WATER AS A FACTOR IN HINTERLAND-COASTAL RELATIONS IN SOUTHERN QUEENSLAND: OUTLINE OF AN ECOLOGICAL HISTORY OF THE UPPER CONDAMINE RIVER

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Abstract

Water has always been a contingent factor in coastal-hinterland relations in southern Queensland given the scarcity of this resource since the first human occupation of Australia. Rich soil, well-watered country (in Australian terms) and close proximity to a seaport have driven development of the region since the British imperial economy first accessed the area in the 1840s. In the 1990s, however, the water resource reached crisis point as new and established industries competed for its limited supplies. While primary and secondary producers vied for its waters, other Australians began to cast a critical eye over the system's biological health. Its scenic, recreational and fishing values had almost disappeared in a generation. However it was the crisis of the entire Murray-Darling system, Australia's largest river system and for which the Condamine is a headwater, which finally focused national and regional concern on the Upper Condamine. This paper argues that sustainable use of the river is essential to economic development of the region. It traces the historical origins of the system's decline and draws some tentative conclusions about the dilemmas facing the system under the new regimes of globalisation and economic rationalism.

Introduction

'Fancy about fifty miles of a river with splendid plains and open forest land...'[1)]

Distance, poor soils and lack of water - these have been the great physical obstacles that

1) Walter Leslie writing home in July 1840, cited in Maurice French, *Travellers in a Landscape: Visitors' Impressions of the Darling Downs 1827-1954*, Toowoomba, USQ Press, 1994, p. 38.

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have plagued Australian life. The discovery of the fertile Darling Downs by Europeans in the early nineteenth century caused great excitement because in this region they finally found good grazing land which was in close proximity to a coastal port, the lifeline to imperial markets. One hundred and fifty years later, these same factors continue to drive economic interest in the region, although today it is Brisbane's proximity to Asian markets rather than European ones that contributes to the region's established attractions of fertility and developed infrastructure.

However, the third physical resource, the waters of the Upper Condamine River, is now struggling to meet investment demands. The biological demise of the river system could not only limit further development but also result in a decline of the regional economy.

This paper will firstly outline the current economic and biological crisis that over-exploitation of the river system has caused. It then seeks to explore the historical origins of this crisis and argues that there have been five distinct phases of human interaction with the river system from traditional Australian use to the current impact of globalisation. It finally seeks to draw some conclusions about future development of water resources for the region.

The State of the River

The Condamine and its anabranches and tributaries are part of the headwaters of the Murray-Darling river system, Australia's largest river system and one of the great river systems of the world. The Condamine is only one of 26 rivers that flow into this system which drains one-seventh of continental Australia, an area the size of France.

On the driest inhabited continent where most of the rain falls on the eastern seaboard, the Murray Darling spreads its waters in a mosaic across southern inland eastern Australia reaching from Queensland to South Australia. About 1.9 million people live in the river basin which includes the cities of Canberra, Toowoomba and Albury. It flows across some of the continent's best agricultural lands whose annual output is valued at $ 8.5 billion.

The demands on its waters are immense. The Murray-Darling provides 60% of all water consumed by Australians. The city of Adelaide draws half of its supply from the system, while many other towns rely on it totally. Consequently most of its flow - about 80% - is diverted into 84 dams along its course as well as many more smaller weirs and even private dams that entrap its waters and exploit them for agriculture and irrigation.

Despite the centrality of the river system to national life, its management is fractured across four state governments and the Australian Capital Territory. In the early 1990s the federal government intervened in an effort to co-ordinate control of its water resources, however, constitutionally water and land policies are state jurisdictions and the Commonwealth

has only been able to share responsibility of this precious natural resource.

In late 1991, over-extraction from the system reached crisis point. In the midst of sustained drought, sickly blue-green algae poisoned the Darling River for more than a thousand kilometres cutting off town water supplies and threatening cattle which drank from its toxic flow. The human impact finally brought the issue of the river's management into the lounge rooms of urban Australians and the economic results of the cumulative degradation of the past 200 years became clear. The clearance of an estimated 15 billion trees from the basin since European settlement has caused widespread dryland salinity. Over-irrigation and irrigation of inappropriate soils has resulted in waterlogging and exacerbated the salinity problem affecting 600 000 hectares of farmlands. Clearance and cultivation to the very edges of streams, in combination with the burrowing habits of the introduced European carp, has caused bank collapses along 2 000 kilometres of the Darling River. Overarching all these problems has been the over-allocation of its waters. Although drought is a natural phenomenon in inland Australia, its impact on the Murray-Darling should occur to a severe enough degree to affect river flows once in every twenty years; under current production regimes the basin experiences drought levels 3 out of every 4 years.[2)]

The crisis directed attention to the system's upper reaches as minimising disruptions along the lengths of its flow became a priority. In 1994, the Queensland Department of Primary Industries, the department then responsible for managing the state's waterways, conducted an assessment of the Upper Condamine and its tributaries. The Condamine rises in the steep uplands of the Great Divide where it flows in generally a northwesterly direction through narrow valleys before it reaches the wide alluvial plains. More than 3900 kilometres of its stream waters 9 million hectares of the rich soils of the Darling Downs. Only10 % of the river's catchment land, predominantly in the uplands, remain forested while over 7 million hectares are subject to grazing or cultivation. The study evaluated the condition of the Upper Condamine from its headwaters through to Loudon Weir, the system's ninth major weir, near Dalby on the north-western Darling Downs.[3)] Although the Upper Condamine is not as degraded as the southern reaches of the Murray-Darling, it is officially classified as being in a moderate to very

2) The information in this section is drawn from the Murray-Darling Basin Commission's website. In particular see 'About the Basin - Resources - Water Use' and 'Water Quality' and 'Land Degradation' headings.
http://www.mdbc.gov.au/Issues/index.html and http://www.mdbc.gov.au/Resources/index.html.

3) Ngaire Phillips & Glen Moller, *Upper Condamine River and Major Tributaries: An Ecological and Physical Assessment of the Condition of Streams in the Upper Condamine River Catchment*, Brisbane, Department of Primary Industries, 1994, pp. 2, 4.

poor condition.

Along half its length the riverbed is now unstable so that the river is now broken into a series of rocky shoals and unconnected still pools. The lack of flow and the high sediment load have been disastrous for the bird and animal life of the river. Even if they survived the changed temperature and flow patterns, clearing of riverbanks has left aquatic life unprotected. The river gums and native reeds and grasses have been cleared and exotic weeds are now the main species which clothe its banks and introduced grasses choke its passage. Whereas the river's edge was once thickly cloaked by native trees and shrubbery along its course, the riverine environment has shrunk to less than 21 metres covering little more than the upper banks. The floodplains which once absorbed its excess waters and flushed fresh nutrients downstream triggering the breeding cycles of its fish, bird and plant life are now cultivated farmlands and towns. The flooding of these plains once fed the system's swamps and billabongs, its aquifers and springs but are now covered by farmers' ringtanks which trap its waters and by levees which rebuff it. The river has been severed from its floodplain. Its environs are now transformed by intensive cropping and grazing and occasional towns although officially the Upper Condamine is defined as 'undeveloped' rural.[4]

Traditional Australian Use

About 100 million years ago volcanic eruptions created the Great Dividing Range and subsequent outpourings of black and red lava formed the region's rich soils. The downs at this time were a shallow inland sea which dried out as the continent of Gondwana drifted north leaving behind deep aquifers, wetlands and the river system which would become known as the Condamine. Fossil remains indicate the immense diversity of life which the region has sustained over the millennia including the diprotodon, a large herbivore, as well as giant wombats and emus which still grazed the area when the first Australians discovered it a minimum of 12 000 years ago.[5]

Whether hunting by the Australians caused the extinction of the large marsupials is

4) Phillips & Moller, *Upper Condamine*, pp. 9-15.

5) For further discussion of primordial conditions see French, *Travellers*, p.10 and Maurice French & Duncan Waterson, *The Darling Downs: A Pictorial History 1850-1950*, Toowoomba, DDIP, 1982, p. 12; Bob Dansie, *A Short History of Gowrie Creek*, Toowoomba, Toowoomba City Council, 1998, p. 1-2.

disputed; [6] certainly their firestick farming maintained the grasslands and increased the palatability and protein content of grasses which encouraged kangaroos and other grazing fauna. The *Giabal, Keinjan* and *Jarowair* peoples who inhabited the river's catchment lands burnt away from the streamsides so that the Condamine's fringing woodlands were also maintained. These people had a vested interested in maintaining the river system because it was integral to their life and economy. They used it for transport, manufacturing canoes from the large hardwoods on its banks. They reaped its vegetable products, early Europeans describing the indigenous river rush as 'quite equal to asparagus'.[7] They harvested its waters, constructing deep wells in rocky sites that were covered to prevent evaporation.[8] They used fishing nets to gather the Murray Cod, mullet and shellfish which were observed by the first Europeans as being 'plentiful' in the system's deep ponds.

The extensive grazing herds of kangaroo and wallaby of the floodplains in combination with the vegetable and fish life indicate that the Condamine was capable of sustaining a high standard of living for the estimated 3 000 tribal peoples who lived in its catchment. This view is reinforced by the evidence that the *Giabal* periodically hosted visits from the *Camillaroi* peoples from northern New South Wales and the *Jagara* from the Brisbane Valley en route to the triennial Bunya festival further north. Thus many hundreds of people encamped by Gowrie Creek to enjoy its bounty for 'a couple of days' preparatory to the main festival. Even after the first disruptions to the native economy by Europeans, the Broadwater wetlands near Dalby sustained a gathering of 400 to 500 indigenous people in the 1860s.[9]

Other evidence indicates that the river system was much more than just an economic resource for its traditional owners. It had spiritual significance and was the site of male and female initiation rites. Thomas Hall' s account of one of these ceremonies is suggestive of the Christian baptismal rite as young males were immersed in the waters of the river. These sites of initiation meant that some sections of the river were taboo because of their greater spiritual significance and were therefore forbidden to members of the opposite sex.[10]

Given the centrality of the river to traditional Australians it is not surprising that its

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6) For a view which advocates this position see Tim Flannery, *The Future Eaters: An Ecological History of the Australasian Lands and People*, Port Melbourne, Reed, 1995.

7) Archibald Meston cited in Dansie, *Gowrie Creek*, p. 2.

8) Maurice French, *Conflict on the Condamine: Aborigines and the European Invasion*, Toowoomba, Darling Downs Institute Press, 1989, p. 34.

9) Dansie, *Gowrie Creek*, p.2; French, *Conflict*, p. 113.

10) French, *Conflict*, pp. 27-28.

attributes influenced their language and identity. Another name for the Giabal tribe was Gomainguru meaning 'men of the Condamine'. Many indigenous terms relating to the river system survived the frontier and have been incorporated into contemporary Australian place names. The township of Cambooya derives its name from the indigenous word for the delectable water rush. Allora is an Anglicization of gnallorah or lagoon, Gowrie was the name of a freshwater shellfish, Jandowae means waterhole and downstream, the name of the township of Goondiwindi means 'a place of wild ducks.' [11]

For thousands of years the Condamine was a site of celebration and spiritual renewal as well as the lifeblood of the human economy but from the 1840s this relationship was to be drastically altered as Europeans elevated the river's economic values above all other human and biological needs.

British Imperial Needs

When on the 1 May 1840, the *Sydney Herald* newspaper announced the European "discovery" of the Darling Downs it emphasised those very features that continue to make the region attractive to economic investors.

> They were free from timber, splendidly watered, of the richest friable mould, and extending to the west and S.W. so far as the eye could reach. ... The advantages this fine district possesses must speedily render it an object of attraction to settlers ... Independently of its high character as a grazing country and its immense extent, it possesses an advantage enjoyed by few ... localities - that of facility of access, as having stores landed by the Brisbane, Logan, or Richmond [rivers], would be within 50 or 60 miles of the new stations, while by land there is a sound and level dray road [to the south].[12]

In the 1830s young European men eager to make money by raising sheep for fine quality wool - which was then fetching high prices from British manufacturers and mill owners - had rapidly taken up land across the grasslands of New South Wales and they now hastily occupied this new northern district. Walter Leslie enthusiastically wrote home to his parents in Scotland of the lease of land that he and his brothers had taken, 'Fancy about fifty miles [eighty kilometers] of river with splendid plains and open forest land on both sides and that is our [grazing] run for which we pay only £ 10 pr ann'.[13]

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11) See French & Waterson, *Pictorial History*, pp. 17, 20; Dansie, *Gowrie Creek*, p.1.

12) Cited in French, *Travellers*, p. 36.

13) Cited in French, *Travellers*, p. 38.

We know from early European accounts that the tree-fringed tributaries of the Condamine winding across the open grassed floodplain had great aesthetic and scenic appeal to the first Europeans. They noted the fine stands of fringing woodlands of river oak (casuarina cunninghamiana,) river redgum (eucalyptus camaldulensis,) Queensland blue gum (eucalyptus tereticornis,) and river cooba (acacia stenophylla) which also dominated the Condamine uplands.[14] 'A beautiful gently undulating pastoral country' was how J.C. Crawford, an early pastoralist recorded his first impressions of the Downs in the 1840s.[15]

Pastoralism had driven them to this remote outpost, however, and it was the demands of pastoralism that dominated their relations with the river. Stock was given unrestricted access to watercourses and their cloven hooves pulverised the soils and stream banks crumbled under their assault. The breach in natural vegetation cover provided an opening for exotic weeds to invade the banks. As early as the 1860s, only two decades after the first stock animals were introduced, there was evidence of serious pasture decline, the native blue grass unable to regenerate because of overstocking. The Darling Downs' soils are highly susceptible to erosion and the combined pressure of the huge introduced flocks and the removal of grass cover on the plains and vegetation on the banks contributed to the sediment loads of the creeks.

Heavy rains now washed rapidly into the system whereas in the past the floodplains and tree fringe had slowly absorbed the run off. The first Europeans, eagerly investigating the geological evidence to assess the soil' s productivity had uncovered evidence of the seasonal variability of water in the region. The periodic flooding which had enriched and fostered the floodplains was now seen as an obstacle and hindrance; simultaneously European grazing practices were increasing the severity and likelihood of floods. The Condamine claimed its first European life in 1843 when John Thane of Ellangowan station drowned crossing a flood-swollen creek.[16] Although in 1845 John Crawford had recorded that he 'bathed in a beautiful waterhole the fish leaping in all directions,'[17] scenic and recreational values were to give way to economic priorities. Europeans wanted water resources that they could control and dominate.

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14) R.O. McCosker, *An Environmental Scan of the Condamine Balonne and Associated Flood Plains*, no p., 1996.

15) Cited in French, *Travellers*, p. 87.

16) Henry Stuart Russell, *The Genesis of Queensland*, Toowoomba, Vintage, 1989, [1st pubd 1888], p. 231; see also Forbes account in cited in French, *Travellers*, pp. 78-79.

17) Cited in French, *Travellers*, p. 87.

National and Imperial Development

The great age of pastoralism predominated up to the 1860s but the political demand to reclaim the colony of Queensland's best agricultural lands for small-scale farming led to new demands on the river system by the human economy. The land reforms of the second half of the nineteenth century derived from a political vision of an enlarged and enlightened rural community which was believed to be a leaven for national and, paradoxically, imperial citizenship. The state was to fund scientific and technical applications to improve agriculture for democratic and redistributive ends. The result was a slow but certain transference of land from pastoral to agricultural use which was accompanied by a growth in towns and social as well as economic development. Although borne of a democratic impulse these developments led to ecological deterioration. Cropping created far more erosion than grazing although at the same time scientific assessment of resources also contributed to the first popular demands for conservation. In spite of this countervailing ethos, the Upper Condamine's deterioration was unchecked. The period of nation building predominates from the 1870s up to the 1940s.

The dream of agriculture replacing sheep farming was initially thwarted by the variable climate and the capital-intensive nature of wheat and cereal production which produced uncertain cash income. Those who did succeed were established on the creek frontages near Warwick in the south and around the waterholes of Toowoomba and Drayton. Cropping required extensive vegetation clearance of these floodplains which in turn accentuated the erosion of the fertile soils and the silt load of the river. Development was slow - even by 1892 after three decades of political propaganda in favour of farm selection there was still only 3 percent of the Downs fertile soils under cultivation.[18]

The turning point was the introduction of refrigeration and government assistance to establish family dairy farms. The application of science and technology for national and imperial goals was succeeding. The regular income from cheese, milk and butter enabled family farms to diversify into grain production as well as maintaining an average farm herd of under 100 cows. The pastures of the Upper Condamine were now providing dairy produce as well as traditional wool production for British markets. A new staple had been found to fund more intensive economic expansion. Within the space of two decades the number of dairy cattle on the Downs increased eight-fold, the number of horses doubled and cultivation for

18) French & Waterson, *Pictorial History*, p. 47.

animal fodder quadrupled. The acreage under wheat and grain production trebled, confirming the commercial consolidation of family farming in the Upper Condamine basin. By World War I the area had become a grain exporter. Although commodity prices fluctuated in the 1920s and 1930s, the pattern of growth in the catchment was set for the next three decades.[19]

The seemingly inexorable expansion of cultivation led to modification of stream banks and floodplains throughout the system. Other than in the steepest uplands, original vegetation cover was cleared. New technology, the locally-produced Southern Cross windmill, enabled the underground springs of the region to be cheaply extracted, which along with dams on private land must have increased water extraction from the system significantly. Nonetheless, flash flooding increased across the region probably as a result of sediment loads reducing the channel depth of creeks and tributaries as well as the removal of forest cover in the headwaters causing faster runoff of water which was once slowly absorbed by old growth forests. The natural water cycle's ability to recharge was being limited through disturbance of floodplain, headwaters and underground water tables.

Although the system was being modified throughout its length there were sections of the catchment where human disturbance was extreme even in the 1870s. By the end of the 1940s the Darling Downs population had passed 100 000 compared with just over 9 000 Europeans at the highpoint of the pastoral era in the 1860s. Almost half these people lived in the three major towns - Dalby in the north, Warwick in the south and Toowoomba in the east. These sites grew up around favourable water supplies, Warwick at the confluence of the Rosenthal Creek and the Condamine and Toowoomba on the wetlands of Gowrie Creek. Not only were these townships built on sites which were naturally prone to flooding but urban development required tree clearance which reduced soil absorption of water and produced an increase in sealed surfaces which increased the speed of storm water runoff so that Warwick and Dalby became subject to flash flooding every five to ten years.

At Toowoomba, European management practices had an immediately degrading impact on the Gowrie Creek wetlands which had been capable of sustaining large numbers of people, albeit intermittently, during Aboriginal times. Orchards were established around the edges of what to European eyes was a swamp. Tree clearance elevated the water table so that the "swamps" spread reclaiming what were now private orchard lands. At the same time European stock constantly crossing the creek in what was the very centre of the growing township

19) Statistics are based on French & Waterson, *Pictorial History*, pp. 49-50.

destroyed the native reeds and other vegetation leaving a boggy morass. The flow between wetland and creek was affected and decaying vegetation emitted obnoxious odours. What had once been a valuable resource of fresh water and abundant plant and animal life was now an obstacle to human transport and communication and resented as a smelly eyesore. Discharge from soap factories, abattoirs and other local industries also ended up in the swamps. Downstream from the town several fellmongeries, boiling down works and tanneries exploited the hides and tallow that were a sideline of the local grazing industry; animal blood and bone byproducts were supposed to be irrigated onto a local field but residents complained of the contamination of Gowrie Creek and called for council to prohibit pollution in 1885. The animal skin processing industries were not the sole cause of the problems in the Gowrie Creek catchment, however. Toowoomba was unsewered and cesspits in urban backyards in Toowoomba's wet climate soon leached into the creek and into the wells that were the main source of freshwater for the town. Public health in the township was consequently poor and triggered several epidemics in the 1870s and 1880s. Although some businesses had briefly used the waters of the creek to power mills, the wetlands were resented more than they were appreciated and in the 1870s engineers drained the much maligned "swamp".[20] The waters of Gowrie Creek which had once been cherished for their abundance were re-channeled away from the town leaving behind an inconsequential little creek that was bridged and sealed and ignored for either economic or recreational uses. Gowrie Creek became a redundant part of town life until a later phase of economic development reconstituted its waters as a threat.

Nation building resulted in the virtual death of parts of Gowrie Creek but the goals of social and economic growth were not necessarily destructive impulses. Scientific applications to economic goals also led to a new assessment and recognition of the country's natural resources. In the last decades of the nineteenth century democratic political movements argued that national greatness ultimately rested on the availability and wise management of natural resources. The great battle of the time was over the forests which were being rapidly depleted. From the arrival of the first Europeans the forests of the escarpment from Killarney in the south to Highfields in the northeast were harvested of their best stands of timber. By the time of the Great War the Queensland state government had resolved to take control of the state's forest resources and the first state forest reserves and national parks were created. Logged but scenic parts of the uplands became national parks while unlogged crown lands

20) Dansie, *Gowrie Creek*, pp. 2-4 and attachments 1, 3-5.

(usually on steep gradients which had prevented their alienation for farming or grazing) became state forests. Community anxiety about scientific-harvesting of the forests were temporarily eased despite the fact that by the end of the 1940s there were still over 126 sawmills operating across the Darling Downs.[21]

The location of the forests and national parks in the headwaters of the Upper Condamine was fortuitous. Scientific studies from the southern parts of the Murray-Darling have indicated a direct link between forest cover and stream flow and conversely between deforestation and downstream drought. For example, although only 1.5% of the catchment area for the Hume Dam is forested, this forest provides between 37 to 41% of inflow into the Murray River. An economic assessment of logging of the Thomson forests in the catchment area from where the city of Melbourne draws its water supply concluded that the forest's water production was of greater economic value than its timber production.[22] The uplands of the Condamine were also the areas of highest rainfall so the preservation of remnant forest cover was doubly beneficial to the river system.

In other respects water conservation faired poorly - scientific management of water resources was interpreted as efficiency and in the case of Australia' s variable climate that meant controlling water so that it would be available in times of drought and restraining it in times of flood. Dams rather than protection of riverine environments were the goal and so Cooby Creek was dammed to provide reliable water supply for the town of Toowoomba in 1940, ending the city' s reliance on wells and rain water tanks.[23]

Although the river was not yet perceived to be suffering from exploitation, the combination of increased human and livestock populations was increasing the basin' s nutrient load at the same time as human engineering was limiting its flow patterns. Dams and weirs impeded the movement of aquatic life, reduced flows affected oxygen levels and stabilised water levels encouraged exotic trees and grasses and discouraged native species dependent on a seasonal cycle of drought and flood. This europeanisation of the Darling Downs environment was hailed as a mark of success - constant streams shaded by exotic willows with golden grain fields and grazing herds marked the successful introduction of European agriculture to a system which operated on totally different principles. The cumulative deterioration of the river system would become more obvious in the next phase of economic development - a phase in which human

21) French & Waterson, *Pictorial History*, p. 88.

22) Michael Johnson & Stephen Rix, (eds) *Water in Australia: Managing, Economic, Environmental and Community Reform*, Leichhardt NSW, Pluto Press & University of NSW, 1993.

23) Dansie, *Gowrie Creek*, p. 4.

ability to disrupt the water cycle reached new heights.

Technological Modernisation and Intensification, the 1950s to the 1970s

In many respects the next phase was merely an extension of the former period of state support for rural development but it was distinguished by technological sophistication which made human impacts on the river significantly greater.

Although direct and indirect government subsidisation of rural enterprises to encourage human settlement and development of the region continued, rural population started to decline in the post World War II era as mechanisation replaced farm labourers. The new machinery was much more efficient at tree clearing, ploughing and harvesting enabling an extension of cultivation into new terrain and more intensive use of established farmland. The impact of tree clearance on water production was not then fully appreciated but the problem of loss of soils was. Over-reliance on heavy machinery degrades the soil through compaction affecting the ability of the soil to absorb water and for plant roots to penetrate. The susceptibility of Australian lands to erosion had been officially recognised in the interwar period and Darling Downs farmers initiated new methods of strip cropping and sowing seed into stubble in an effort to minimise the impact of the new techniques in the 1950s.[24]

Erosion in this period however represented a much more insidious threat to the catchment than the mere increase in sediment loads in a river which in some reaches had a naturally high turbidity. The suspended particles carried more than just clay or nutrients; by the 1950s they were likely to be coated in DDT. Government and business encouraged use of DDT and other organochlorines as a new and exciting technology to boost production. Early organochlorine pesticides were long lasting and transported by air and water to the river where they poisoned riverine biota and entered the food chain by accumulating in the fat of birds and mammals. Aquatic life which escaped toxic poisoning suffered as lower rungs of the food chain were disrupted with some insect and water species increasing because predatory insects were destroyed.

Artificial fertilisers were also increasingly in use in this period, particularly superphosphates which were subsidised by government. Chemical technology succeeded in eradicating insect and weed pests and boosted production. Its negative impacts included modification of the chemical composition of soil although increasing acidity affected only a

24) MDBC website - Land Degradation at http://www.mdbc.gov.au/Issues/index.html.

small part of Upper Condamine grazing lands which are generally alkaline. The phosphorous which binds to soil particles however fed the river algae creating ideal conditions for toxic algal blooms.

The state government's commitment to furthering rural development would also create ideal conditions for promoting algal growth. In the mid-1960s government agencies continued their traditional role of fostering economic growth and rural development imbued with the confidence of the postwar boom and new scientific advances; the environment movement was still largely marginalised and development was unrestrained by realistic assessments of ecological limits. In southern inland Queensland the priority was improved water management to stimulate agricultural expansion through the Upper Condamine Irrigation Project (UCIP). In 1965 at a cost of $ 4.4 million the Queensland government built the Leslie Dam on Sandy Creek near Warwick to provide irrigation water for 93 farms and 9 000 hectares of land. As an inducement much of the water was sold to users at a price well below actual production costs, for example Warwick City Council bought water from the dam for $ 10.30 per megalitre representing a price subsidisation of more than 54 % of the actual cost of delivering the water.[25] The still waters of the Leslie Dam have frequently been a site for blue-green algae blooms temporarily rendering the water unsuitable for stock or human consumption.

Another consequence of the UCIP and encouragement to individual farmers to take up irrigation in this period was the promotion of River Improvement Trusts. These are statutory bodies which receive government funding and have special powers to enter any class of land and to carry out any works upon that land to "improve" the river. Although the Queensland government had established the River Improvement Trusts prewar, their negative effects were only felt in the Upper Condamine once the irrigation project was underway. Improvements usually consisted of re-engineering the river to hasten water flow to benefit irrigators. Trust work included straightening of river channels, removal of trees and bank vegetation and of logs and rocks which were perceived as impeding river flows. Such improvements were disastrous for fish and riverine biota which depended on the vegetation and rock cover and diverse riverine habitats. Government promotion of irrigated agriculture was encouraging a view of the Upper Condamine as little more than a cheap and accessible irrigation ditch.

Although state government policy continued unquestioningly in its goal of facilitating

25) Figures are derived from Appendix 1 attachment to Goondiwindi, Office Memo, 29 February 1996, Department of Primary Industries, Ref. No. A96/54 290/3 (obtained under Freedom of Information); MDBC website - Resources - at http://www.mdbc.gov.au/MDBasin/Resources/Irrigation/index.html. The Leslie Dam was enlarged in 1986 to extend the irrigation scheme to 14 000 hectares.

industry, rural development had lost its nineteenth century vision of democratic and redistributive goals. Small-scale dairying declined in the region in the aftermath of Britain's entry into what was then known as the Common Market in 1970. As Australian primary producers switched to new export markets, grain growing and a new agro-industry of intensive livestock production became more important to the region. 'Family-farms' were bought by neighbouring properties to provide the economies of scale required to be viable in the new trading environment. The perception of farming crisis in the 1970s was the prelude to the restructuring of the 1980s and 1990s as trade became increasingly 'globalised'. State economic policy was no longer to be subservient to social goals as it had been for the past century. Yet state government agencies continued to subsidise the sale of essential natural resources which were publicly owned. The Condamine River was almost being given away for the sake of international markets and the river suffered as a result.

Globalisation, the 1980s and 1990s

Anecdotal evidence indicates that recreational use of farmed and urban reaches of the river, particularly by children, was still common in the 1950s and 1960s.[26] Such use was not possible in the 1990s or at least would have constituted a grave risk to human health. Regular water testing downstream from Toowoomba indicates microbial and bacterial contamination is high, possibly a result of stormwater run-off from the town. The Gowrie Creek subcatchment remains severely degraded despite removal of high polluting industries such as the tannery and the foundry from the sewerage treatment system because of their heavy metal contamination in the 1970s. The problems of the Upper Condamine extend well beyond this subcatchment; depending on seasonal flows faecal coli and oxygen levels are generally recorded at levels which make the water unsuitable for drinking or for swimming and in some troublesome locations occasionally unsuitable even for stock consumption or irrigation.

As a result of export market demand, production in the catchment is now dominated by intensive livestock production, grain and cotton-cropping with only very limited downstream processing. The first produces high volumes of animal effluent contributing high concentrations of E. coli bacteria. Cotton growing relies on substantial chemical inputs. The

26) Individual experiences of the river are being systematically gathered for a research project, 'Listening to Our Elders - An Oral History of the Condamine'. The project is an initiative of the Condamine Catchment Management Association and is due to be completed in 1999.

crop is usually sprayed with more than 10 different chemicals and perhaps 25 applications are made throughout the growing season. It is almost impossible to prevent the escape of these substances into adjoining lands or bodies of water. Most are quite persistent and can remain in the sediments of dams or streams for several months. A wide range of herbicide and pesticide residues is found in both the ground and surface waters of the Murray Darling Basin, and within the Condamine system. Both endosulphan and atrazine are regularly detected above guideline levels. Swiss research found that atrazine (used on grain crops for weed control) is transported and spread around by rain, suggesting that atmospheric transport may be a significant source of contamination of water bodies.[27] Although the most residual of the organochlorines such as dieldrin and DDT were banned as a result of environmental lobbying and popular pressure in the 1980s and 1990s, others such as endosulphan have dire effects on aquatic life. Crop and animal production also continue to contribute a high nutrient and sediment load to the system.

The major problem posed by each of these industries however is their dependence on water. The state government through its Department of Primary Industries continues to promote development projects for the region but as of 1996 the estimated 25 000 megalitres of water available annually in the Upper Condamine was already allocated to existing users.[28] With limited surface supplies from the river, local producers began extracting more from groundwater sources - the below ground aquifers that recharge only slowly. In the mid-1990s the state government was forced to increase controls over groundwater extractions as the aquifers were being mined at a rate in excess of their known recharge.[29]

Furthermore the current international trading environment demands standardisation and reliability of product delivery. Responsibility for meeting these higher requirements is now borne directly by producers as the industry marketing boards, which in the past undertook trading contracts, allocated farm quotas and stabilised pricing for individual growers, have been disbanded on economic rationalist and competition grounds. As farmers aggregate holdings for large-scale monocultural production to guarantee a reasonable rate of return, the individual producer bears an even greater risk.

In 1996 the Queensland State Water Conservation Strategy acknowledged that to be internationally competitive Queensland farms needed to be able to guarantee a regular supply

27) CSIRO 1991 cited in Johnson & Rix, *Water in Australia*, p.100.

28) *State Water Conservation Strategy*, Departments of Primary Industries & Water Resources, Brisbane, 1996.

29) Stallman, 1995, cited in MDBC website - Water Use at http://www.mdbc.gov.au/Issues/index.html.

of high quality produce and that requires secure access to water.[30] Since groundwater supplies are fully utilised this has led to new demands for additional water storages on the Upper Condamine.

The demand for construction of more dams has created a strange alliance of economic rationalists, some Australian governments and environmentalists. Economic rationalists represented by the National Competition Council are concerned about the Queensland state government's aspirations to build and own more dams which, it argues, constitute a form of industry subsidisation. Already other state governments have privatised water supplies and the council insists that Queensland must conform to the national policy of enhancing competition and removing hidden subsidies. Queensland's failure to conform to national policy could result in penalties in the form of reduced Commonwealth Government financial assistance to the state. The Ministerial Council of the Murray-Darling Basin Commission also has concerns about new developments at the Queensland end of the system as there is currently a moratorium on all further diversions from the system until an equitable process is worked out across the states. It is committed to the principles of environmental protection of the basin and the most efficient allocation of its resources, meaning that water is allocated on the grounds of highest value use.[31] These principles were more fully articulated by the Council of Australian Governments (made up of all local, state and territory governments and the Commonwealth) which agreed to implement an environmentally and economically sustainable water industry, including adopting consumption based pricing, full cost recovery and removal of cross subsidies by 2001 and to achieve real rates of return on state-owned water assets.[32] This last point was eagerly adopted by sections of the environment movement because, if the state were forced to charge the full cost of water supplied from expensive new dams, it would greatly increase the price of water to farmers. Leading environmentalists welcomed this as a mechanism to dampen demand for water and force water users to adopt better water efficiency and conservation measures.[33]

The logic of this position has already forced rural industry to forego some of its more extreme water proposals for the Upper Condamine. In the 1990s local lobby groups such as the Condamine River Basin Irrigators Association and Darling Downs Vision 2000 - dominated by

30) *State Water Conservation Strategy*, Queensland Government, 1992, revised 1996.

31) Murray-Darling Basin Ministerial Council, *Setting the Cap: Report of the Independent Audit Group*, November 1996, pp.viii-ix.

32) Council of Australian Governments, *Water Resource Policy*, Canberra. Date?

33) Queensland Conservation Council and Australian Conservation Foundation submissions to National Competition Commission, September 1997.

cotton growing interests - have spent thousands of dollars promoting an interbasin transfer scheme to pipe water from the Clarence River in northern New South Wales to a holding dam or dams which would divert it to the Upper Condamine. In spite of the ecological degradation such a scheme would cause both catchments[34] and the enormous political difficulties in transferring water across political boundaries, local and state governments have persisted in supporting the idea, and have contributed funding for feasibility studies worth hundreds of thousands of dollars. The 1996 State Water Conservation Strategy gave a very preliminary estimate for a Clarence-Condamine diversion project of around $ 200 million. The most recent appraisal of the scheme concluded that to cover capital and operating costs for the two necessary dams, water supplied by such a scheme would cost $ 400 per megalitre in 1996-dollar terms. The threat of full cost pricing has finally forced Darling Downs Vision 2000 to begin looking at more realistic proposals such as improving water efficiency and re-use proposals.[35] However many new development schemes such as two coal-fired power stations - which require between 15 000 and 23 000 megalitres of water per year for cooling - proposed for the western Darling Downs continue to include uncosted interbasin water transfers to the Condamine to resolve the water shortage.[36]

Full cost pricing is therefore problematic. Full cost pricing could well reinforce the negative effects of globalisation on the local community and the river. The liberalisation of world trade is forcing Australia to deindustrialise and to refocus on the provision of cheap food, fibre and energy to world industrial centres such as the United States and Japan.[37] Experience in the Upper Condamine suggests that this process in combination with the implementation of the economic rationalist ideology of full-cost pricing may replicate this pattern within the primary industry sector itself. For example, pork production, both raising and processing, has been well established in the Upper Condamine catchment for many years.[38] However in the

34) See Johnson & Rix, *Water in Australia*, p.119 and John E Miles, (Rankine and Hill, Consulting Engineers) "Feasibility of major water diversion schemes" in *Management of the Murray Darling Headwaters Symposium, 17-19 Sept 1984.* Toowoomba, DDIAE.

35) DDV 2000 talk to Toowoomba & Region Environment Council, 1998 ; More Effective Water Use In the Upper Condamine River Basin: Conjunctive Water Use Options in the Northern Murray Basin, A Collaborative Community-based Project, MDBC, Department of Natural Resources, Queensland, & Darling Downs Vision 2000.

36) Kogan power station proposal wants to draw water from the Burnett River catchment, Wandoan power station proposal suggests transferring water from the Dawson River catchment.

37) Frank Vanclay & Geoffrey Lawrence, *The Environmental Imperative*, Rockhampton, Central Queensland University Press, 1995, ch.2.

38) The KR Darling Downs Bacon factory was established in 1911. French & Waterson, *Pictorial History*, p. 88.

1990s, new European mass production techniques, which minimise costs through large-scale fattening and slaughtering and which also cut and package meats in a style suitable for expanding Asian markets, were developed. To match this output the Australian industry needed to invest in new equipment and technical expertise. However, when a totally foreign-owned pork production company, Danpork, offered to set up on the Darling Downs, even though it threatened to outcompete local producers, it was given support by state government agencies on the grounds that it represented the sort of value-added export product that Australia needed to develop. Danpork represents the onset of vertical integration in the Queensland pig industry, as large overseas investors would control each stage of the production cycle. The biggest hurdle Danpork has faced in establishing itself in the region has been access to sufficient water resources. Intensive feedlots require large volumes of water and Danpork's operations require secure access to 1 200 megalitres of water per year. The city of Warwick has offered to pass its reserve allocation of 500 megalitres from the Leslie Dam to the project and lobbied to have the price remain at its preset 1967 level of $ 10.30 per megalitre representing a subsidy to Danpork of $ 170 per megalitre in 1996 values. Another 500 megalitres is to be supplied by a new weir to be designed and built by the state government with a charge estimated at $ 165 per megalitre to recover capital and operating costs.[39] Water pricing has simply become another of the large capital costs which only agribusiness can afford to meet. Small farmers unable to compete at this level will be reduced to filling only the simplest part of the production chain such as supplying unfattened pigs to the feedlot or growing animal fodder for Danpork's feedmill. Local farmers will be de-industrialised and de-skilled and expensive water resources will be purchased only by those sectors that are already lucrative.

Similar large corporate interests dominate the cotton industry, although on the Upper Condamine many family farms also contribute to the sector. Australia is now the world's third largest exporter of cotton. Farms are large agribusiness concerns, heavily reliant on extensive agri-chemical inputs. At the moment both intensive feedlots and cotton growing are producing high value returns so their monopolising of water resources is consistent with the Murray Darling Basin Commission's principle of allocating water to the highest economic value use. Yet their effects are among the most harmful on the waterway. Farmers engaged in less

39) Department of Primary Industries - Southern Region, Danpork Proposal: Comments on the EIS in relation to Terms of Reference, in F3697J Department of the Premier & Cabinet (obtained under Freedom of Information); Letter from Danpork Australia to Director General, Department of Primary Industries, 3 October 1995, File no. NRM/520/000(170) (obtained under Freedom of Information).

harmful production but receiving lower rates of returns are doubly penalised since the principle of highest value use denies their right to water allocations.

If pricing is to be the main mechanism to implement policy, it may simply increase the economic returns on the water resource without necessarily limiting the river' s degradation. Were this trend to continue we would not only see the total industrialisation of the river but its waters could very likely be owned by foreign investors for whom its recreational, biological and aesthetic values would be irrelevant.

Conclusion

In 1995 the Prime Minister's Science and Engineering Council recommendations for sustaining the agricultural resource base included government funding for removal of weirs on Australian rivers and establishment of crown reserves up to 50 metres wide along major water courses to improve water quality.[40] Such scenarios are widely supported by environmentalists but the views of national organisations such as the Australian Conservation Foundation and of the local Toowoomba and Region Environment Council are dramatically over-shadowed by primary industry producer groups and different levels of government for whom environmental considerations of the river resource are always secondary.

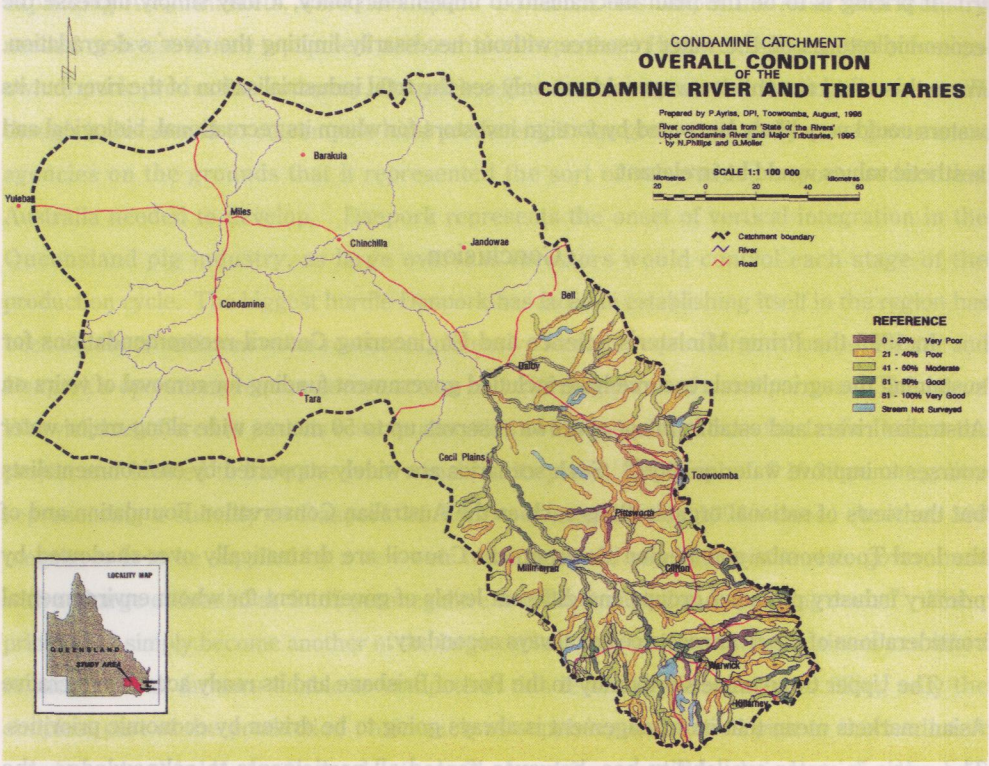
The Upper Condamine's proximity to the Port of Brisbane and its ready access to lucrative Asian markets mean that its management is always going to be driven by economic priorities. The crisis in water availability has, however, forced all participants to acknowledge the system's limits. After years of pressure from the environment movement, local producers now seriously plan waste water re-use - although that too is a limited resource over which local industry is now fighting[41] - and agricultural engineering is moving towards improving the poor 40% water efficiency of irrigated agriculture.[42] Where the idealism of ecological integrity has failed perhaps the economic crisis, which is the result of over-exploitation of the whole Murray-Darling system, will finally result in more sustainable use of the Upper Condamine. Perhaps it

40) *Sustaining the Agricultural Resource Base: Papers Prepared for the Prime Minister's Science and Engineering Council,* Canberra, Commonwealth of Australia, 1995; *Managing Australia's Inland Waters: Paper Prepared for the Prime Minister's Science and Engineering Council,* Canberra, Commonwealth of Australia, 1996.

41) Public consultation meeting for Intergen's Millmerran project, Toowoomba Region and Environment Council, October 1998.

42) Rod Smith, Steven Raine & David McClymont, 'Design for Improved Efficiency of Surface Irrigation Applications: A Best Management Practice,' National Centre for Engineering in Agriculture, University of Southern Queensland, 1997.

will even allow a return to a view of the river as more than just an industrial component.



Source of map.

From Carberry, D.J., (ed.) *An Assessment of the Natural Resources of the Condamine Catchment*, Toowoomba, Condamine Catchment Committee, 1995.