater than the 153 GL of total storage in the proposed Traveston Crossing Dam stage 1, and utilizing it has an estimated marginal cost of only $5-10 million (QWC 2007) – compared to a cost of at least $1.7 billion for the Traveston proposal. Hydrological studies conducted by Gilbert and Associates (2007) for the QWC illustrate that there are likely to be many occasions when the Somerset/Wivenhoe system could benefit from extra storage capacity. The argument that the Moreton Water Resource Plan (WRP) would not allow an increased yield from the Brisbane River does not apply to this option, because the additional storage would be more appropriately used to prolong the supply period at a given annual yield, rather than increase the annual rate of abstraction.

Although the Strategy recognizes a responsibility for maintaining waterway health in SEQ, it does not specifically recognize any responsibility for maintaining stream and estuarine health or water resource security in the Mary catchment. In a strategy that includes scenarios in which nearly 20% of SEQ's urban water supply could be sourced from the Mary catchment, this is a worrying oversight. The Strategy document implies that the QWC's obligations under the National Water Initiative (NWI) regarding the ecological sustainability and equity of resource allocation within the Mary catchment are discharged by simply complying with the Mary Basin WRP. This is not so. The MRCCC, which was intimately involved in the consultation process underlying the Mary Basin WRP, considers that the WRP does not meet the requirements of the NWI with respect to impacts on the Mary River estuary, community consultation and transparency of process. In addition, the WRP specifically does not relate at all to the ecological sustainability of specific infrastructure proposals in the plan area. By law, these need to be assessed via a separate EIS process for each specific infrastructure proposal.

The ecological sustainability of the major Mary Basin water infrastructure projects included in the draft strategy has not yet been assessed under either the State Development and Public Works Organization Act or the Federal Environmental Protection and Biodiversity Conservation Act. The assessments for stage 2 of the Northern Pipeline Interconnector and stage 1 of the Traveston Crossing Dam have not been completed, and the assessment process for the Northern Regional Pipeline project, which is also required to deliver the yield from the proposed dam at Traveston Crossing, has not yet begun. All of these projects have been built into the draft strategy as it stands with the unsupported assumption that they will be found to be ecologically sustainable. The MRCCC holds the strong view that the Traveston Crossing Dam proposal, in particular, is not ecologically sustainable.

The MRCCC has concerns that some comparisons of the energy and financial costs of the various water supply options in the Strategy are biased towards underestimating the costs associated with the 'committed' infrastructure projects in the Strategy (like the proposed Traveston Crossing Dam) and overestimating the energy and financial costs associated with water supply options that could be viewed as alternatives to these 'committed' projects (such as additional desalination capacity). One example of this is where the capital and energy costs attributable to desalination are based on whole-of-plant estimates from the Tugun plant (not the marginal cost of additional capacity in an existing plant), and includes the entire pumping cost attributable to the Southern Regional Water pipeline. However, the energy costs attributable to water supply from the Traveston Crossing Dam include none of the energy costs associated with transporting this water via the Northern Pipeline Interconnector to its destination. Similarly, none of the capital or operating costs of the northern pipeline projects are incorporated into the cost of water from the Traveston Crossing dam. This sort of biased economic comparison could lead to outcomes that are in clear conflict with the intent of the National Water Initiative.

The evidence in support of these comments is presented in the following sections.

MRCCC's standing as a stakeholder body

The Mary River Catchment Coordination Association is a very active Integrated Catchment Management organization with a committee representing 25 government, industry and community sectors within the Mary Catchment (the MRCCC). The MRCCC has been nationally recognized for the development and ongoing successful implementation of the Mary Catchment Strategy and the Mary River and Tributaries Rehabilitation Plan. These documents outline a 50 year strategic vision and planning framework for a creating a sustainable and productive future for the river system and were developed in active partnership with the Queensland Government, local communities and industry. Throughout a long history of working with the national and international scientific community the MRCCC has amassed considerable technical and scientific knowledge about the Mary Catchment, and has built a strong network of active community support throughout the region.

Since 1993, the Mary River Catchment Coordinating Committee has forged productive partnerships with thousands of stakeholders throughout the Mary Catchment and beyond: government departments at all three levels, industry, farmers, large and small rural and urban landholders, landcare and environment groups, recreational and commercial fishing interests, forestry, irrigators, Waterwatch volunteers, researchers, universities, school students… the list goes on.

These partnerships have triggered a groundswell of interest and activity in natural resource management across the Mary Catchment, and have led to the MRCCC winning the National Rivercare Award in 2004 and the Queensland Rivercare award in 1999, 2003 and 2007. The Mary River and Tributaries Rehabilitation Plan was the first catchment-wide rehabilitation plan in Queensland. Since 2000 this plan and the MRCCC's Catchment Strategy have guided the coordinated restoration of stream health in the catchment, and have informed regional Natural Resource Management plans and national threatened species recovery plans. These documents were developed by the MRCCC in close partnership with the Queensland Government.

This submission on the draft SEQ Water Strategy is based on the resultant accumulated body of technical knowledge of the Mary Catchment, along with the results of the studies undertaken over the last 5 years during the preparation of the Mary Basin Water Resource Plan (WRP).

Based on this accumulated evidence the MRCCC believes that two items of 'committed' water supply infrastructure upon which the draft strategy is built are in clear conflict with the goals and objectives of the Mary River Catchment Strategy and the community visions outlined in Mary River and Tributaries Rehabilitation Plan. These are the proposed new dam at Traveston Crossing and the associated Northern Pipeline interconnector. These proposals are discussed in more detail in a separate section of this submission.

There were significant flaws in the process behind the Mary Basin Water Resource plan which are outlined in a separate section of this submission. Based on the WRP, the draft SEQ water strategy encompasses scenarios which could see an additional 150 billion litres/annum removed from the Mary Catchment, leaving none of the strategic reserve of water identified in the WRP for managing future demand within the Mary basin itself.

Although the scientific information gathered during the water resource planning process has added greatly to the understanding of the catchment, the political process of deliberate deception of the community which lay behind the later stages of the drafting of the Mary Basin Water Resource Plan led to the entire community reference panel unanimously withdrawing their support for the draft plan before it became legislation. It would be most unfortunate if this approach to the community consultation process was to set a precedent for future community engagement in water resource management issues in the Mary catchment.

The wider community is beginning to understand many of the causes of environmental degradation. The farming community is embracing sustainable production as a means of increasing productivity whilst protecting natural assets. Triple bottom line objectives are now common-place in strategic planning documents like the SEQ Draft Water Strategy. Governments at all levels should now recognize that community engagement is critical to the success of environmental repair and ecological protection initiatives. The MRCCC has a legitimate role laid out in its constitution to represent community interests in these matters within the Mary catchment.

Risks associated with the interbasin transfer component of the Strategy

The MRCCC maintains that such an inter-basin transfer of water resources is an option of last resort, only to be considered after all less risk-prone options have been fully implemented. This is in keeping with current international understanding of ecologically sustainable water development. We refer to the 2007 International Declaration on Environmental Flows ("the Brisbane Declaration") and the WWF 2007 paper on Inter Basin transfers in support of this stance. Even the very first stage of this increased interbasin transfer; the extra extraction from Obi Obi Creek via Stage 1 of the Northern Pipeline Interconnector, is predicted to have major adverse environmental impacts on the nationally protected high environmental values of Obi Obi Creek.

A large part of the draft strategy is the reliance on interbasin transfer from the Mary Catchment to fill future water supply/demand gaps in the Moreton Basin. The Mary catchment lies outside the SEQ water planning region, and water resources in the catchment are needed for the Wide Bay/Burnett regional water strategy, and for the sustainable management and conservation of the high ecological values and biodiversity of the Mary catchment and the receiving estuary.

The risks associated with this aspect of the Strategy are treated very lightly in the draft document, and the rhetoric that surrounds public presentations of the Strategy is worrying. On repeated occasions, the QWC has referred to the water grid reducing 'wasteful' spillage from storages and seems to place little economic value on water that flows from river systems to the sea. In the case of the Mary, spillage from storages such as Baroon Pocket Dam and Lake MacDonald provide essential environmental services for the tributaries and the rest of the Mary catchment downstream. Large flood flows from the mouth of the Mary provide essential freshwater and nutrient pulses to the Great Sandy Strait and Hervey Bay. Much of the water needed for the downstream communities throughout the Mary catchment originates from the wet south eastern corner of the catchment. The flow modeling data presented in the EIS for the Traveston Crossing Dam proposal suggests that diverting this resource via a midstream dam is likely to impact adversely on dry season flows in the river throughout the rest of the catchment.

The very first step in the increased interbasin transfer from the Mary is the taking of the full allocation of water from Baroon Pocket Dam via the Northern Pipeline Interconnector. This allocation was created with the construction of that dam in the late 1980's, at a time when the full ecological significance of the stream flow regime in Obi Obi Creek downstream of the damsite was not known nor considered. However, the full allocation of water from this stream has never been extracted to date, partially due to environmentally sensitive management of the dam by the past operators. Now that the ecological values of this stream are better recognized (it is federally listed as a wetland of national significance and provides habitat for EPBC threatened species), it is disheartening to consider that the draft strategy has earmarked this full allocation for interbasin transfer. This is in direct contradiction to clear written advice by the Technical Advisory Panel appointed to the Water Resource Plan that this would be detrimental to the high environmental values of Obi Obi Creek.

The MRCCC would like to refer the QWC to the 2007 'Brisbane Declaration' on environmental flows which was the principle policy outcome of the 2007 International RiverSymposium sponsored by the Queensland Government. The summary of this document is highlighted and reproduced at the end of this section.

Recent academic research into interbasin water transfers (eg. Ghassemi & White 2007) clearly document the risk of undesirable economic, social and environmental outcomes when the full scope of the implications for both the donor and recipient basins are considered. A direct quote from this work seems to be applicable to the proposed interbasin transfer which underlies the draft SEQ strategy.

"Most large water infrastructure and inter-basin water transfer projects in the past were the domain of engineers and government bureaucrats. Many were undertaken with minimal assessment of environmental or social impacts and with rudimentary and in some cases doubtful cost–benefit analyses. Community participation in such schemes was either nonexistent or token. While many have benefited from such schemes, there has often been marked inequity in the distribution of benefits. There have been significant social, economic and environmental impacts, with poor and indigenous communities frequently bearing a disproportionate share of the impacts. Globally, millions of people have been displaced by large water projects. The predicted performance of water projects and projected cost recovery and profitability has often proved illusory. Rivers and lakes have dried to a trickle, aquatic ecosystems and biodiversity have declined, and sediment delivery to floodplains has been reduced while expensive dams have silted up. As a result of these issues, the World Bank has been impelled to change its policy and currently demands detailed impact assessment of water resources development projects before approving their funding. Furthermore, the World Commission on Dams, following its extensive review of major water infrastructure projects, has recommended seven strategic priorities and related policy principles for making decisions on dam construction and inter-basin water transfer."

In 2007, the Worldwide Fund for Nature also produced a report on interbasin transfers, similarly based on a series of case studies throughout the world. Some of the main conclusions of this report are highlighted and reproduced at the end of this section.

It is important to note that there was absolutely no public consultation regarding this component of the Strategy (interbasin transfer from the Mary) before the infrastructure that would enable it to occur was announced as a *'fait accompli'* by the Queensland Government in 2006. In spite of the overwhelming public opposition to the proposal, particularly from within the Mary ('donor') Catchment, there is still no attempt at all in this draft SEQ water strategy to examine any alternatives to the Traveston Crossing Dam and the associated Northern Pipeline Interconnector. Although a wide range of progressive supply and demand management options are addressed in draft strategy, none of them are considered as alternatives to the 'committed' infrastructure. In this respect, the experience of Queensland citizens in the Mary Valley is no different to the experiences outlined in the WWF report from other parts of the world.

The Brisbane Declaration

Environmental Flows[1] are Essential for Freshwater Ecosystem Health and Human Well-Being

This declaration presents summary findings and a global action agenda that address the urgent need to protect rivers globally, as proclaimed at the 10th International River*symposium* and International Environmental Flows Conference, held in Brisbane, Australia, on 3-6 September 2007. The conference was attended by more than 750 scientists, economists, engineers, resource managers and policy makers from more than 50 countries.

Key findings include:

Freshwater ecosystems are the foundation of our social, cultural, and economic well-being.
Healthy freshwater ecosystems – rivers, lakes, floodplains, wetlands, and estuaries – provide clean water, food, fiber, energy and many other benefits that support economies and livelihoods around the world. They are essential to human health and well-being.

Freshwater ecosystems are seriously impaired and continue to degrade at alarming rates.
Aquatic species are declining more rapidly than terrestrial and marine species. As freshwater ecosystems degrade, human communities lose important social, cultural, and economic benefits; estuaries lose productivity; invasive plants and animals flourish; and the natural resilience of rivers, lakes, wetlands, and estuaries weakens. The severe cumulative impact is global in scope.

Water flowing to the sea is *not* wasted.
Fresh water that flows into the ocean nourishes estuaries, which provide abundant food supplies, buffer infrastructure against storms and tidal surges, and dilute and evacuate pollutants.

Flow alteration imperils freshwater and estuarine ecosystems.
These ecosystems have evolved with, and depend upon, naturally variable flows of high-quality fresh water. Greater attention to environmental flow needs must be exercised when attempting to manage floods; supply water to cities, farms, and industries; generate power; and facilitate navigation, recreation, and drainage.

***Environmental flow management* provides the water flows needed to sustain freshwater and estuarine ecosystems in coexistence with agriculture, industry, and cities.**
The goal of environmental flow management is to restore and maintain the socially valued benefits of healthy, resilient freshwater ecosystems through participatory decision making informed by sound science. Ground-water and floodplain management are integral to environmental flow management.

Climate change intensifies the urgency.
Sound environmental flow management hedges against potentially serious and irreversible damage to freshwater ecosystems from climate change impacts by maintaining and enhancing ecosystem resiliency.

Progress has been made, but much more attention is needed.
Several governments have instituted innovative water policies that explicitly recognise environmental flow needs. Environmental flow needs are increasingly being considered in water infrastructure development and are being maintained or restored through releases of water from dams, limitations on ground-water and surface-water diversions, and management of land-use practices. Even so, the progress made to date falls far short of the global effort needed to sustain healthy freshwater ecosystems and the economies, livelihoods, and human well-being that depend upon them.

Alternatives to interbasin water transfers

(from WWF 2007, Pipedreams? Interbasin water transfers and water shortages)

Established IBTs are typically characterised by the following negative attributes:

- Demand management in the recipient basin was not a serious part of preplanning for IBT, leading to on-going water wastage there;
- The IBT became a driver for unsustainable irrigation or urban water use in the recipient basin;
- The scheme created strong dependence on the IBT in the recipient community, thus promoting unsustainable activities, and removing the need to improve water use efficiencies or find alternative water sources/supplies;
- The IBT is now seen as inadequate and other water supplementation approaches have been required such groundwater extraction, desalinisation, recycling etc;
- The donor basin experiences serious environmental impacts through reduced flows especially;
- The IBT created or escalated threats to critically endangered species, Ramsar listed wetlands and protected areas;
- The transfer scheme saw economic benefits in recipient basin at the cost of communities in the donor basin;
- The IBT served as a catalyst for social conflict between the donor and recipient basins or with government;
- The IBT has not helped the situation of the poor affected or displaced by it;
- Post IBT mitigation costs have proven very high, either environmentally or socially; and,
- Governance arrangements for some IBT's are weak, resulting in budget blow-outs or corruption (in some cases).

The lessons we can learn from existing IBTs are as follows:

1. Before progressing to commission an IBT, there should be a comprehensive assessment of the alternatives available for providing the water needed in the proposed recipient basin. Can this water be provided through demand management, water recycling, water harvesting etc, before considering a major infrastructure investment with its possible environmental and social impacts?
2. Undertake a cost-benefit analysis of the likely impacts of the IBT on both the donor and recipient basins, considering the full range of environmental, social and economic implications.
3. Ensure risks associated with the proposed IBT; environmental, social and economic are clearly understood, and if the project proceeds, governance arrangements are adequate to manage and minimise these risks.
4. Undertake consultations with the likely directly and indirectly affected people, before a decision is taken regarding the possible IBT (and certainly before it becomes fait accompli) ensuring they understand and have the opportunity to voice views on likely cost, benefits and risks.

References

Ghassemi, F & White, I. (2007) Inter-Basin Water Transfer: Case Studies from Australia, United States, Canada, China and India. Cambridge University Press.

International RiverFoundation (2007). The Brisbane Declaration on Environmental Flows. www.riverfoundation.org.au/images/stories/pdfs/bnedeclaration.pdf

WWF (2007) Pipedreams? Interbasin water transfers and water shortages. www.wwf.org.au/publications/pipedreamsibtsfinaljune21.pdf

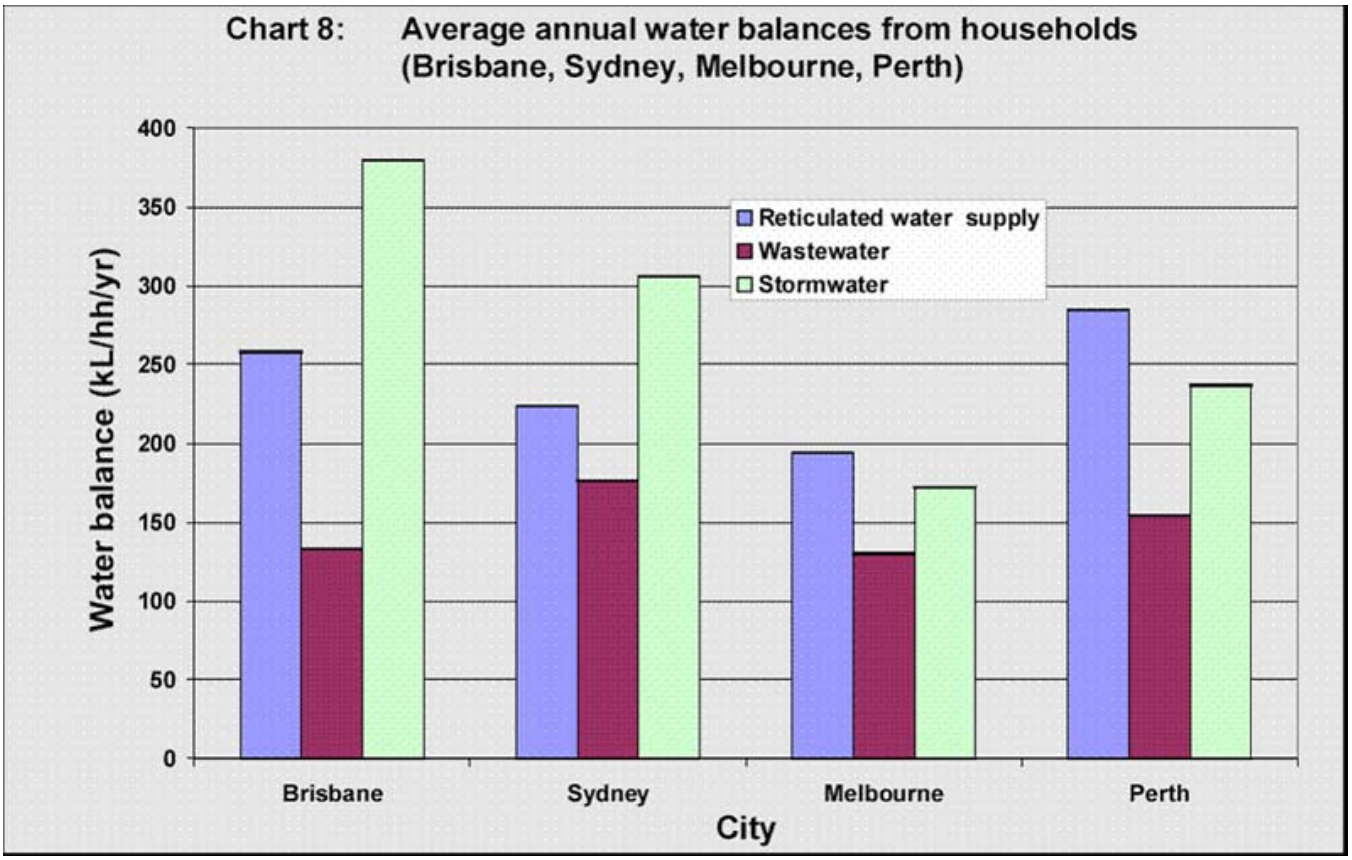
Total water cycle planning, adaptive supply/demand management.

The MRCCC is wholly supportive of the QWC's "Total Water Cycle" planning approach, which suggests that many excellent supply alternatives and adaptive management proposals are available within the Strategy framework which could be used to produce an economically efficient and ecologically sustainable strategy for both the SEQ region and the Mary catchment. However, the MRCCC considers that the potential for stormwater harvesting and roof rainwater collection in synergy with waste water recycling schemes in coastal urban areas is not fully recognized in the draft strategy.

Although not concisely defined in the document, the 'Total Water Cycle' planning approach alluded to in the draft strategy is aligned with the core values of the MRCCC and the principles of Integrated Catchment Management. As such, the MRCCC is fully supportive of the wide range of supply technologies, efficiency and demand management measures incorporated into the draft strategy. As pointed out in the 2007 review of water management options for SEQ conducted by Cardnos and the Institute for Sustainable Futures (Turner et al 2007), the fact that much of the projected demand will come from new urban growth suggests that there is a huge potential for Water Sensitive Urban Design to play a major role in providing future water security.

One major resource that seems to be not sufficiently investigated in the draft strategy is the rainfall that falls directly on the SEQ urban footprint. Work summarized by the Urban Water Security Research Alliance shows that for Brisbane, the size of this one water resource is far greater than the total water demand, yet only a very small amount of it is utilized. Considering that this is a resource which is available right at the site of demand, without needing to be pumped long distances, it is an obvious part of the Total Water Cycle which presents an enormous opportunity which does not seem to be fully recognized in the Strategy. The size of this underutilized resource is illustrated in the graph below (*Coombes and Barry 2007*, taken from the 'Water For Our Cities' working group report to PMSEIC)

Research by the alliance suggests that in 2004, SEQ's urban water consumption was 450 GL/annum, while stormwater runoff alone in the same period was estimated at 870 GL/annum.



In weighing up the various water supply options which can contribute to the SEQ water strategy, the MRCCC considers that the commission could take an even more holistic view of the comparison of alternatives than what has been included in the Strategy to date. An example of the issues that the MRCCC feels should be considered has been included in the tables on the following 2 pages (drawn from the MRCCC comments on the EIS for the proposed Traveston Crossing Dam)

Another progressive aspect of the draft strategy, which is wholly endorsed by the MRCCC is the explicit readiness approach which holds the next anticipated piece of water supply technology in readiness for the appropriate supply/demand trigger. Closely matching the supply and demand curves in this way provides water security, and maximizes the economic efficiency of public investment in water infrastructure. This very enlightened response to uncertain future demand and supply situations is in stark contrast to the remarkable mismatch between projected supply and demand produced by the so called 'committed' infrastructure over the next quarter of a century. (See figure E, p21 of the draft strategy – reproduced below).

Lack of demand for Traveston Crossing Dam in non-drought conditions

The information about the future demand/supply balance presented in the Strategy for 'non-drought' conditions confirms the major conclusion drawn from the 2007 ISF/Cardno study commissioned by the Mary Valley Council of Mayors; that once the Western Corridor recycling scheme and the Tugun desalination plant come on line, yield from the proposed Traveston Crossing Dam would do nothing but provide a useless surplus for more than a quarter of a century. Under such circumstances, it is remarkable that alternatives to such a financially, socially and environmentally costly project are not investigated in the draft strategy.

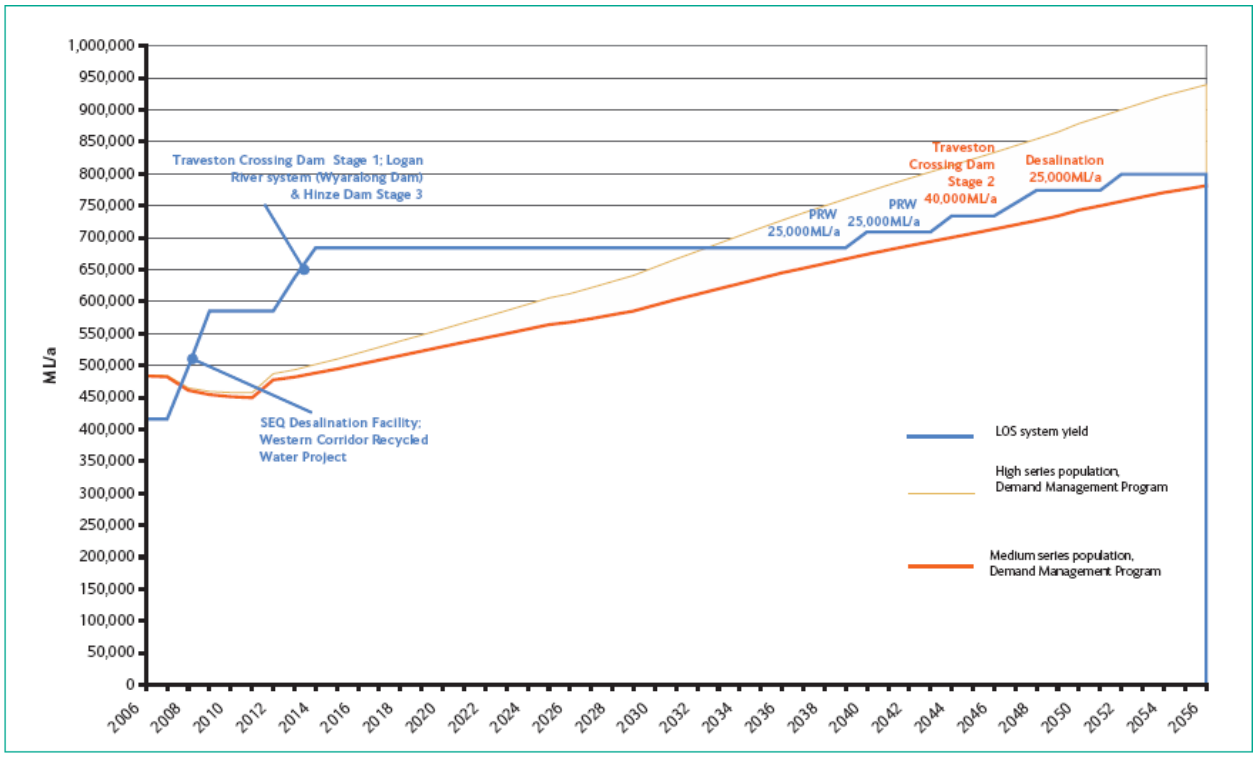


Figure E Projected infrastructure program: Climate resilient and surface supplies (medium series population growth and no allowance for climate change)

The socially and economically irresponsible anomaly of investing billions of dollars of public money in water infrastructure for the purpose of producing a large water surplus decades ahead of the predicted demand is a major flaw in the Strategy as it stands.

Multiple-Criteria appraisal of water strategy components

The MRCCC is wholly supportive of the QWC's "Total Water Cycle" planning approach, which suggests that many excellent supply alternatives and adaptive management proposals are available within the Strategy framework which could be used to produce an economically efficient and ecologically sustainable strategy for both the SEQ region and the Mary catchment.

The following tables show the type of concerns that the MRCCC considers should be explicitely addressed in the selection of the various components in the Strategy. (Source: MRCCC submission on the EIS for the proposed Traveston Crossing Dam –2008)

	Demand management	Rain water tanks	Stormwater harvesting	Non-potable recycling	Potable recycling	Desalination	Traveston Crossing Dam
Biodiversity	No direct impact	No direct impact	Possible positive impacts –improved stream water quality	Possible risks in case of system failure. Possible waste stream impacts.	Possible risks in case of system failure. Possible waste stream impacts.	Possible waste stream or local infrastructure impacts.	Many certain direct adverse impacts on threatened and protected species and ecosystems
Energy	Saves energy	Energy use dependent on pump efficiency and use of gravity (tank stands)	Energy requirement for local pumping and treatment	Energy requirement for local pumping and treatment	High energy requirement for multiple water treatment stages and long distance pumping (if pumped back to dams)	High energy cost - but produces high-quality water under pressure. Able to be positioned close to demand thus reducing energy required for pumping.	Very high energy requirement for long distance pumping and water treatment. Energy cost comparable to desalination.
Climate change	Essential first response to climate change.	Rainfall will be significantly less affected than streamflow or runoff with predicted climate change. Tanks provide efficient storage	Urban hard surface stormwater runoff will be less affected than streamflow with predicted climate change. Cisterns provide efficient storage.	Will operate under drought conditions but supply gradually decreases	Will operate under drought conditions but supply gradually decreases	Will operate under drought conditions. Supply remains constant and reliable throughout	Based on the capture and highly inefficient storage of surface water streamflow, - the most unreliable fresh water resource under predicted climate change. Will fail within 18 months of commencement of drought conditions.
Social equity	Some risk of the pricing impact not being equitably distributed	Not available as an option for all members of society	Local infrastructure impacts, but does not displace communities	Local infrastructure impacts , but does not displace communities	Local infrastructure impacts , but does not displace communities	Local infrastructure impacts , but does not displace communities	Unacceptable levels of social disruption and displacement of entire communities. Removes a regional water resource and associated environmental services from one community for the benefit of another with no compensation.
Potential for growth	Essential in the face of growing demand	Resource increases with increased roof area	Resource increases with increased urban hard surface	Resource increases with increasing consumption	Resource increases with increasing consumption	Resource only limited by suitable locations, no volume limitation	Stage 1 proposal already beyond ecologically sustainable level of extraction

	Demand management	Rain water tanks	Stormwater harvesting	Non-potable recycling	Potable recycling	Desalination	Traveston Crossing Dam
Economics *(Marsden Jacobs The economics of rainwater tanks and alternative water supply options 2007)	*Most cost-effective option	*Highly variable – depending on installation details. Competitive with expensive options like Traveston Crossing Dam and desalination	*Comparable to demand management	*Variable – depending on pipeline and pumping costs	*Variable – depending on pipeline and pumping costs	Less expensive than Traveston Stage 1 when delivery costs are taken into account.	More expensive than desalination when all costs (including long distance pipeline, pumping and treatment) are taken into account
Estuarine and marine impacts	No foreseeable impacts	No foreseeable impacts	Beneficial water quality impacts	Possible reduction of nutrient loads in streams	Possible reduction of nutrient loads in streams	Removal of fresh water yield only from source waters. Local infrastructure impacts (tunnels/ pipes). No change to freshwater, nutrient or sediment inflow regime in estuary	Removal of freshwater yield + evaporation and seepage losses from receiving waters. Disruption of freshwater, nutrient and sediment inflow patterns.
Health Risks	No foreseeable impacts	Possible water quality and mosquito risks from un-maintained tanks	Possible insect risks	Possible risks of cross contamination with potable supply	Possible risks in the case of multiple barrier breakdown. (Needs to be viewed in context of comparison with current water and sewage treatment practices)	No obvious impacts. High quality treated water.	Risks associated with poor water quality – algal toxins, mercury, manganese and other metals. Local health risks from greatly increased mosquito habitat.
Landscape impacts	No impacts	Minor visual impact	May have positive impact on degraded urban landscapes	Minor- associated with works and pipelines.	Minor impacts associated with works and pipelines	Minor impacts associated with works and pipelines. Small land area footprint for treatment plant	Major change to landscape, loss of large area of good quality agricultural land, major riverine ecosystem changes for 200 km downstream.
Irreversibility of impacts	No adverse impacts	Disposal problem of used tanks and pumps.	Storage structures may be difficult to decommission. Not likely to have large scale irreversible impacts	Easy to switch off and/or decommission. May be long term impacts associated with waste stream	Easy to switch off and/or decommission. May be long term impacts associated with waste stream	Easy to switch off and/or decommission. No long-term ecosystem or biodiversity impacts likely.	Difficult to decommission. Large scale and long-term ecosystem and biodiversity impacts may be effectively irreversible

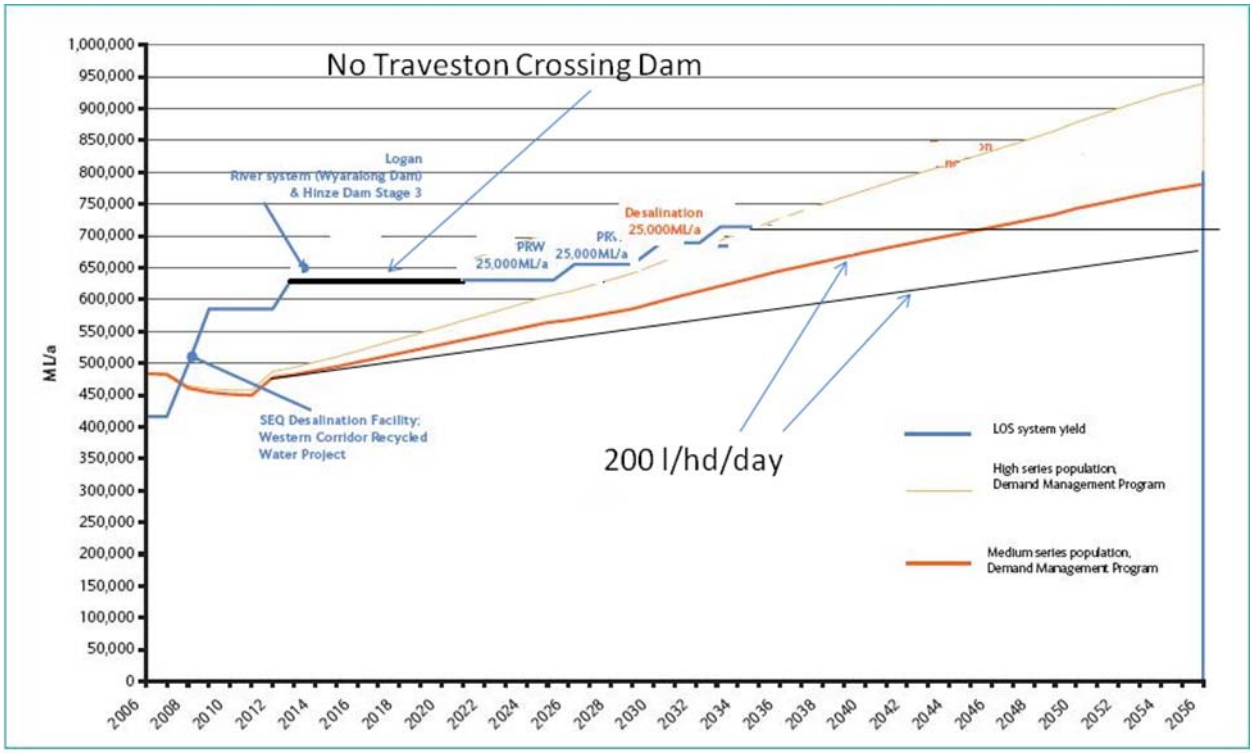
No review of strategies that don't rely on 'committed' infrastructure

The major flaw in the QWC draft strategy is that it does not investigate any alternatives to the proposed interbasin transfer from the Mary Catchment, when the information available to the QWC throughout preparation of the Strategy suggests many viable alternatives to this inherently risky and potentially destructive option. It amounts to an admission that the QWC has failed (or has not been given the political freedom) to provide a truly sustainable and self-reliant strategy for the management of water resources within the Moreton basin itself.

The QWC maintains that a review of the 'committed' infrastructure in the Mary Catchment is beyond the scope of the SEQ water strategy planning process. However, it is entirely illogical to quarantine the most expensive, publicly controversial, environmentally risky and potentially unreliable (in light of climate change) components of the draft strategy from being reviewed in the context of the role they play in the overall SEQ water strategy. The only conclusion that can be drawn is that these pieces of infrastructure have been politically quarantined from review.

At a very simplistic level, it is possible to demonstrate an example of an alternative supply/demand scenario from figures in the draft strategy that does not involve the construction of the Traveston Crossing dam stage 1 or 2 and does not require additional interbasin water supply from a raised Borumba Dam. Such a simple option could still supply water security over the life of the Strategy, and represents a saving of billions of dollars, without the environmental risks posed by the proposed dam. This can be illustrated by simply 'cutting and pasting' components of the supply curve from the Strategy to bring forward options already in the Strategy, and allowing for a 15% reduction in the demand curves (commensurate with achieving 'target 200' rather than 'target 230' consumption behavior). This is only suggested as an example. It may be more effective to encourage effective Water Sensitive Urban Design (WSUD) in all new developments to achieve a similar flattening of the demand curve. The point made here is that no scenarios like this have been investigated in the Strategy.

This represents a major flaw in the current water planning process in SEQ, and may result in SEQ being burdened by a drastically sub-optimal water strategy for the next century and beyond.



Cut

Example of 'cut and paste' replanning, without a mid-stream dam on the Mary River and reduced interbasin transfer. One of the many possible scenarios not investigated in the draft strategy.

Drought strategy assumptions for the Mary in conflict with data

Under drought conditions, however, the MRCCC is concerned that the technical data used by the QWC pertaining to drought resilient yields from the Mary catchment do not agree with up-to date measured stream flow data or with the extensive hydrological modelling of the catchment conducted for the Mary Basin Water Resource Plan and the EIS for the proposed Traveston Crossing Dam. The document also portrays a false impression of the relative hydrological performance of the upper Mary catchment in comparison to the Somerset/Wivenhoe catchment that is not supported by either the yield data or the geography of the catchments. Some of this information has already been published by the MRCCC in technical reports and submissions (MRCCC 2008), and some of it is clear in evidence submitted to the 2007 Senate Inquiry by the Queensland State Government.

The front cover of this report shows two satellite images of the Mary River taken during the 2002 dry season. The top left shows the Mary River Barrage just upstream of Maryborough, illustrating a total disconnection between the river and the sea. The fishladder to the right of the barrage wall is totally non functional under these conditions, and no freshwater is reaching the estuary at all. The dark colour upstream of the barrage is a continuous mat of water hyacinth and salvinia which totally covers the water surface under these low flow conditions.

The photograph at the middle left of the cover illustrates the level of urban and irrigated agriculture development surrounding the lower Mary irrigation scheme, and the close proximity of this region to the internationally protected wetlands of the Great Sandy Strait, Fraser Island and Hervey Bay. Sustainable management of water resources in dry seasons is very difficult at this end of the river, and any additional stress from increased extraction within the catchment at these times, however small the marginal impact might be perceived to be, is a clear step in the wrong direction.

The picture at the centre top shows the pool in the river where Gympie draws its urban water supply, downstream of the proposed Traveston Crossing dam site. In 2002, Gympie's urban water supply was threatened, and even the relatively small amount of water extracted at this point was sufficient to stop the river from flowing. (This supply is provided for by a high priority allocation from Borumba Dam further upstream).

In the natural state, the main trunk river would be expected to experience periods of time where it retreats back to a series of disconnected deep pools. However, the highly developed demand for irrigated agriculture and existing urban development throughout the river means that the wise management of the river during these natural dry spells is critical. Adding another large demand from interbasin transfer is expected to make the management of these critical periods even more difficult, and risks pushing the health of the river past the threshold of its natural ability to recover.

In this light, it is worrying that the QWC does not seem to be using the most up-to-date information relating to the flows experienced by the Mary River over the last 7 years to inform the calculation of drought resilient yields available from the Mary River during droughts.

It is also worrying that the draft strategy plans for an additional 40GL/annum of urban supply from a raised Borumba Dam, when the IQQM modeling conducted for the Mary Basin WRP only identified 25GL/annum of additional high priority yield from this proposal. In addition, this yield calculation did not take into account the impact of the much drier years we have experienced from 2000 to 2007, and the predictions that such conditions are likely to become more likely in the future.

In the supporting documents for the draft strategy, QWC assumes a drought resilient yield of 46GL/annum from the Traveston Crossing Dam site. This calculation is supposedly based on the lowest historically recorded inflow, with allowances made for evaporation. The actual recorded total streamflow at this site for the 2006/2007 water year (from NRW data recorded at the Dagun Pocket gauging station) was only 26GL. Much of this flow came from regulated releases from Borumba Dam. This would imply that the drought resilient yield of this site (using the methodology outlined in the supporting documents for the Strategy) is actually zero.

The MRCCC has published an analysis of modeled and actual streamflow data in the river, focused on conditions over the last 10 years and the daily hydrographs published by QWI in the EIS for the proposed Traveston Crossing Dam. (Burgess 2008, *Hydrological Analysis of the Flow and Storage Data Presented in the Environmental Impact Statement for the Proposed Traveston Crossing Dam*). Figures from the publication are reproduced below.

Effect on the surface water resource in the river at Dagun Pocket

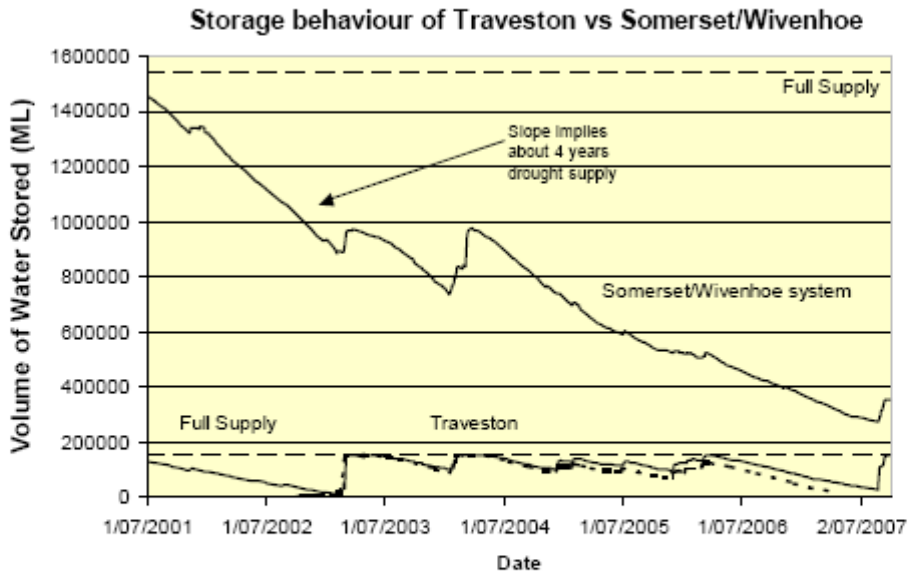
	Gauged flow: Current usage. (GL/annum)	Modelled flow : full extraction of current allocations & no dam (GL/annum)	Modelled flow: Stage 1 TCD (GL/annum)	Reduction from gauged flows: S1 TCD %	Modelled storage losses from Stage 1 TCD		
					Seepage (GL/annum)	Evaporation (GL/annum)	Total (GL/annum)
1999	1660	1586	1481	11%	9	39	48
2000	355	333	254	28%	9	38	47
2001	232	215	174	25%	8	35	43
2002	43	26	16	64%	4	18	23
2003	330	300	130	61%	7	30	38
2004	303	288	175	42%	8	35	44
2005	122	113	32	74%	8	34	42
2006	98	83	32	67%	8	34	42

MARY RIVER CATCHMENT COORDINATING COMMITTEE

Figure 15. Annual streamflows and storage losses.
(Proponent's data from report 17, proponent's evaporation and seepage model, proponent's storage geometry, NRW Watershed data, Sunwater Online data with MRCCC corrections)

Comments on proposed Traveston Crossing Dam EIS

As shown in the figure below, these data imply that at the 'Level of Service' (LOS) yield of 70 GL/annum, the proposed dam at Traveston Crossing would only provide approximately 18 months of supply in a prolonged drought situation.



MARY RIVER CATCHMENT COORDINATING COMMITTEE

Figure 2. Volume of water stored in Somerset/Wivenhoe system compared to Traveston.
(Proponent's data digitized from EIS Figure 2.3)

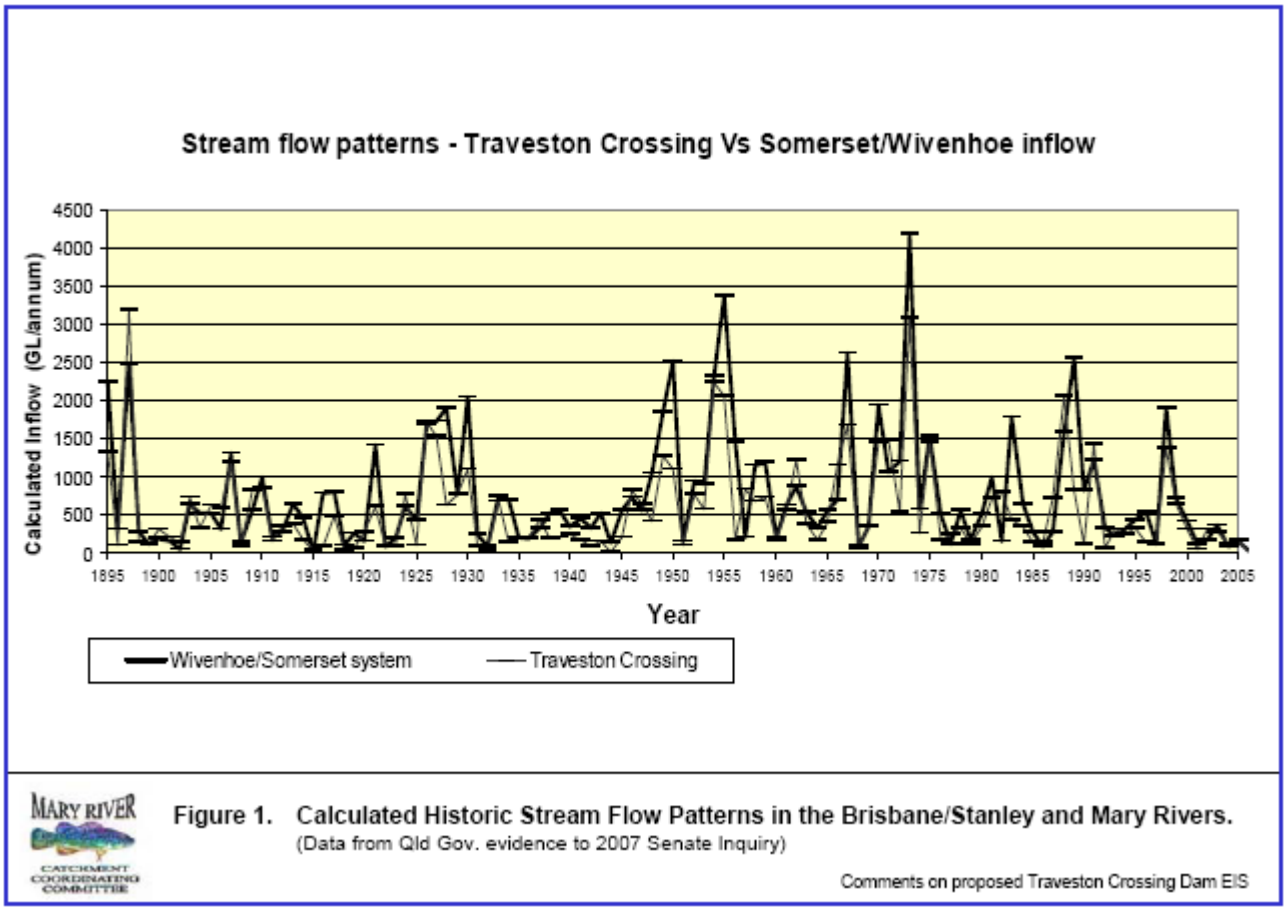
Comments on proposed Traveston Crossing Dam EIS

Another aspect of the drought behavior of the Mary Catchment that seems to be misrepresented in the draft strategy is the location of the Mary Catchment and the implication that it experiences a climatic regime that would somehow be able to provide water for SEQ at times when the rest of SEQ is in drought. This is simply not borne out by the geography of the catchment, nor by an analysis of streamflow data in comparison with the adjoining Somerset/Wivenhoe catchment.

The inside front cover of this document illustrates the relative locations of the catchments which provide water to the SEQ water strategy. In spite of constant reference throughout the Strategy document to the Mary being a 'coastal' catchment implying good hydrological performance, the facts are that the existing Somerset/Wivenhoe catchment comes closer to the coast, is much larger in area, drains the wettest region of SEQ and directly adjoins the wettest part of the Mary catchment. It also is interesting to note that the most 'coastal' major dam is the North Pine Dam, which has not performed well over the last 7 dry years. Over an annual time scale, the major weather systems which provide rain to the north of Brisbane provide rain to the Somerset/Wivenhoe catchment at the same time they provide water to the catchment of the proposed Traveston Crossing dam.

The statistical linkage between the catchments is reflected in the high correlation between modeled annual inflows into the Somerset/Wivenhoe system and modeled flows at the Traveston Crossing damsite. This correlation can be calculated from data presented to the 2007 Senate Inquiry, and the analysis is presented below. In simple terms, annual flow at the Traveston Crossing site is about 70% of Wivenhoe/Somerset inflows for the same year. Therefore, a low-flow year in the major Somerset/Wivenhoe system is also a low-flow year at the Traveston Crossing site. It is important to remember that the existing Somerset/Wivenhoe system also has a very large drought reserve capacity (more than 4 years), while the proposed Traveston storage has a very low drought reserve capacity (about 18 months) at the specified LOS yields.

In conclusion, when the Somerset/Wivenhoe system is full (and interbasin contributions not required) so would be the proposed dam at Traveston Crossing. But, when the former is at low levels, a dam at Traveston Crossing will have already been low for a number of years; a non-existent drought strategy.



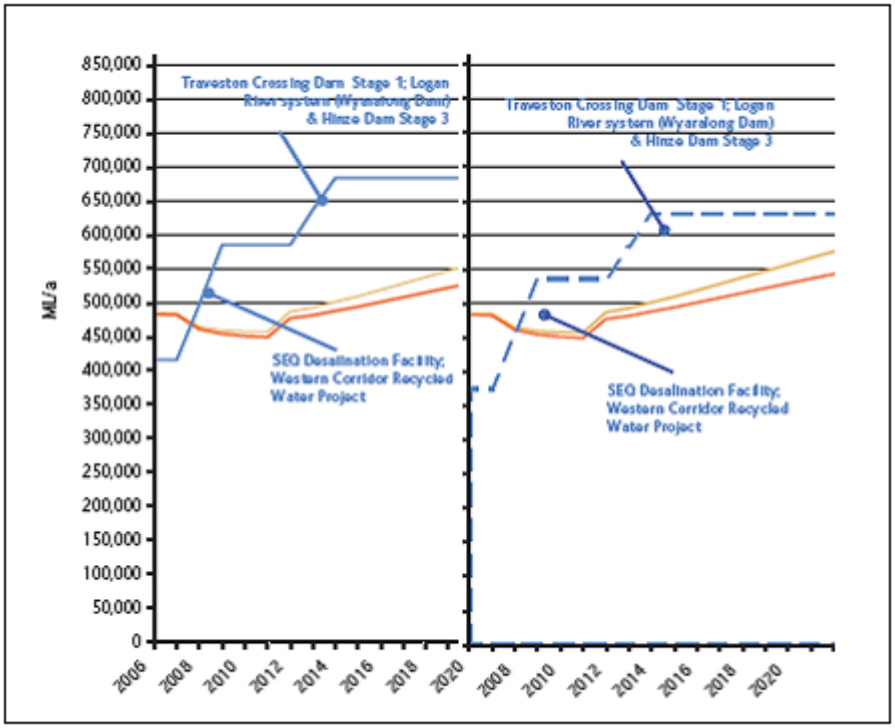
Annual flow at Traveston Crossing = 0.7 * Annual inflow of Somerset/Wivenhoe system
R^2 (1895 – 2006) = 69%

Climate change yield assumptions are inconsistent

The MRCCC also maintains that allowing for only a 10% reduction in surface water storage yields in response to climate change is likely to underestimate the true effect. Preliminary work by the MRCCC suggests that allowing for a 30% decline in streamflow in the Mary over the 50 year life of the Strategy would be more prudent, in the light of current knowledge. Already, measured streamflow at the Traveston Crossing dam site over the last decade (which includes major flood events) is less than 60% of the long-term averages used to develop the Mary Basin Water Resource Plan. Of particular concern is the assumption inherent in the data presented that the yield from stage 1of the proposed Traveston Crossing Dam (and the proposed Wyaralong dam) will not be reduced under the climate change scenario in the Strategy. Hopefully this is an oversight that will be rectified in the final document.

The figure below compares the non-climate change water supply scenario with the climate change supply scenario considered in the draft strategy, displayed side-by-side on the same scale. It is extraordinary that the supply increment from the 'committed' new surface water supplies is not reduced in the climate change scenario. Hopefully this is merely an unfortunate oversight, but it is a worrying symptom of unclear thinking in the ability of the Strategy to deal with the risk of climate change.

The relatively small allowance for reduced yield from surface water supplies in the face of climate change is at odds with general observations of the relationship between streamflow and rainfall. In a catchment like the Mary a small percentage decrease in annual rainfall is likely to result in a much greater percentage decrease in surface water flow. Preliminary estimates from MRCCC analysis on streamflow and rainfall in the catchment suggests that a 10% decrease in annual rainfall in the upper Mary Valley would be accompanied by about a 30% decrease in streamflow at Traveston Crossing. This finding is on a par with work done on other Australian catchments.



Comparison of 'no climate change' (left) and 'climate change' (right) water supply scenarios from the Strategy

The other predicted effect of climate change on the yield of surface water storages is increased evaporation. Estimates from the Queensland Climate Change Centre of Excellence suggest that a 25% increase in surface evaporation is plausible over the time period considered in the Strategy. The effect of this on yields from dam storages does not seem to be addressed in the Strategy document. On a shallow storage such as the proposed dam at Traveston Crossing this effect could easily be in the order of 10GL per annum additional losses on top of the storage losses accounted for in the calculation of non-climate change LOS yields.

Rural water commitments not clear

The assertion that the Strategy will result in an additional 10GL/annum allocation of water for rural use in the Mary Valley is misleading, because it does not account for the loss of at least 11GL/annum of allocations that are directly associated with the property resumptions required for the proposed Traveston Crossing Dam. On these grounds alone the proposed strategy would therefore result in a net loss of water allocations in the Mary Valley. In addition, it is impossible to account for the effects on the relative reliability of high and medium priority water allocations in the Mary system without knowing the water-sharing rules in the Resource Operating Plan for the Mary – which has not yet been released.

An analysis of existing irrigation licences in the project area for the proposed Traveston Crossing Dam shows that properties with approximately 11 GL/annum of medium priority irrigation allocations will be displaced by the dam (NRW data, 2007 senate inquiry). Making only 10 GL/annum of 'new' rural water allocations available downstream of the proposed dam therefore actually represents a net loss of rural water to the Mary Valley, unless this 10GL is additional to existing allocations, therefore reducing the urban yield of the dam by 10GL/annum. This is not made clear in the Strategy.

In addition, the impact on downstream producers with medium priority allocations of having to share water with a large allocation of high priority urban water from the river in times of drought cannot be determined without an analysis of the water-sharing rules in the resource operations plan.

Recommended alternatives in the Moreton Basin not addressed in strategy

It is surprising that the 288 GL of additional drought contingency storage that will become available in Wivenhoe Dam when it is compulsorily upgraded to comply with ANCOLD guidelines is not accounted for in the Strategy. This amount of additional storage is far greater than the 153 GL of total storage in the proposed Traveston Crossing Dam stage 1, and utilizing it has an estimated marginal cost of only $5-10 million (QWC 2007) – compared to a cost of at least $1.7 billion for the Traveston proposal. Hydrological studies conducted by Gilbert and Associates (2007) for the QWC illustrate that there are likely to be many occasions when the Somerset/Wivenhoe system could benefit from extra storage capacity. The argument that the Moreton Water Resource Plan (WRP) would not allow an increased yield from the Brisbane River does not apply to this option, because the additional storage would be more appropriately used to prolong the supply period at a given annual yield, rather than increase the annual rate of abstraction.

Although briefly mentioned in section 6.3, the additional contingency storage available from the mandatory raising of Wivenhoe Dam by 2035 which is needed to comply with ANCOLD guidelines is not discussed in the Strategy. This is extraordinary, considering the findings of the SEQWater report of March 2007 that a 2m raising of Wivenhoe Dam and associated changes to dam operation rules would provide 288 GL of additional contingency storage for a marginal cost (additional to the obligated cost of the ANCOLD upgrade) of 5 to 10 million dollars. In a situation like SEQ, where the main issue is ensuring water supply in unpredictable drought periods, such an option would extend the drought contingency supply period of the Somerset/Wivenhoe system by at least 6 months. This is a bargain for this relatively small initial capital cost.

In 2007 Gilbert and Associates conducted a study for the QWC into the potential for interbasin transfer between the Mary and the Brisbane Rivers, based on a scenario of having a large storage at Lake Borumba on the Mary system. Although this report was not published with the support material for the Strategy, it clearly concluded that there would be far more potential for interbasin transfer from Wivenhoe Dam to a large storage in the Mary Catchment than the other way round. This suggests that it would be far more efficient to simply increase the storage capacity of Wivenhoe Dam, rather than pump the excess inflows into a different storage in the neighbouring catchment. This is also the more desirable environmental outcome in that it would increase the reliability of flows in the Brisbane River downstream of Wivenhoe in times of prolonged drought.

No consideration of decommissioning or replacement of infrastructure

One aspect of existing infrastructure that is not addressed anywhere in the Strategy document is the prospect of increasing maintenance costs and possible need for decommissioning of dams within the life of the Strategy. Overseas experience is showing that decommissioning is becoming a major problem, with typical lifespan of dams being in the order of 100 years. Significant components of the water infrastructure in SEQ will fall into this age class within the life of the Strategy, yet no mention is made anywhere in the Strategy of planning for the decommissioning or replacement of existing infrastructure.

ESD responsibilities to Mary Catchment relegated to Mary Basin WRP

Although the Strategy recognizes a responsibility for maintaining waterway health in SEQ, it does not specifically recognize any responsibility for maintaining stream and estuarine health or water resource security in the Mary catchment. In a strategy that includes scenarios in which nearly 20% of SEQ's urban water supply could be sourced from the Mary catchment, this is a worrying oversight. The Strategy document implies the QWC's obligations under the National Water Initiative (NWI) regarding the ecological sustainability and equity of resource allocation within the Mary catchment are discharged by simply complying with the Mary Basin WRP. This is not so. The MRCCC, which was intimately involved in the consultation process underlying the WRP, considers that the Mary basin WRP does not meet the requirements of the NWI with respect to impacts on the Mary River estuary, in community consultation and in transparency of process. In addition, the WRP specifically does not relate at all to the ecological sustainability of specific infrastructure proposals in the plan area. By law, these need to be assessed via a separate EIS process for each specific infrastructure proposal.

The Mary Basin Water Resource Plan (2006) created a 'strategic reserve' of 150 GL/annum of previously unallocated water in the Mary catchment. The MRCCC considers that the process behind the creation of this hypothetical reserve did not comply with the principles of ecologically sustainable development and simply keeping levels of new water allocation from the river within the limits set by this 'strategic reserve' does not ensure that the resulting level of resource extraction is ecologically sustainable.

Early IQQM modeling of the catchment (by late 2004) showed that if all existing water allocations on the river were fully utilized, the river could not comply with the *a priori* environmental flow objectives suggested by the Technical Advisory Panel for the Water Resource Plan. From late 2004 to late 2005 (when the draft water resource plan was released for public comment), a number of very specific simulations of various large dam options which were located at Traveston Crossing and referred to internally as 'Traveston' were modeled with a view to determining the level of yield that could be made available for out-of-basin transfer via a dam at this location.

While this activity was being undertaken by NRW staff, the prospect of a large out-of-basin transfer of water and the construction of a large midstream floodplain dam to enable this to occur was never discussed with the Community Reference Panel appointed under the Water Act to consult on the Water Resource Plan. Additionally, at no time leading up to and following the publication of the draft Water Resource Plan for public comment was there any public mention of the prospect of a large dam at Traveston Crossing, or of the intent for a large inter-basin transfer of water from the Mary Catchment.

The simulations of the downstream effects of a specific dam at Traveston Crossing were used to write the environmental flow schedules in the draft WRP legislation. These were designed to allow for the predicted flow impacts of the modeled dam. In the 'Environmental flows and scenario implications report' and subsequent internal documents the Technical Advisory Panel for the WRP advised that a large dam in this location would have many undesirable environmental consequences, based on the flow data produced from these simulations.

When the Traveston Crossing dam was publicly announced (after all opportunities for public comment on the Water Resource Plan had ended), it was larger than the dam around which the draft environmental flow objectives had been written. Simulations of a larger dam were run to determine its downstream flow effects and a new set of environmental flow objectives were written around the predicted downstream flow impacts to allow the legislation to fit the dam announced by the Premier. These are the flow objectives that appeared in the final legislation in 2006.

MRCCC has legitimate copies of the IQQM modeling scenarios used during the formulation of the legislation. These were obtained with explicit permission from NRW after the legislation was enacted. Every point raised in this outline of the Mary WRP process can be supported by documentary evidence. Before the WRP legislation was enacted, the entire community reference panel wrote to the minister stating that they felt they had had been 'profoundly deceived' during the WRP process for the Mary River.

Notwithstanding this unsatisfactory process behind the determination of the size of the strategic reserve, the WRP cannot protect the environmental values of parts of the Mary River below the tidal limit, because this is beyond the scope of the waters governed by the Water Act. It is also very clear in law that the environmental impacts of any specific pieces of infrastructure which access the strategic reserve identified in the WRP need to be assessed and approved on a case-by-case basis.

Major 'committed' projects not assessed yet

The ecological sustainability of the major Mary Basin water infrastructure projects included in the draft strategy have not yet been assessed under either the State Development and Public Works Organization Act or the Federal Environmental Protection and Biodiversity Conservation Act. The assessments for stage 2 of the Northern Pipeline Interconnector and stage 1 of the Traveston Crossing Dam have not been completed, and the assessment process for the Northern Regional Pipeline project, which is also required to deliver the yield from the proposed dam at Traveston Crossing, has not yet begun. All of these projects have been built into the draft strategy as it stands with the unsupported assumption that they will be found to be ecologically sustainable. The MRCCC holds the strong view that the Traveston Crossing Dam proposal, in particular, is not ecologically sustainable.

The large amount of scientific study that has been conducted on the Mary River, particularly over the last ten years, increasingly confirms the high level of biodiversity which depends upon the natural functioning of the Mary River. Based on their extensive history of research in the river, the Australian Rivers Institute ranks it as a river of global significance, and regards it as the most significant unregulated coastal river system in the South East Queensland bio-region from a biodiversity and conservation perspective (Arthrington, A. and Bunn, S. 2008– Submission to the EIS for the proposed Traveston Crossing dam).

Early work on Mary River Cod habitat undertaken as part of the Mary River Cod recovery plan and the Mary River and Tributaries Rehabiliation plan showed that the floodplain reaches of river in the footprint of the proposed Traveston Crossing dam provided the greatest number of recorded deep pool habitat ('cod holes') in the catchment. The rehabilitation plan was written to prioritize the distribution of resources for early river restoration works by landholders. These mid floodplain reaches were not given high priority for early restoration works because of the large cost involved in the extensive riverbank restoration needed in many locations within those reaches.

Later work has shown that the floodplain reaches of the main trunk of the river provide crucial in-stream habitat for a number of ecologically significant threatened species, particularly Mary River Turtle, Mary River Cod, Australian Lungfish and, in several crucial locations, Giant Barred Frog. This is evident in the survey data collected for the EIS for the proposed dam at Traveston Crossing, and is the reason why the MRCCC has nominated the ecological communities of the pool, riffle and sand bar sequences of the Mary River floodplain for listing under the EPBC Act. An example of the recorded distribution of these iconic species in the proposed infrastructure footprint is shown on the next page.

In light of the sheer number of Matters of National Environmental Significance that are adversely affected by the proposed dam and the associated pipeline, the MRCCC strongly believes that these projects are not ecologically sustainable. As yet, the proponents have not been able to clearly demonstrate the effectiveness of the measures proposed to mitigate or offset the adverse impacts that are expected to follow from these proposals.

It is premature to lock these projects into the water strategy before their impacts have been fully assessed and an appropriate decision has been made under the relevant state and federal laws.

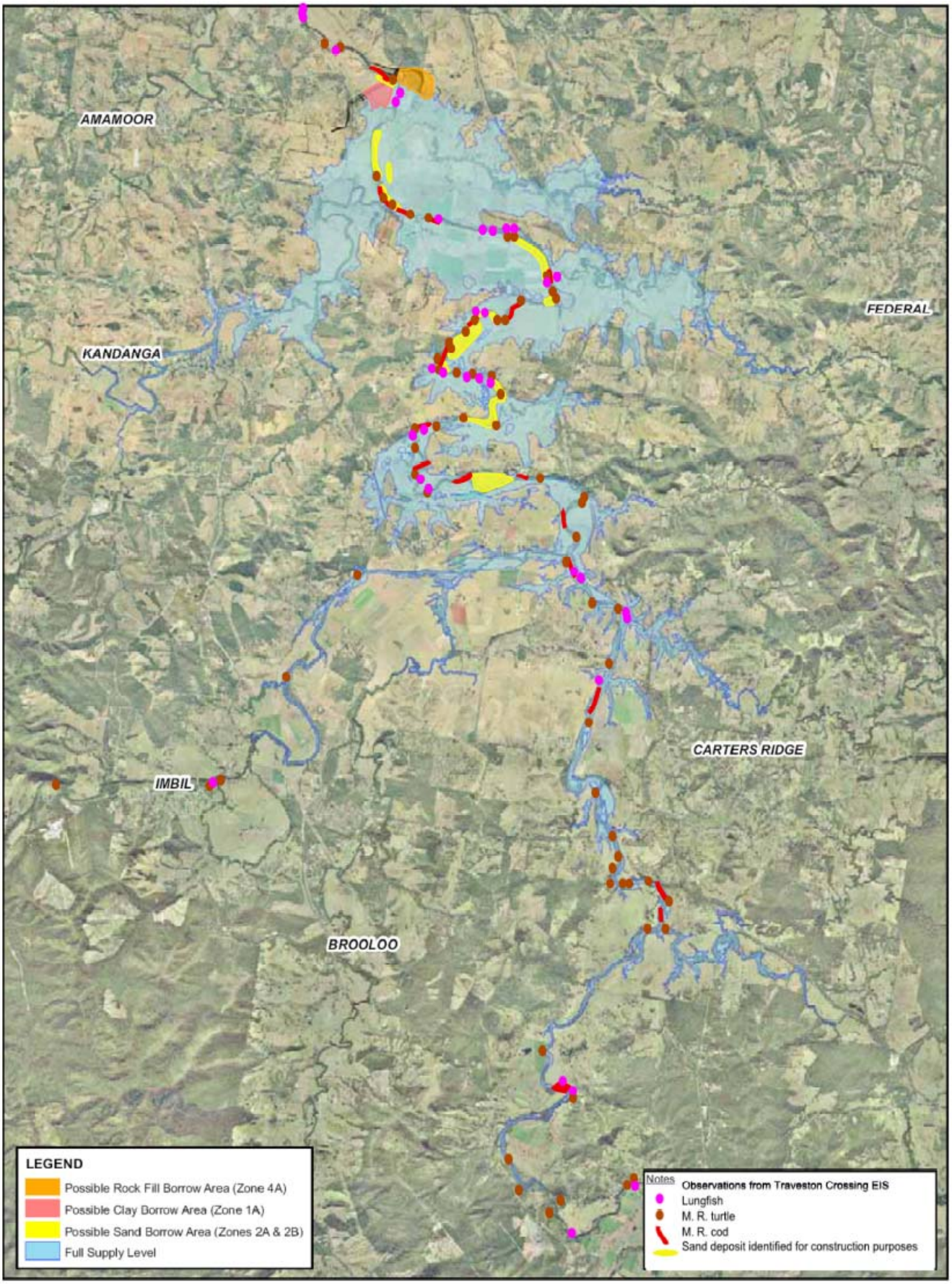


Figure 1. Typical distribution of distinctive fauna species and sand deposits - mid Mary Valley floodplain- Traveston Crossing Prepared from the EIS for the Traveston Crossing Dam proposal - Queensland Water Infrastructure Pty Ltd 2007.
(Sand deposits illustrated represent those targetted for potential extraction during construction, not all riparian sand deposits in the area)

Comparison of alternatives biased in favour of 'committed' infrastructure

The MRCCC has concerns that some comparisons of the energy and financial costs of the various water supply options in the Strategy are biased towards underestimating the costs associated with the 'committed' infrastructure projects in the Strategy (like the proposed Traveston Crossing Dam) and overestimating the energy and financial costs associated with water supply options that could be viewed as alternatives to these 'committed' projects (such as additional desalination capacity). One example of this is where the capital and energy costs attributable to desalination are based on whole-of-plant estimates from the Tugun plant (not the marginal cost of additional capacity in an existing plant), and includes the entire pumping cost attributable to the Southern Regional Water pipeline. However, the energy costs attributable to water supply from the Traveston Crossing Dam include none of the energy costs associated with transporting this water via the Northern Pipeline Interconnector to its destination. None of the capital or operating costs of the northern pipeline projects are incorporated into the cost of water from the proposed Traveston Crossing dam. This sort of biased economic comparison could lead to outcomes that are in clear conflict with the intent of the National Water Initiative.

The 'water grid' is a key element of the Strategy. When comparing possible sources of supply with each other, the Strategy document seems to deliberately downplay the comparative costs associated with connecting these sources to the grid, both in terms of initial capital costs, and the ongoing energy costs of pumping water from these sources around the grid.

A good example is figure 6.10 which suggests that the energy cost associated with water from the proposed Traveston Crossing Dam is about 0.32 kWh/Kl. The text then states:
"Desalination and PRW schemes are five to 12 times more energy intensive than treated dam water as illustrated in Figure 6.10."

This is a deliberate misrepresentation of the numbers published in Appendix B of the Energy Consumption Discussion Paper which accompanies the Strategy document. These numbers show that the energy cost of treated dam water from Traveston Crossing Dam delivered at the Morayfield reservoirs (on the extreme northern fringe of the Brisbane urban area) is in fact 2.36 kWh/kL, more than seven times greater than the figure presented in the Strategy document. This number becomes comparable with the predicted energy intensity of desalinated water based on current best practice energy efficiency. Consumption as low as 3 kWh/kL has already beeen demonstrated overseas (the Tugun plant at 5.1 kWh/kL is based on relatively old technology). As a further example, current research work by Siemens in Singapore has set an efficiency target of 1.5 kWh/kL for producing desalinated water.

The Commission's supply/demand figures imply that once the Western Corridor recycling and Tugun plants are operational there is unlikely to be any urban demand for water from Traveston Crossing for many years, (except in a severe drought – during which it would not be a reliable source). This would seem to allow plenty of time to allow more energy efficient desalination technology to mature. On all other grounds, such as overall environmental footprint, social disruption, effects on receiving estuaries, capital cost, reliability of supply, flexibility of operation and speed of construction, additional desalination capacity is preferable to a dam at the Traveston Crossing site. In any case, SEQ has already committed to and embraced desalination technology, but there is not as yet any irreversible on-ground commitment to a dam at Traveston Crossing.

Of course, what may be better still would be the practical application of Water Sensitive Urban Design principles which also results in the better use of the plentiful urban stormwater resource in SEQ.