

‘A river with a city problem, not a city with a river problem’: Brisbane and its flood-prone river.

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Abstract

This article explores the relationship between the Brisbane River and its river-plain dwelling citizens between 1824 and 1900 through four distinctive narratives. The first is praise for the river for its economic and utilitarian potential until severe flooding in 1893 prompts a second response of incredulity, followed by a third viewpoint demanding engineering solutions to tame nature to prevent future floods. A fourth subordinate voice appeared as an undercurrent to the demands to control nature, reflecting a burgeoning realisation that human action had created the flood hazard. Settlers had created a problem for both the river and the city. I argue that despite the accumulation of flood experience and climatic knowledge, prospective actions have evolved little since the initial British settlement in 1824.

Introduction

Language is a powerful tool for conveying an idea, value or environmental understanding. Brisbane marketers, promote the aesthetic beauty of its river in the ‘River City’, yet in times of flood, the language used by residents significantly changes to express horror at the city’s river problem. Indigenous people respect the river’s life cycles, with legends of flood in their oral tradition. Although they modified the river’s flow with small weirs to aid fishing, this had minimal impact on the river. By contrast, when penal settlers arrived in 1824 they transformed the river and its floodplain. They sought to exploit the river, and its bankside land, and then control it with cuttings, dredging, truncations and ultimately dams. Their actions were accompanied by language that reveals dominant cultural values which underpin Brisbane’s nineteenth century environmental history. Four different perspectives emerged demonstrating the various ways settlers viewed the river. Through unpacking these cultural understandings, I argue that the settler society’s relationship with the environment left the river with a ‘city problem’.¹

Australian scholars have used settlers’ writings to illuminate how settlers responded to the environment and how these shaped the settler experience.² Here I take a similar approach to the written accounts of the Brisbane settler experience and the 1893 Brisbane River floods to reveal four prevailing perspectives. Diaries and official reports of explorers and penal colony administrators expose the first, a colonial pre-occupation with the navigational potential of the river and the river bank’s economic value as a source of free timber and rich, alluvial farming land. Newspaper accounts, after Brisbane opened to free settlement in 1842, demonstrate that the free settlers, and their political and administrative leaders, had veered little from this economic assessment. The river had great potential as a transportation route, water source and effluent

¹ The phrase ‘A river with a city problem, not a city with a river problem’ comes from an anonymous quote I was given which prompted this article.

² Stephen Martin, *A New Land: European Perceptions of Australia 1788–1850* (St Leonards, NSW, 1993); Katie Holmes and Kylie Mirmohamadi, ‘Howling Wilderness and Promised Land: Imagining the Victorian Mallee, 1840–1914’, *Australian Historical Studies*, 46: (2015): 191–213; Stephen Dovers, ‘Still Discovering Monaro: Perceptions of Landscape’, in S. Dovers (ed.) *Australian Environmental History: Essays and Cases*, pp. 119–40 (Melbourne: Oxford University Press, 1994); Tom Griffiths, *Forests of Ash: An Environmental History* (Cambridge: Cambridge University Press, 2011).

dump. The riverside land offered farmland, workers accommodation on the cheaper, low-lying flats and undulating land for villa estates on the hills. By 1893 a city of over 100,000 people had grown around the river, with little regard to the inherent risk of flooding. When three floods hit Brisbane in one month in 1893, a second viewpoint emerged as residents expressed incredulity and wonder at the force of nature, as the flood torrent washed away the city's bridges and buildings. The British immigrants had never experienced a flood like this in the United Kingdom (UK), an event well beyond their environmental comprehension. These floods fundamentally altered the dynamic between the settlers and their environment and a third viewpoint emerged. The Brisbane River, previously perceived as an economic resource to be exploited, became an 'evil' threat to civilisation. The demand to find engineering solutions to 'tame the river' and prevent flooding became the dominant voice. By controlling the river, its promised potential could be delivered. While this third response prevailed, a fourth ran concurrently. Although less pervasive, and certainly less influential, this understanding realised that the human action created a flood hazard for the city.

As the British settlers colonised Australia, they imported ideals of 'improving' the land, exploiting the environment in the utilitarian pursuit of progress, as they had done throughout their empire.³ Numerous scholars have shown how the language of progress prevailed in the settler narratives of the United States of America (USA), Canada and Australia, full of exaggerated promise of prosperity assured by the gifts of nature.⁴ As settlers pursued their ideals they were confronted by the challenges of nature, in this case, flood. The event was met with shock and wonderment at nature's destructive power as their homes and bridges swept downstream in flood waters. By viewing the devastation through the social construct of flood as a natural catastrophe or Act of God, attention could be diverted away from human action or responsibility, to justify transforming nature.⁵

With floods now firmly identified as the enemy in 1893, a new response emerged that invoked the militaristic language of conquest. As in Europe and North America, the settlers demanded that

³ William Lines, *Taming the Great South Land: A History of the Conquest of Nature in Australia*. (Athens: University of Georgia Press, 1991); Geoffrey Bolton, *Spoil and Spoilers* (Sydney: George Allen and Unwin, 1981); Griffiths, *Forests of Ash*; Timothy Mitchell, *Rule of Experts: Techno-Politics, Modernity* (Berkeley: University of California Press, 2002); Donald Worster, *Rivers of Empire: Water, Aridity, and the Growth of the American West* (New York: Oxford University Press, 1992); Rohan D'Souza, *Drowned and Damned: Colonial Capitalism and Flood Control in Eastern India* (Oxford: Oxford University Press, 2006); Benjamin Cohen, 'Modernising the Urban Environment: The Musi River Flood of 1908 in Hyderabad India', *Environment and History* 17 (2011): 409–432.

⁴ William Cronon, *Nature's Metropolis: Chicago and the Great West*. (New York: WW Norton and Company, 1991); Worster, *Rivers of Empire*; Shannon S. Bower, 'Natural and Unnatural Complexities: Flood Control Along Manitoba's Assiniboine River' *Journal of Historical Geography*, 36 (2010) 57–67; Griffiths, *Forests of Ash*, p. 190.

⁵ Stéphane Castonguay, 'The Production of Flood as Natural Catastrophe: Extreme Events and the Construction of Vulnerability in the Drainage Basin of the St. Francis River (Quebec), Mid-Nineteenth to Mid-Twentieth Century', *Environmental History* 12, (2007): 820–844; Craig E. Colten and Amy R Sumpter, 'Social Memory and Resilience in New Orleans', *Natural Hazards* 48 (2009) 355–364; Tom Griffiths, 'The Language of Catastrophe: Forgetting, Blaming and Bursting into Colour' *Griffith Review* 35 (2012); Ted Steinberg, *Acts of God: The Unnatural History of Natural Disaster in America* (Oxford: Oxford University Press, 2000); Christof Mauch and Christian Pfister (eds.) *Natural Disasters, Cultural Responses: Case Studies toward a Global Environmental History* (Lanham: Lexington Books, 2009).

nature be “tamed”, “harnessed and “controlled” with engineering structures to provide perceived environmental security.⁶ This language of control did not abandon utilitarian notions of improvement but added another layer. While engineering would tame nature, embedded in this notion was the belief that controlling the environment would improve it, and with it, the economy. Peter Coates has shown how colonial settlers regarded modifying the environment with engineered structures as an improvement.⁷ Just as settlement improved the land, canals and dams would improve the river. With the river dammed, settlers could further exploit the floodplain.

Amidst these narratives of utilitarianism, exploitation and domination, a subservient, alternative voice appeared concurrently that showed a small group of settlers were aware of the environmental hazard being created. This viewpoint reflects what is generally regarded as a more modern approach, articulated by Gilbert White’s ground-breaking research in 1942, that recognises that while floods are a natural event, flood hazard is human-created, the inevitable consequence of building on a floodplain.⁸ However, in Brisbane the dominant language of environmental taming and control to achieve prosperity, overshadowed this fledgling environmental awareness. As settlers chased ideals of improvement and economic progress, the ever-increasing riverside urban settlement blithely intensified the flood hazard.

A study of the Brisbane River between 1824 and 1900 provides another urban example of the importation and implementation of these British cultural values on a colonial territory, this time in Australia. However, this case study adds more than volume to the growing literature on the relationship between society and rivers by highlighting a key element of difference; an unfamiliar climate. A focus on the contemporary Brisbane narratives illustrates how settlers struggled to understand their new climate. A small body of Australian and New Zealand scholars has identified climate history as a neglected field, but one of importance as climate shaped the settler

⁶ David Blackbourn, *The Conquest of Nature: Water, Landscape and the Making of Modern Germany* (New York: WW Norton and Company, 2006), p. 191; Mark Cioc, *The Rhine: An Eco-Biography, 1815–2000* (Seattle: University of Washington Press, 2002); Mark Everard, *The Hydro-Politics of Dams* (London: Zed Books, 2013), p. 155; Emily O’Gorman, *Flood Country: An Environmental History of the Murray-Darling Basin* (Collingwood: CSIRO Publishing, 2012), p. 24; Sara B Pritchard and Thomas Zeller, ‘The Nature of Industrialisation’, in Martin Reuss and Stephen H Cutcliffe (eds.) *The Illusory Boundary: Environment and Technology in History* (Charlottesville: University of Virginia Press, 2010) p. 85; Griffiths, ‘Language of Catastrophe’; Sara Pritchard, *Confluence: The Nature of Technology and the Remaking of the Rhône* (Cambridge: Harvard University Press, 2011); S. Castonguay, ‘Production of Flood’.

⁷ Peter Coates, ‘Can Nature Improve Technology?’ in Martin Reuss and Stephen H Cutcliffe (eds.) *The Illusory Boundary: Environment and Technology in History* (Charlottesville: University of Virginia Press, 2010) p. 43; Ari Kelman, *A River and Its City: The Nature of Landscape in New Orleans* (Berkeley: University of California Press, 2003), p. 54.

⁸ Gilbert F. White, ‘Human Adjustment to Floods’ (Ph.D. diss., University of Chicago, 1942); John Handmer and Stephen Dovers, *The Handbook of Disaster Policies and Institutions* (Abingdon, UK: Routledge, 2013); Uwe Lübken, ‘Rivers and Risk in the City: The Urban Floodplain as a Contested Space’ in M. Evenden and S. Castonguay (eds.), *Urban Rivers: Remaking Rivers, Cities, and Space in Europe and North America* (Pittsburgh: University of Pittsburgh Press, 2012), pp. 130–144.

experience.⁹ Immigrants travelled with their homeland's climatic knowledge in their cultural baggage, against which they measured and analysed their new environment, often erroneously.¹⁰

British immigrants brought with them their experience of relatively low variability in rainfall and droughts measured in days, not years.¹¹ Experience in India and other colonies did not make them more prepared for Australia. In Brisbane, immigrants were confronted with the combination of sub-tropical and dry continental climate, characterised by a large variability in rainfall, long droughts and severe floods. The Australian experience of settlers in the southern cities of Sydney and Melbourne, provided little local comparative knowledge as these towns' temperate climates were less subject to monsoonal troughs, cyclonic conditions and intense rain than the Brisbane sub-tropics. Besides, Sydney, built on a harbour, and Melbourne, on Port Phillip Bay, were not constrained by a flood-prone river. Settler experience in the Hawksbury-Nepean area in New South Wales would have provided an insight into variable rainfall and large floods, but most Britons arrived in Brisbane with little understanding of tropical rain, a river catchment or the river's propensity to flooding.¹² Many had experience of Britain's manicured canal system, where water was harnessed for transport. By resorting to 'taming' or controlling its extremes of flood and drought with dams, the Brisbane settlers hoped to make the climate less alien and more manageable. With the river altered, it would behave more like a British river, with smaller floods. The alluvial land would now be ready for its transformation as a colony for yeoman farmers and urban dwellers, right at the water's edge. The cultural values reflected in the three dominant responses encouraged development of the floodplain to create a city. Ultimately urban settlement left the river with a city problem.

The Brisbane River

The Brisbane River is 309 kilometres long, with its source near Mt Stanley and its mouth at Moreton Bay, flowing through a number of small townships before the major metropolitan areas of Ipswich and Brisbane (Figure 1). Created as a fluvial system some 40 million years ago, the river's present course was established in the late Miocene era about 10 million years ago.¹³ The geological record shows a history of flooding in the sedimentation along the river bank. For

⁹ Tim Sherratt, Tom Griffiths and Libby Robin (eds.), *A Change in the Weather: Climate and Culture in Australia* (Canberra: National Museum of Australia, 2005); Don Garden, *Droughts, Floods and Cyclones: El Niños That Shaped Our Colonial Past* (North Melbourne: Australian Scholarly Publishing, 2009); J. Beattie, E. O'Gorman and M. Henry (eds.), *Climate, Science and Colonization: Histories from Australia and New Zealand* (New York: Pelgrave Macmillan, 2014).

¹⁰ Kirsty Douglas, "'For the sake of a little grass'" A Comparative History of Settler Science and Environmental Limits in South Australia and the Great Plains' in J. Beattie, E. O'Gorman and M. Henry (eds.), *Climate, Science and Colonization: Histories from Australia and New Zealand* (New York: Pelgrave Macmillan, 2014), p. 100.

¹¹ Tim Sherratt, 'Human elements' in T. Sherratt, T. Griffiths and L. Robin (eds.), *A Change in the Weather: Climate and Culture in Australia* (Canberra: National Museum of Australia, 2005), p. 1–17; Claire Fenby, Don Garden and Joëlle Gergis, "'The usual weather in New South Wales is uncommonly bright and clear ... equal to the finest summer day in England": Flood and Drought in New South Wales, 1788–1815' in Beattie, O'Gorman and Henry (eds.), *Climate, Science and Colonization*, p. 50.

¹² Grace Karskens, 'Floods and Floods-mindedness in Early Colonial Australia', *Environmental History* 21 (2016): 315–342.

¹³ Helen Gregory, *The Brisbane River Story Meanders Through Time* (Brisbane: Australian Marine Conservation Society, 1996), p. 152.

approximately 40,000 years the Turrbal and Jagera people lived along the river, fishing and hunting and relying on it for drinking water. The river was a bountiful source of food – mullet and flounder, crabs, shellfish, turtles, eels and water birds, amongst the seasonal foods on offer. ‘Mairwar’, the Yugarabul name for the river, offered bathing and food as well as being an integral part of the spiritual landscape.¹⁴ Indigenous people understood through force of circumstance that rivers have life cycles of their own and understood the cycles of drought and flood.¹⁵ According to journalist, Archibald Meston, floods were experienced as the Cooyar people living near the Upper Brisbane River, recounted a legend of a large flood on Magenjie, Big Flowing Water or Big River.¹⁶ In times of drought Indigenous people dug wells in swampy areas to provide a water supply and in some areas they built weirs across the river or tributaries to regulate the water flow to help fishing.¹⁷ They harvested kambi (*Nausitora queenslandica*), a long white worm, in piles of rotting wood on the water’s edge. When explorer Edmund Lockyer described Long Pocket in 1825, he wrote of ‘brush with long grass, thinly wooded’ which was most likely the result of firestick farming.¹⁸ While these changes to the landscape were discernible, they were minimal. European settlers came with an entirely different mindset. For them, the river was a resource to be exploited.

¹⁴ Gregory, *The Brisbane River*, p. 2.

¹⁵ Joseph M Powell, *Plains of Promise Rivers of Destiny: Water Management and the Development of Queensland 1824–1990*, (Brisbane: Boolarong, 1991), p. 3; Jessica Weir, *Murray River Country: An Ecological Dialogue with Traditional Owners*, (Canberra: Aboriginal Studies Press, 2009).

¹⁶ A Meston in *The Queenslander*, 29 March 1890, 600. The meaning ‘big flowing water’ is given in *The Queenslander*, 17 August 1901, 328 S.

¹⁷ Gregory, *The Brisbane River*, p. 4; Alan Cunningham Journal, 16 September 1824, cited in John Steele, *The Explorers of the Moreton Bay District 1770–1830* (Brisbane: University of Queensland Press, 1992), p. 151.

¹⁸ Gregory, *The Brisbane River*, p. 3.

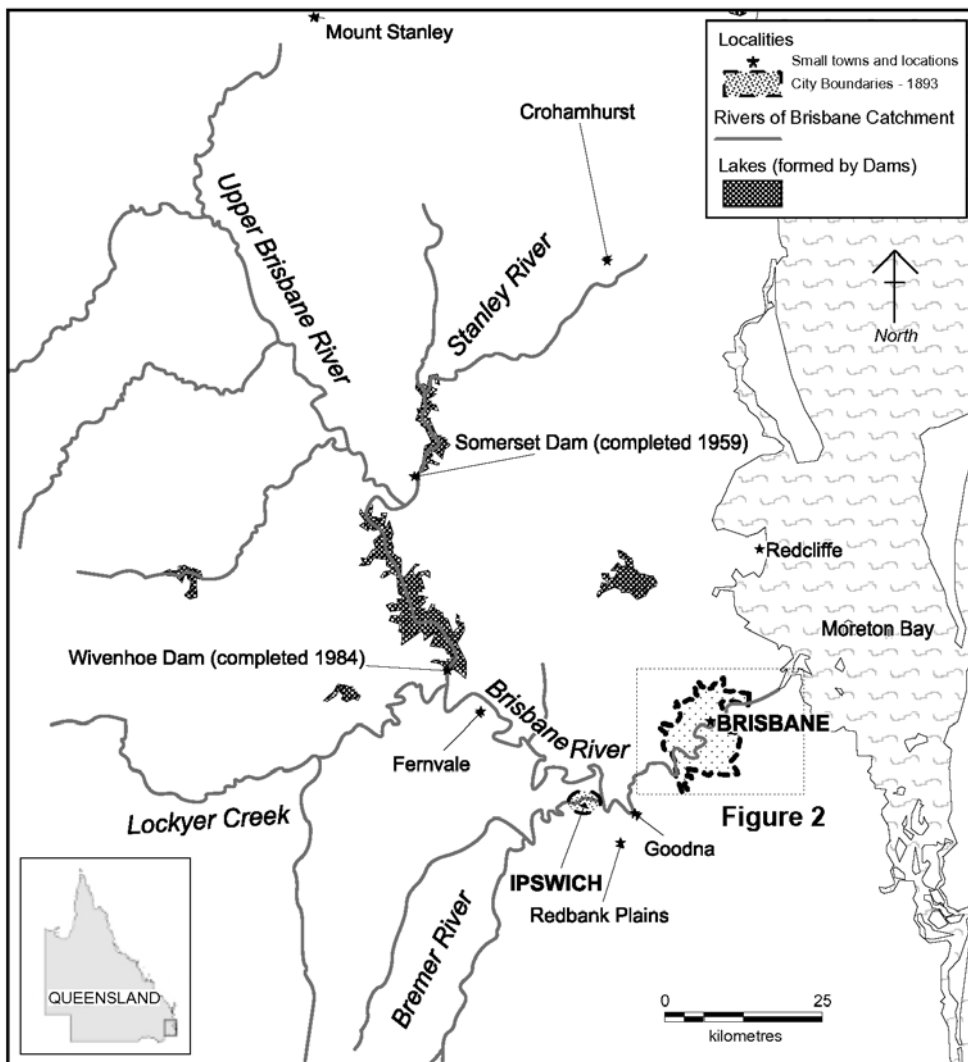


Figure 1: Rivers in Brisbane River catchment, as well as key locations.

Rivers have their own territory, both the bed and the banks. Floodplains are a natural part of the river, an area along a watercourse likely to experience flooding, and with that, fertile thin layers of clay-rich sediment. Scholars maintain that a floodplain is more than a boundary between terrestrial and aquatic, but an 'ecosystem in its own right, dependent on water level fluctuations'.¹⁹ For the purposes of a settler society, rivers are marked on a map, with a defined location and clear-cut boundaries and provide obvious landscape features to any observer. As James Scott argues, the administrative tools of state were used to survey and map the river's boundaries, and delineate and regulate land available for purchase and human occupation.²⁰ River and land were deemed separate – terrestrial and riparian territories. Modern societies view rivers as 'canals rather than meandering and dynamic streams, with a fixed length but no prescribed breadth'.²¹

Marc Cioc has argued that this contrived division between river bed and bank has created the 'highly anthropocenic term' flood.²² Rivers naturally overflow their banks but if human

¹⁹ Lübken, 'Rivers and Risk in the City' p. 131.

²⁰ James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998), p. 36.

²¹ Lübken, 'Rivers and Risk in the City', p. 131; Worster *Rivers of Empire*, p. 5.

²² Cioc, *The Rhine*, p. 33.

settlements are inundated, it becomes a flood. Heather Goodall has shown how early British colonists in Australia viewed land and rivers as separate, the latter to be kept within its banks. From a settler perspective floods were moments of 'disorder' when rivers left their 'proper place with catastrophic results'. Only at times of flood are the pathways of the floodwaters, with their almost inconceivable height and speed, evident. But, as Goodall explained, on the floodplain the banks are 'never permanent' as 'banks collapse, beds shift and water overflows into gullies and billabongs as flood flows across the land'. Rivers meander and split into tributaries and at times of flood replenish the floodplain by depositing silt and mud. In drought the river shrinks and the river bed rises with deposited sediment. The floodplain is a 'complex and dynamic relation between land and water'.²³ Floodplain land is created by rivers during flood events, a function of the near-horizontal deposition of fine river sediments. Steep-sided river valleys, however, are erosional in nature. Floods are an inevitable natural event when catchment rains see the river reclaim its beds and banks. The creation of a city on river banks and floodplains makes the flood a hazard. With European settlement the Brisbane River floodplain became a contested ground between nature and human urban development.

The Brisbane River: An economic resource

Although Governor Lachlan Macquarie warned settlers of the risk of settling on floodplains after floods on the Nepean and Hawkesbury Rivers in 1819, his wisdom appears to have been far from mind when Moreton Bay was selected only five years later by the next Governor of New South Wales, Sir Thomas Brisbane, as a secondary place of punishment for convicts. Surveyor-General John Oxley went north in 1823 to find a suitable site. He identified a river flowing into Moreton Bay that he followed as far upstream as the present-day suburb of Goodna, bestowing the Governor's name on the newly mapped river.²⁴ Oxley enthusiastically reported the location of a river 'Capable of Supporting the Cultivation of the richest productions of the Tropics'.²⁵ This praise reveals the first narrative, the river's economic potential. Apart from rocks at what became Seventeen Mile Rocks, Oxley declared the river largely navigable, the banks abundant with timber fit for boat building, 'domestic use or exportation' and the country near Termination Hill (later Goodna) was 'equally well adapted for cultivation or grazing' (Figures 1 and 2). As Scott has argued, European explorers viewed the world 'through the fiscal lens of revenue needs'.²⁶ Nature had become a 'natural resource' ready for exploitation.

²³ Billabongs are also known as oxbow lakes. Heather Goodall, 'The River Runs Backwards' in Tim Bonyhady and Tom Griffiths (eds.) *Words for Country: Landscape and Language in Australia*. (Sydney: University of New South Wales Press, 2002), p. 36.

²⁴ Plan of the River Brisbane by John Oxley, Surveyor General of New South Wales, 1825. Reproduced in H. Gregory, *The Brisbane River*, p. 17.

²⁵ John Oxley, Report of an Expedition to Survey Port Curtis, Moreton Bay, and Port Bowen, 10 January 1824. Reprinted in J. Steele, *Explorers*, p. 121.

²⁶ Scott, *Seeing Like a State*: pp. 11–12.

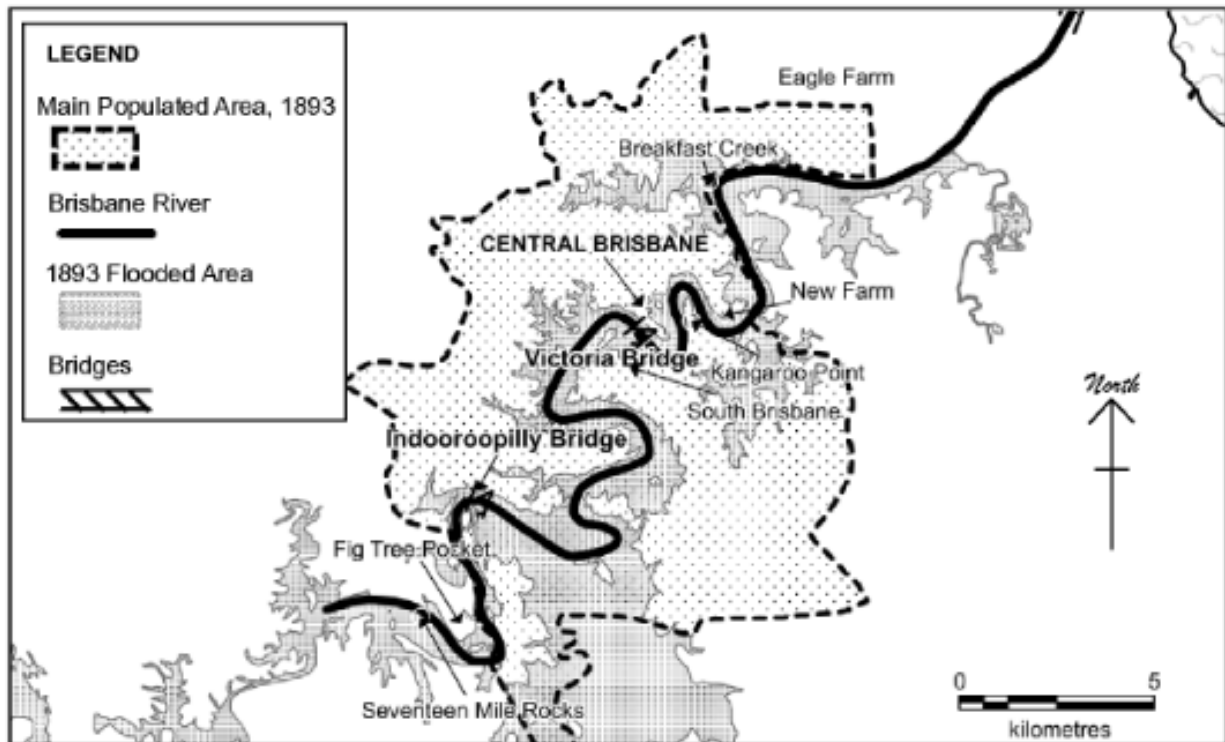


Figure 2: Brisbane River showing key urban areas and bridges, as well as flood height in 1893.

After a shallow port and malarial mosquitoes forced the abandonment of the first settlement at Redcliffe (Figure 1), the Moreton Bay penal settlement relocated to what became William Street on the Brisbane River. Commandant Lieutenant Henry Miller chose the site as the land was ‘well elevated, dry and contiguous to the fresh water’.²⁷ The river would provide transportation, water supply and a gaol wall. The environmental impact was immediate. Acres of trees were felled and shipped to Sydney, the barren soil exposed to erosion. South Brisbane, across the river from William Street, described in the 1820s as a ‘tangled mass of trees, vines, flowering creepers, staghorns, elkhorns, towering scrub palms, giant ferns, beautiful and rare orchids and the wild passion flower’, was cleared and cultivated for maize.²⁸ Rich alluvial plains at Eagle Farm and the Government Gardens (now Botanic Gardens) became agricultural farms and cattle and sheep were grazed at Limestone and Redbank Plains (53 kilometres up river), the land fulfilling its perceived utilitarian purpose.

The Moreton Bay Penal Colony closed in 1839 and the town of Brisbane surveyed the following year, adopting the existing settlement along the river course already in place.²⁹ The accepted rectilinear street pattern, already familiar in the USA, was imposed on the topography. As Scott has shown, this system offered a ‘cheap and rapid’ method of surveying a town, providing homogeneity, administrative order and control.³⁰ The plan made little variation for the landscape,

²⁷ Captain Bishop to Colonial Secretary, 14 March 1826, cited in J. Steele, *Explorers*, p. 129.

²⁸ ‘The Brisbane River 100 Years Ago’, *Brisbane Courier (BC)*, 22 March 1930, 10.

²⁹ John Cole, *Shaping a City: Greater Brisbane 1925–1985* (Brisbane: William Brooks Queensland, 1984), pp. 14–15.

³⁰ Scott, *Seeing Like a State*, p. 55.

merely rotated from north to fit a meander in the river.³¹ Dreams of a river esplanade were abandoned as Governor Gipps saw little future for this provincial town he disparagingly believed would amount to ‘nothing else but a paltry village’.³² With the exception of Queen’s Wharf Road at North Quay the land was subdivided and sold up to the edge of the river bank, creating a permanent environmental risk of flood. Moreton Bay opened for free settlement on 14 February 1842 and the Sydney press promoted the principal settlement on the Brisbane River, with its navigable river, rich alluvial, undulating banks, rich timber supplies and coal.³³ The river ensured a promised land of untapped economic resources.

Brisbane flooded in 1841 but purchasers seemed undeterred when the first land sales took place in Sydney in July 1842. When floods came in 1841 and 1843 they may have been regarded as an aberration. We may never know. The 1841 flood, thought to be the biggest recorded, went largely unreported in both the Sydney and Moreton Bay newspapers. However, rather than an aberration, floods were a frequent visitor in nineteenth century Brisbane, before structural engineering dammed the river as shown in Figure 3.

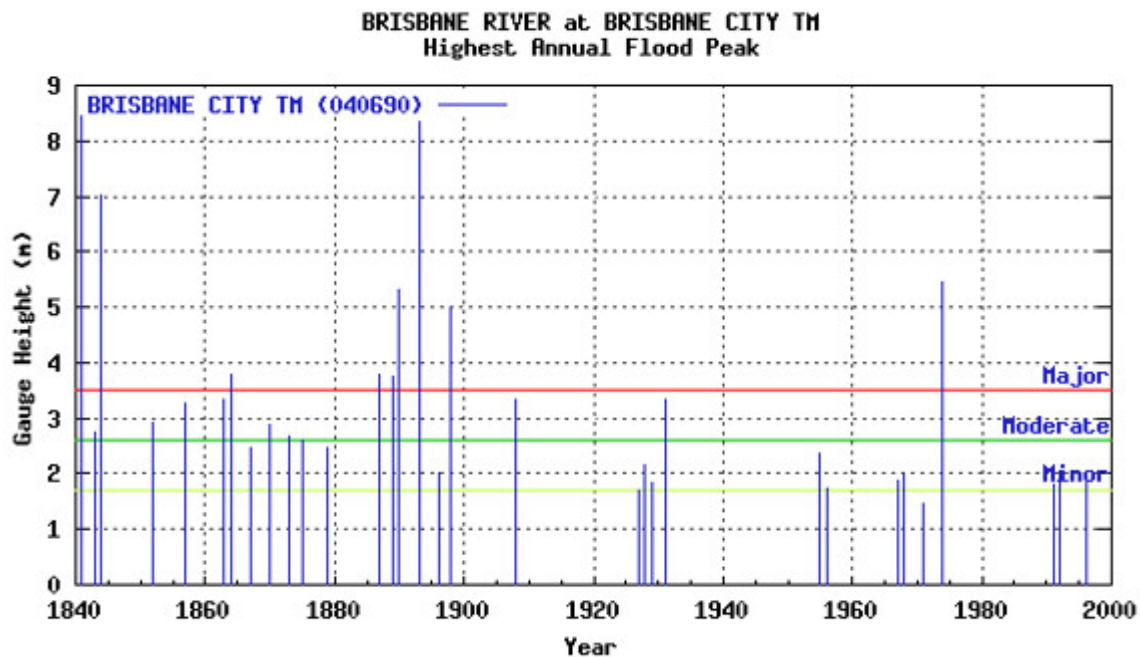


Figure 3. This graph shows the frequency before the impact of Somerset Dam in the 1950s and Wivenhoe Dam in the 1980s. The 1880s, early twentieth century and early 1950s brought drought. Source: Bureau of Meteorology, *Known floods in the Brisbane River Catchment*.³⁴

Why did these new settlers fail to adapt to floods? Tim Sherratt has offered one possibility when he observed ‘a new climate cannot be mapped and comprehended like a new continent. It can

³¹ Bolton, *Spoil and Spoilers*, p. 59.

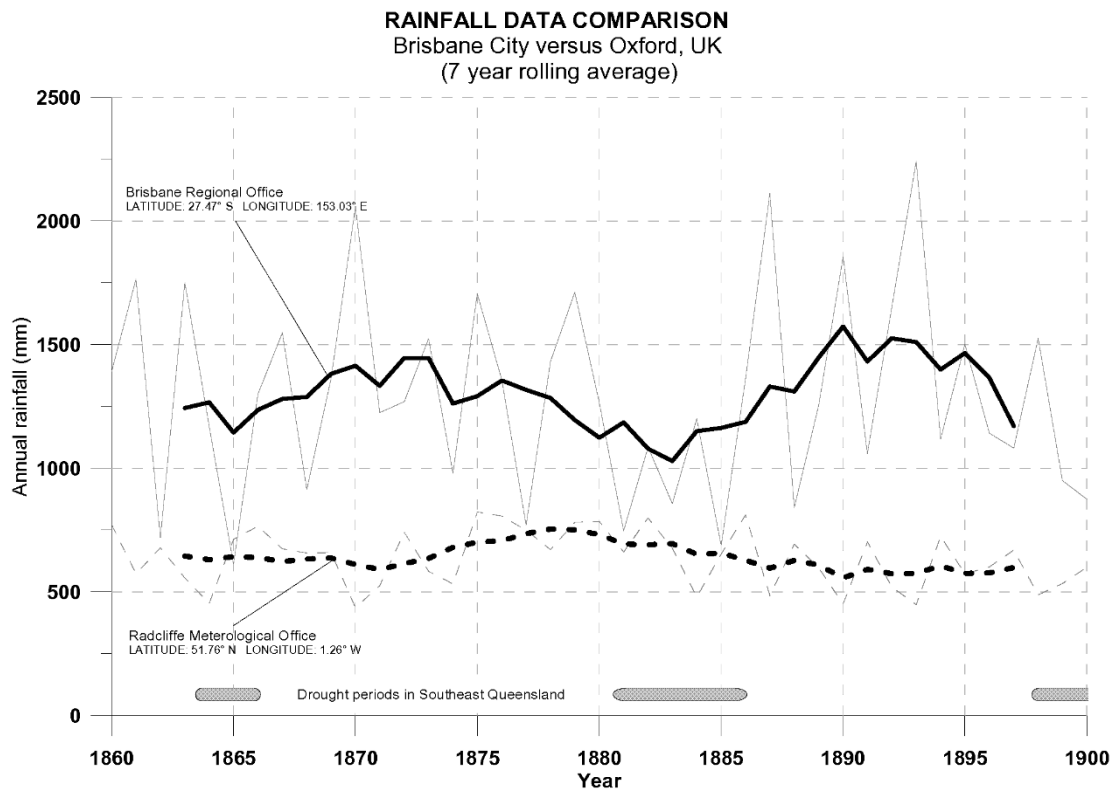
³² W. Ross Johnston, *Brisbane The First Thirty Years* (Brisbane; Boolarong, 1988), p. 34.

³³ *Australian*, 24 Feb 1842 cited in Gregory, *The Brisbane River*, p. 28.

³⁴ Bureau of Meteorology, ‘Known Floods in the Brisbane River Catchment’.

http://www.bom.gov.au/qld/flood/fld_history/brisbane_history.shtml Accessed 13 June 2016.

only be known through time, through averages and extremes, through experience and expectation'.³⁵ Decades of record keeping and experience has now taught Brisbane residents about their weather, its heavy rainfall and cycles of drought and flood. The British had no alternative but to draw on their own experience, and compare Brisbane with the weather at home. Imported environmental knowledge from Britain made it difficult to comprehend what they were experiencing. The British could not yet know that Australian rivers 'are twice as variable' as rivers overseas. The only constant, was the state of flux.³⁶ Settlers from England may have been familiar with the Thames River, one of the largest rivers in England. The Thames catchment, an area of 13,470 square kilometres (comparable with the Brisbane River catchment of 13,600 km²), receives an average rainfall of around 706 mm distributed fairly evenly throughout year.³⁷ By comparison an annual rainfall of 1148.8 mm falls in the Brisbane River catchment, with extremes of both drought and flood.³⁸ The rainfall variation in the UK has much less variability and volume than that of Brisbane, as shown by comparative rainfall data at two points on the Thames and Brisbane Rivers from Oxford, UK and Brisbane City.



³⁵ Sherratt, 'Human Elements' p. 4.

³⁶ Karskens, 'Floods and Floods-mindedness', 315–342.

³⁷ Klement Tockner, Urs Uehlinger and Christopher T Robinson, *Rivers of Europe* (Amsterdam: Elsevier, 2009) p. 395.

³⁸ J. Kemp, J.M. Olley, T. Ellison and J. McMahon, 'River Response to European Settlement in the subtropical Brisbane River, Australia'. *Anthropocene* (2015), pp. 48–60

Figure 4: Rainfall Data Comparison.³⁹ This graph shows the large contrasts between the annual rainfall measured at gauges at the Radcliffe Meteorological Office on the Thames River at Oxford, UK, and Brisbane City (Port Office Gauge). Yearly rainfall totals in millimetres for both locations and seven year rolling averages are plotted. Note that the yearly rainfall variation in Brisbane can exceed the total average annual rainfall in Oxford. Times of drought are shown along the base of the graph, closely matching the long term low rainfall periods evident in the Brisbane rolling average. It is also worth noting that this gauge is downstream in the Brisbane system – there can be much heavier rain in the upper catchment.

Meteorological data from the England and Wales Precipitation (EWP) records show the rainfall familiar to British immigrants. The data are worthy of examination as they highlight the climatic knowledge the English immigrants brought with them, and hence the lens through which they viewed Australia. Data recorded since 1766 shows November 1852 as receiving the highest monthly rainfall of 202 mm, the highest recorded rainfall until 1903 when October received 218.1 mm. Together with November 1770, these three are the only recorded months that received more than 200 mm. Significantly, Brisbane’s current mean January rainfall of 159.6 mm and 158.3 mm for February are not substantially below UK’s record rainfalls.⁴⁰ This rainfall mean is the more remarkable as Brisbane can experience relatively dry months during the wet summer season, such as February 1874 when only 64 mm fell.⁴¹ Looking at pre-twentieth century EWP records, the wettest Spring occurred in 1782 when 363mm fell between March and May. The wettest year, January to December 1872, recorded 1,284.9 mm, with 1877 a close second with 1,282.9 mm.⁴² The Australian record of 907 mm in 24 hours at Crohamhurst, on the Upper Brisbane River in 1893, was well beyond any British record, and arguably their comprehension. Totals well beyond the UK monthly record of 218.1 mm were reached several times in the nineteenth century in Brisbane, figures which do not include unrecorded extreme rainfalls which occurred in the 1840s. Record monthly rainfall figures for Brisbane in the nineteenth century are shown in Figure 5.

Figure 5. Highest Monthly Rainfall at Brisbane in the Nineteenth Century⁴³

Month	Rainfall (mm)	No. of rain days in month
1870	865	26
1875	691	24
1887	593	17
1890	543	26
1893	1,026	25

³⁹ Compiled from data from Brisbane Regional Office, Australian Bureau of Meteorology monthly rainfall data – Station 40214. <http://www.bom.gov.au/climate/data/index.shtml> and Oxford Rainfall data. Radcliffe Meteorological Station, Oxford.

<http://www.geog.ox.zc.uk/research/climate/rms/rain.html>

⁴⁰ Australian Bureau of Meteorology <http://www.bom.gov.au>.

⁴¹ *Pugh’s Almanac* (Brisbane: Theophilus Pugh, 1877) p. 37.

⁴² https://en.wikipedia.org/wiki/England_and_Wales_Precipitation.

⁴³ Department of Science, Bureau of Meteorology, *Brisbane Floods, January 1974* (Canberra: Australian Government Publishing Service, 1974), p. 30.

1895	704	22
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British settlers failed to acknowledge the frequency of heavy rain and the inherent risk of flooding in pursuit of the utilitarian goal of settlement and progress. Instead the newspaper bragged of Moreton Bay's fertile soil, 'absence of hot winds, and the more copious rains' than experienced in southern parts of Australia, as the roots of agricultural success.⁴⁴ As environmental historians have long maintained, for Europeans nature provided the stage on which human activity could be enacted. The dynamism of rivers, expressed so convincingly in times of flood, could be ignored, as could the potential impact they may have on the human settlement.⁴⁵ Underlying this failure to learn was a fundamental belief in human superiority over nature. 'Civilised man' had to tame the natural world, harness and control it.⁴⁶

Despite floods in 1843 and 1845, riverfront land sold in 1843 at Kangaroo Point and New Farm, South Brisbane and Breakfast Creek in 1844.⁴⁷ Industries were established at Kangaroo Point and South Brisbane, the river offering transport, steam and a convenient effluent dump. By March 1846 there were 614 people residing in North Brisbane, 346 in South Brisbane.⁴⁸ Brisbane grew slowly with newly surveyed land creating little commercial interest in the early 1850s, most sales being concentrated in the inner city areas.⁴⁹ This changed in 1854 when booming land sales saw settlement spread to the suburbs, the dense foliage cleared and the land made more vulnerable to erosion, the river subjected to silting in heavy rain.⁵⁰ By the time the Colony of Queensland separated from New South Wales in 1859, with its population of 7000, settlement had expanded along the riverbank, extracting a water supply and discharging sewerage and industrial waste into the river. As buildings were constructed the floodplain was fundamentally altered, creating a contested terrain between the river and the fledgling city.

In the settler society of Australia, utilitarian values prevailed. Humans were considered separate from nature whose role was to serve the Empire's economic interests.⁵¹ Floodplains, devoid of farms, houses or industry were considered wasteful. Peter Coates asserts that the link between 'wasteful' land and progress has been evident since Ancient Rome.⁵² Land had to be organised for 'improved', productive use. Tom Griffiths has explained that in Australia 'improvement' was a culturally laden term, whereby altering the land to 'look like the old country', settling it with 'an idealised yeomanry of self-sufficient family freeholders' offered 'the true measure of progress'.⁵³

These values were unambiguously expressed by a self-described 'traveller' in the *Moreton Bay Courier* in 1859, who bemoaned the 'wasted' rich scrub land along the river, a potential 'poor man's purchase'. The writer hoped that the new Moreton Bay Government would change the land

⁴⁴ *Moreton Bay Courier* (hereafter *MBC*), 24 June 1848, 2.

⁴⁵ William Cronon, 'Time and the River Flowing' in Cioc, *The Rhine*, p. xi; Griffiths, *Forests of Ash*, p. 190.

⁴⁶ Donald Worster, *Nature's Economy: A History of Ecological Ideas* (Cambridge: Cambridge University Press, 1977), p.29; M. Everard, *Hydro-Politics of Dams*, p. 155.

⁴⁷ Steele, *Brisbane*, p. 81.

⁴⁸ Census, *NSW Government Gazette*, 1846.

⁴⁹ Steele, *Brisbane*, p. 187.

⁵⁰ Steele, *Brisbane*, p. 237.

⁵¹ Lines, *Taming the Great South Land*, p. 134.

⁵² Coates, 'Can Nature Improve Technology?', p. 44.

⁵³ Griffiths, *Forests of Ash*, pp. 32–35.

regulations so that the 'sale of these waste lands will be both rapid and profitable to the colony and the purchaser.' Warming to the theme, the writer continued 'millions of acres of productive land is unsurveyed and unsold, affording ample space for the industrial exertions of thousands of our fellow creatures'. He added that along the river 'immense tracts of maiden soil lie upon their margins only waiting for the occupation and labors (sic) of man to convert them into productive wealth'.⁵⁴ In the 'traveller's' account, the value of riverside land was economic, the key to progress. In 1861, the passage of Acts and Regulations that dealt with the 'Occupation of the Unoccupied Waste Lands of the Crown in the Unsettled Districts' made this link between land and economic progress clear at a legislative level.⁵⁵ Unoccupied, non-productive land failed to extract a desirable annual license fee for an impoverished Colonial Government.

Imperial Britain favoured closer settlement as Queensland's yeoman farmers would produce food and raw material for industrial Britain.⁵⁶ Presbyterian Minister, the Reverend John Dunmore Lang, an advocate of British immigration to Australia, championed closer settlement. Lang viewed Queensland as a vast colonisation scheme whereby British immigrants would buy and convert unused land to cotton fields for England. His 1861 promotional book on Queensland, subtitled 'a highly eligible field for emigration, and the future cotton-field of Great Britain', employed much of the rhetoric used by the land promoters or 'boosters' in America, New Zealand and Australia, and left no-one wondering about his intent.⁵⁷ Commenting on the navigational potential of the river, described by him as 'glassy water, exhibiting all the romantic beauty of a Highland or Swiss Lake', Lang noted that 15 miles from the river mouth, cottages had already been built on riverside land 'appropriated by colonists of taste and enterprise'. The lush vegetation on the riverbank provided proof of 'spots of extraordinary fertility where the hand of man is perhaps erecting his future dwelling, and transforming the wilderness into smiling farms and fruitful fields'. Along the river, he had seen no other Australian city, apart from Sydney, with a 'greater number of interesting and beautiful sites'.⁵⁸

Lang acknowledged the 'considerable' flood-prone rich alluvial land along the flats on both sides of the main river and tributaries, promoting it as easy to clear and cultivate. This land would 'prove admirable localities for the settlement of small farms to raise productions suited to the district'. Encouraging British settlers to migrate to Brisbane, Lang declared it a 'pity' that 'such a region should be lying comparatively waste and unoccupied, when there are so many thousands of our fellow-countrymen struggling with poverty and privations at home!' Lang had a dream. He could not 'conceive anything either in natural or in moral scenery more interesting and beautiful than

⁵⁴ *MBC*, 12 March 1859, 3.

⁵⁵ *Acts and Regulations relating to the Waste Lands of the Colony of Queensland, 1861* (Brisbane: s.n., 1861).

⁵⁶ Kay Cohen, 'Lands Administration', in K. Cohen and K. Wiltshire (eds.), *People, Places and Policies: Aspects of Queensland Government Administration 1859–1920* (Brisbane: University of Queensland Press, 1995), p. 132; W Ross Johnston, *The Call of the Land: A History of Queensland to the Present Day* (Brisbane: The Jacaranda Press, 1982), pp. 49–55.

⁵⁷ Cronon, *Nature's Metropolis*, p. 34; Eric Pawson, 'On the Edge: Making Urban Spaces', in Eric Pawson and Tom Brooking (eds.), *Making a New Land: Environmental Histories of New Zealand* (Dunedin: Otago University Press, 2013), p. 228; Douglas, in Beattie, O'Gorman and Henry (eds.), *Climate, Science and Colonization*, p. 112.

⁵⁸ John Dunmore Lang, *Queensland, Australia; a highly eligible field for emigration, and the future cotton-field of Great Britain* (London: Edward Stanford, 1861), pp. 60–62.

this noble river would unquestionably be, if its banks were thus lined with the neat cottages and well-cultivated farms of a happy peasantry'.⁵⁹

Like the land, the river also had to be productive. Shallow bars, rocks and bends were seen as obstacles to navigational efficiency as they impeded larger ships which restricted trade. Engineers were called on, as they had been throughout the British Empire, to 'improve' the river. The terminology employed, 'improving the river', 'taming' and 'training' became the frequently cited euphemisms for dredging, cutting and straightening.⁶⁰ River improvement meant navigational improvement, rather than ecological.⁶¹ In the name of improvement, channels were cut in the river, the bed repeatedly dredged, training walls constructed and Gardens, Kangaroo, Kinellan, Norris and Bulimba Points all truncated to reduce bends. Government officials and business people altered the river for colonial aggrandisement and economic gain.

As Brisbane became increasingly urbanised, the city developed without the constraints of formal town planning until the 1920s. As land was cleared, houses and businesses were erected and the flood hazard grew. The effect of land clearing became evident as early as 1850, and in 1863 the floodwaters carried so much silt that between two or three feet was deposited in the newly dredged channel at the river mouth bar.⁶² Regular floods in the 1860s and 1870s did nothing to change the attitude that regarded the river as a resource to be exploited. Industries, such as the Brisbane Gas Company located at Petrie Bight after 1865, drew heavily on the Brisbane River for its water supply, as did the second gasworks in South Brisbane from 1881. Storm water, sewerage and other waste emptied into the Brisbane River and into Moreton Bay. Despite concerns about mortality rates from a fetid water supply, there was no affirmative action until 1909 following the creation of the Metropolitan Water Supply and Sewerage Board. Water supply in a relatively dry climate had always presented a problem, especially in the drought of 1883-1884, which completely overshadowed flood. Engineering offered a means to control the environment when Mount Crosby pumping station, well upstream from Brisbane, built between 1890-1893, began extracting 6 million gallons (over 27,000 litres) from the river each day.⁶³

Brisbane experienced a building boom and widespread land speculation in the 1880s, as did many Australian cities, in this case encouraged and shaped by ferry services and the construction of the Brisbane to Ipswich railway line in 1875. Suburban development could expand beyond walking distance of the city. As the inner suburbs became crowded, large tracts of land were subdivided and developed as outer suburbs. In came the land speculators, the same breed as the 'boosters' William Cronon described in Chicago, USA.⁶⁴ The speculators promised an urban dream, their enthusiastic rhetoric offering the promise of suburban development and prosperity for settlers (most of all themselves). The Colony continued to view riverside land as a natural, exploitable resource. The sale of Crown land offered the State financial reward and Councils a larger rate base. Concerns about floods seemed foolish when an economic bonanza awaited. The auction houses promoted undeveloped river banks as an untapped resource, waiting to be realised by astute investors. For example, at the February 1885 auction for Orleigh Estate, land subdivided from R Gray's 30 acre estate at West End, Brisbane, the auctioneer promoted 240 'magnificent building sites', 66 of which had 'large river frontages'. Billed in the auction advertisement aimed at

⁵⁹ Lang, *Queensland, Australia*, p. 77.

⁶⁰ Cioc, *The Rhine*, p. 5.

⁶¹ *MBC*, 31 January 1860: 2.

⁶² Gregory, *The Brisbane River*, p. 118.

⁶³ Gregory, *The Brisbane River*, p. 78.

⁶⁴ Cronon, *Nature's Metropolis*, p. 34.

'capitalists, speculators, trustees' and 'others', this land was declared 'the cream of South Brisbane'. Occupying a 'charming, and fashionable position', the land commanded 'grand and picturesque views, having such a noble river frontage'. Government auctioneers Arthur Martin and Co. assured the potential buyer that with the arrival of the tramway under construction, it was

no stretch of the imagination, or in any way an extravagant assertion, to state that no matter what prices these lots realise at present, they will at least be worth double the same amount within the next twelve months.⁶⁵

The commodity of land offered guaranteed economic success, perceived as a measure of human progress. No 'less than 600' people attended the auction, with the river frontages realising the highest prices of the 71 allotments sold, two at £160 each and seven at £150 each.⁶⁶ The narrative, peppered with phrases such as 'noble river frontage' and 'magnificent building sites', and delivering the promise of doubling the investment return had changed little from the language in John Dunmore Lang's 1861 sales pitch.

By 1891 Brisbane boasted a population of 101,554 inhabitants, making it the fourth largest city in Australia.⁶⁷ At the time Sydney and Melbourne had populations nearing half a million. Over 90 per cent of Brisbane's population lived within five miles of the city centre. North Brisbane and South Brisbane were rival settlements, both attracting industry and commerce, but the north side provided the government hub. The city was segregated by elevation, the heights overlooking the river occupied by the elite, the middle classes on the slopes, the lower classes in the valleys and flats. The flats were less attractive, susceptible to flooding and often attracting industry and consequently industrial class housing.⁶⁸ By the late 1880s the building boom had ended. The city endured floods in 1887 and a more severe flood in 1890, which peaked at 5.33 metres, the highest flood since December 1845 (8.43 metres; all measured at the Port Office Gauge within the City). An economic depression culminated in 1893 when 5,743 unemployed registered with the Brisbane Labour Bureau.⁶⁹

The 1893 Flood: A Natural Wonder

The 1892-93 summer had been exceptionally hot in much of the colony, with drought widespread across Queensland.. This drought came to a sudden end in the south-east, when on 3 February 1893 an Australian record for one day's rainfall of 35.7 inches (907 mm) was recorded by meteorologist Inigo Jones, at his home at Crohamhurst, 97 kilometres northwest of Brisbane.⁷⁰ As extreme rain fell in the Stanley River catchment that day, the river rose drastically, producing a 'flood of unprecedented height in a remarkable short space of time'.⁷¹ Henry Somerset Plantagenet, a grazier close to the junction of the Stanley and Brisbane Rivers, lost horses, dairy

⁶⁵ *The Telegraph*, 21 January 1885, 10.

⁶⁶ *The Telegraph*, 9 February 1885, 4.

⁶⁷ Ronald Lawson, *Brisbane in the 1890s: A Study of an Australian Urban Society* (Brisbane: University of Queensland Press, 1973), p. 6.

⁶⁸ Lawson, *Brisbane in the 1890s*, p. 104.

⁶⁹ Lawson, *Brisbane in the 1890s*, p. 38.

⁷⁰ Clement Wragge, *Nature*, 4 May 1893, 3.

⁷¹ J.B. Henderson, Annual Report of the Hydraulic Engineer, Appendix 6. Floods, Brisbane and Mary Rivers – Second Interim Report, 1894. *Queensland Parliamentary Papers* (1895), 15.

cattle and 720 fat bullocks as they swept down the river.⁷² The following day the raging water in the Upper Brisbane River, raced to Moreton Bay, careering into obstacles that had been built on its floodplain. The swirling water, travelling at a velocity of 8 to 10 miles an hour, destroyed farms and 52 houses in its path.⁷³ The torrent took lives, including the four Jackson children and Constable Sangster who died trying to save them, when the boat and tree they were clinging to succumbed to the floodwater.⁷⁴ Before the floods were over the river had claimed 35 lives. As the floodwater, full of debris and livestock, headed downstream towards Brisbane, it destroyed the only cross river bridges (Indooroopilly and Victoria), leaving many suburbs isolated. In Brisbane and Ipswich a number of industrial and commercial premises and an estimated 500 houses were inundated, their building materials, furniture and possessions adding to the river's debris (Figure 2).⁷⁵

A smaller second flood occurred on 11 February, but more heavy rain brought a third flood between 16 and 19 February, only 0.2 metres lower than the first. Journalist Theophilus Pugh noted that the effects were similar to the first 'calamity'.⁷⁶ In all three floods, the water followed its natural, predetermined path, and previous dredging, truncation of river bends and building of training walls made minimal difference to the impact. As the *Brisbane Courier* reported, the floodwater 'practically covered the same ground' as it raced into Moreton Bay.⁷⁷ The river edge, so clearly defined on surveyors' maps and in *Government Gazettes*, could no longer be found under the large expanse of water. Journalists noted that in parts of Brisbane the 'actual course of the river could not be distinguished save for the greater velocity of the current there'.⁷⁸ The *Brisbane Courier* declared it 'might easily have been supposed that the waters were occupying their natural bed'.⁷⁹

As the floodwaters subsided, Brisbane 'presented a wretchedly dismal appearance', the land left cleared of obstacles, or what remained of them, covered in a thick layer of stinking mud, the much prized alluvial soil.⁸⁰ A correspondent to *The Queenslander* reported that 'upwards of twenty years' of 'careful toil and industry' had delivered the promised productive farmland at Fig Tree Pocket, 'but, alas! the late floods have left them nought but grief and pain for promised joy'.⁸¹ Among the debris were the shattered remains of the new houses built in the recently subdivided Orleigh Estate in West End, the promised economic return reduced to nothing. In a 'rushing torrent', the *Telegraph* declared, the river had carried away a 'vast amount of the wealth of Queensland – wrecked homes, furniture, cattle, produce'.⁸² The response suggested a sense of betrayal that nature had not made good on its promised bounty.

⁷² Henry Plantagenet Somerset, in *Cuttings on the 1893 Brisbane River flood*, (Brisbane: Fryer Library Manuscript, 1982).

⁷³ *Queensland Times* (hereafter QT), 16 February 1893, 5; *Barrier Miner*, 15 February 1893, 4; *BC*, 6 February 1893, 2; *Pugh's Almanac*, 1894, 75.

⁷⁴ QT, 7 February 1893, 3.

⁷⁵ *Morning Bulletin* (Rockhampton), 9 February 1893, 5.

⁷⁶ *Pugh's Almanac*, 1894, 76.

⁷⁷ *BC*, 20 February 1893, 5.

⁷⁸ *The Queenslander*, 25 February 1893, 372.

⁷⁹ *BC*, 6 February 1893, 2.

⁸⁰ *North Queensland Register*, 22 February 1893, 32.

⁸¹ *The Queenslander*, 11 March 1893, 477.

⁸² *The Telegraph*, 8 February 1893, 2.

The initial reaction to the floods reflects the second understanding, a sense of bewilderment or amazement, surprise that a normally quiet river could change so much, rather than seeing flood as an inevitable event. For many, it was a natural wonder, a spectacle to be watched and marvelled at. Newspapers and photographs document that as the flood waters rose, people rushed to view the turbulent water and the rolling debris. Astonished witnesses described the floodwaters as ‘something to look on with admiration and wonder, as a sample of the wonderful forces of nature’ (Figure 6).⁸³ *The Brisbane Courier* noted that the floods ‘fascinated and inspired the onlooker as do all the mighty outbreaks of nature’s forces’.⁸⁴



Figure 6: Spectators viewing flooding in Creek Street, Brisbane in 1893. Henry Alcock Collection, Fryer Library, UQFL 256.

Tom Griffiths writes of the ‘irresistible tendency’ to use ‘crisis language’ of tragedy, destruction, and disaster when writing of fires.⁸⁵ Robert Hillman coined the phrase ‘the vernacular of Australian catastrophe’ referring, as Griffiths explained, to the nature of disaster narratives: ‘sparse, vivid storytelling’, ‘full of verbs, full of agency and responsibility’.⁸⁶ As with fire, the same can be said of flood accounts. The following account from the *Brisbane Courier* illustrates the point.

⁸³ *The Telegraph*, 8 February 1893, 2.

⁸⁴ *BC*, 8 February 1893, 2.

⁸⁵ Griffiths, ‘language’, 52.

⁸⁶ Robert Hillman, ‘The fire this time: notes on the vernacular of Australian Catastrophe’ *Griffith Review*, no. 25 (Spring 2009): 207; Griffiths, ‘Language of Catastrophe’, 57.

The produce of many a hard-working farmer went hurrying down the turbid waters. Hundreds of wooden houses of owner or occupier, careered upon the flood, often remaining whole till they struck Victoria Bridge, when they crashed like matchboxes, and broke away into shapeless masses of wood and iron. Many of these houses contained furniture; and there is an awesome rumour that in some cases they carried the human inmates to hopeless death.⁸⁷

The typically emotive and dramatic language emphasised the destructiveness of the river. The devastation caused by the 1893 floods forever altered Brisbane's relationship with its river.

Control: Taming the River or Taming the River: human control

Floods had made Brisbane a victim and the river an adversary; the enemy that had to be tamed. Accounts of the floods reveal a third response, reflecting a change in the relationship between the city and the river. Sherratt has noted how floods 'fracture' human relationships with the environment and 'provide moments of collective shock, resolve and recrimination'.⁸⁸ Floods changed Brisbane settlers' perception of the river from an exploitable economic resource to an element, that using contemporary international parlance, needed to be controlled, tamed or harnessed.⁸⁹ With this relational shift came the use of military metaphors in describing natural disasters.⁹⁰ Griffiths maintains that 'in the face of an awesome natural force', the language offers comfort, creating a belief that somehow these events can be controlled.⁹¹ These linguistic trends were evident in the narrative of the 1893 floods. Newspaper articles were littered with warlike phrases. Houses were 'invaded'; factories took 'every precaution to battle with the invasion'; the 'dreaded invader would be seeking fresh conquests'; and property was 'destroyed'.⁹² Houses 'fell a victim to the water'. Human sufferers were also 'fallen victims to the ravages of the unruly waters', their rescuers awarded bravery medals as in wartime.⁹³ Queen Victoria conveyed her 'great regret at the heavy loss inflicted on Queensland by recent disastrous floods' and sympathy to the sufferers, a message not unlike post-battle commiserations.⁹⁴ Constable Sangster, who died in a flood rescue attempt, was eulogised in a poem published in the *Queensland Times* with language reminiscent of a soldier's tribute, citing his glorious courage, chivalry and daring 'deeds of glory' displayed in the 'field of battle'.⁹⁵ The press recorded the suffering of those beginning the 'battle' to recover their losses.⁹⁶

⁸⁷ *BC*, 6 February 1893, 2.

⁸⁸ Sherratt, 'Human Elements', p. 4.

⁸⁹ Pritchard and Zeller, 'The Nature of Industrialisation', p. 85; Christof Mauch, *Nature in German History* (New York: Berghahn Book, 2004).

⁹⁰ Everard, *Hydro-Politics of Dams*, p. 155; O'Gorman, *Flood Country*, p. 24; Blackbourn, *Conquest of Nature*, p. 191; Pritchard and Zeller, *Nature of Industrialisation*, p. 85; Griffiths, 'Language of Catastrophe', 47.

⁹¹ Griffiths, 'Language of Catastrophe', 52.

⁹² *QT*, 21 February 1893, 5; *Telegraph*, 20 February 1893, 6.

⁹³ *Queenslander*, 25 February 1893, 373; *QT*, 11 February 1893, 8 & 10; *BC*, 25 September 1893, 4; *QT*, 18 September 1894, 5.

⁹⁴ Copies of Telegrams from the Secretary of State to the Governor Queensland, 8 February 1893, Letterbook of minutes and memoranda, mostly addressed to the Colonial Secretary or Chief Secretary. Volume 1. Queensland State Archives, ID 17628.

⁹⁵ *QT*, 28 February 1893, 2.

⁹⁶ *The Week*, 10 February 1893, 16.

The battle lines were drawn. Brisbane residents demanded an engineering solution from the Queensland colonial government to prevent a repeat of this perceived 'evil', calamitous 'catastrophe'.⁹⁷ Stéphane Castonguay and Sara Pritchard maintain that framing flood as a catastrophe and rivers as unpredictable and unmanageable provided justification to control the river flow.⁹⁸ Action could be taken to control the river to prevent future floods and ensure environmental security so that the pursuit of progress and civilization could continue, with nature playing its rightful utilitarian role for that purpose. In the 19th century civil engineering could be called upon to restore progress, order and civilisation and ensure environmental security.⁹⁹

The government engaged its own hydraulic engineer, John Baillie Henderson, to report on the floods, their cause and possible mitigation. Between 1893 and 1896 Henderson compiled three reports. The title of his first interim report, 'Floods, and the Mitigation of their evil effects' reflected the prevailing viewpoint. Henderson's final report, 'Floods in the Brisbane River and Schemes for Abatement of their Disastrous Effects' bore a less adversarial title but had the same intent, investigate causes and suggest engineering 'means to prevent or to mitigate the evil effects of floods'.¹⁰⁰ Henderson believed it advisable to consider means 'to diminish, if not altogether prevent, their ruinous effects in future'.¹⁰¹ Henderson's reports investigated various structural engineering methods to control floods – all well-known in Britain – canals, levee banks, dredging, river truncation and dams. The debate that followed in the newspapers through articles and letters and government reports reflected the general consensus, expressed by the Chamber of Commerce, that it was the government's 'imperative duty' to deal with the 'problem of flood mitigation or prevention'.¹⁰²

Flood: A Human-created Hazard

Amongst the demands for engineering intervention to the river, another response emerged, one that recognised that human actions may have altered the river and actually increased the flood hazard. Relocating human activity above the flood line and vacating the floodplain was openly discussed. Henderson himself suggested this as an option in his flood mitigation report. He 'strongly' advised that 'steps be immediately taken to prevent the erection, on low-lying flooded lands along the river banks below the city, of buildings of every kind, and also of all other structures that would retard the flow of flood waters'.¹⁰³ Rather than tame the river with engineering, the floodplain could be vacated.

Although the idea largely fell on deaf ears at a political level, newspaper accounts prove that some citizens shared Henderson's solution. Some called for legislation to prevent building below the flood line, with low-lying land in popular areas to be purchased as state reserves. However, the *Brisbane Courier* believed this strategy would have 'insuperable' difficulties and would only be a

⁹⁷ *BC*, 15 February 1893, 4; 28 February 1893, 6; 3 April 1893, 7; 10 April 1893, 6.

⁹⁸ Castonguay, 'Production of Flood', 821; Pritchard, *Confluence*, p. 59.

⁹⁹ Michael Cathcart, *The Water Dreamers: The Remarkable History of Our Dry Continent* (Melbourne: Text Publishing, 2009), pp. 177, 199–200; O'Gorman. *Flood Country*, p. 125.

¹⁰⁰ J.B. Henderson, Floods in Brisbane River, and Schemes for Abatement of their Disastrous Effects, June 1896. *Queensland Parliamentary Papers*, Vol 1, 5.

¹⁰¹ Henderson, Floods in Brisbane River, 1.

¹⁰² *BC*, 19 January 1898, 4.

¹⁰³ Henderson, Floods in Brisbane River, 9.

partial remedy in any case.¹⁰⁴ Besides, this land comprised 'some of the best arable land' and the most valuable sites in Ipswich and Brisbane, with a rateable value of £14 million within 10 miles of the city centre. Local councils were unlikely to abandon such a lucrative revenue source.¹⁰⁵

Under the pen-name 'exchange no robbery' a letter headed 'modern river dwellers' appeared in the *Brisbane Courier* in February 1893. The writer advocated remedying the mistakes of the past, maintaining that a 'very considerable slice of the bed of the Brisbane River', sold by the Crown as town allotments and eligible building sites in South Brisbane, should be surrendered to the State in exchange for land of equal value 'in the vicinity of the true banks, and not in the bed'. The river channel could then 'devote' itself to the 'purpose for which nature, and not man, has designed it'. Although, the idea of 'tucking' the river into its bed with embankments might be 'desirable', the writer considered it impractical and expensive.¹⁰⁶ This viewpoint recognised that encroachment on the floodplain had created a hazard and clearing land offered a flood solution.

The *Brisbane Courier* editorial in February 1893 supported legislation to prevent building below the flood level, acknowledging that 'much of the misery lately endured in Brisbane has been the result of building beneath the known flood level of 1890'. Legislation would 'protect the home owner against himself' and the land could be used as parks and paddocks, breathing spaces for the city.¹⁰⁷ Recognising British aversion for 'grandmotherly legislation', the editor disputed the perceived 'inalienable right' to build as one pleased on his own property as floodplain development violated health laws and posed a danger to others. He conceded the impossibility of enforcing the demolition of existing structures, but called on legislators to prevent new buildings. Why did the writer, and indeed much of society, believe it was impossible to enforce demolition? Allowing structure to remain in flood prone land created a permanent hazard and potential danger to the occupants. Why did the State Government not exercise its powers of compulsory resumption granted in the *Public Work Land Resumption Act 1878* as it did for roads? Perhaps the answer lay in another *Brisbane Courier* article which clearly thought planning reform unlikely, despairing that

'our city of hill and swamp is shamed by the disregard of health and greed of gain which has lured the working man to so-called cheap allotments in the low-lying flats of creek and river; and in default of Government interference the unholy game will start anew with the return of prosperity'.¹⁰⁸

The insatiable desire for progress and development prevailed.

Merchant Nehemiah Bartley recognised the inevitability of future flooding 'calamities' and their cause, namely settlement on a floodplain, and the preoccupation with converting land from waste to production. Writing in *The Telegraph*, he declared the primary cause was the site selection of Brisbane and the 'consequent busy little human hive, all settled upon the treacherous 'waste' ground where the river once flowed, and where it intends, periodically, to flow again'.¹⁰⁹ Without any political will to relocate buildings or prevent construction on the floodplain future flooding was inevitable. The Brisbane River simply had to be controlled.

This fourth perspective understood that human action may have not only caused the hazard by building on a floodplain, but may have exacerbated the problem. Perhaps a surprising voice

¹⁰⁴ *BC*, 6 November 1896, 4.

¹⁰⁵ *BC*, 6 November 1896, 4.

¹⁰⁶ *BC*, 21 February 1893, 3.

¹⁰⁷ *BC*, 10 February 1893, 4.

¹⁰⁸ *BC*, 10 January 1894, 4.

¹⁰⁹ *Telegraph*, 9 February 1893, 2.

expressing this view was the President of the Chamber of Commerce who referred to the 'scientific fact' that the 'progress of settlement increases the frequency and severity of floods'.¹¹⁰ Letters to the *Brisbane Courier*, fuelled this discussion, with Thomas Bryce informing the paper in 1893 that land clearance and soil hardened by livestock had exacerbated floods, as the ground and vegetation could no longer absorb the water.¹¹¹ Others wrote of the 'indisputable fact' that the 'progress of settlement' with its land clearing and building construction had increased the height, velocity and damage caused by floods.¹¹²

The Royal Society of Queensland weighed into the discussion with a paper in March 1898. In 'the early days of Brisbane, and before man's interference, Nature was naturally guarded' by vegetation 'so that in times of long or heavy rains the lower reaches of the river's low-lying lands were saved from sudden overwhelming flood'. However,

civilised man came: Governments without knowledge or experience sold the scrub land and the river bank reaches. The spirit of speculation in boom mirage set in, and the buyers or speculators chopped down and burned off or allowed the flood to wash away the timber, until the character of the country completely changed. Proportionately as this unwise work went forward, Nature's provisions for holding back the drainage waters were broken away, hence the waters unchecked had to come down in a rush in torrents.

The cleared land increased erosion, and siltation in the river, raised the flood height. The Society warned 'let the scrub land on the Upper Brisbane be cut down, and Brisbane had better be shifted at once'. Rather than build walls in the river which cannot prevent floods, 'let us study Nature, and again do amends for the violence wrought by giving her restitution of protective rights'. Buy back the riverbank land and replace the scrubland so 'ruthlessly destroyed'. The language depicted nature as the recipient of violence, rather than the perpetrator as before. Despite the recognition that human action had transformed the river and its banks, human utilitarian values were not far away. To justify this idea of re-afforestation the paper assured the reader that 'Nature's own way would immediately add to the beauty of our river, and would protect the shipping and commerce as well as the city itself'.¹¹³ The river, still regarded as a resource, needed protection.

The issue of development on the floodplain exacerbating floods received attention at the Queensland Branch of the Royal Geographical Society. Member, J. P. Thomson, shared the contents of correspondence with John Wesley Powell, the Director-General of the United States Geological Survey with other members at a meeting. Years of experience had taught Powell respect and understanding of environmental limits. Powell unequivocally informed his Brisbane reader that

There is one prominent fact which must not be overlooked – namely, that rivers of the character of the Brisbane must be allowed to retain a large territory in their own possession over or through which to discharge the waters of unusual floods. If man encroaches on these domains, he must take the consequences, from which no ordinary exertions can save him. In other words, the river must be allowed a fair amount of space of its own choosing. When by a large flood this space has been fairly

¹¹⁰ *BC*, 19 January 1898, 4.

¹¹¹ *BC*, 25 February 1893, 4.

¹¹² *BC*, 28 February 1893, 4; 6 November 1896, 4; 19 January 1898, 7.

¹¹³ *Our Scrubs and the Part they Play in Mitigation of Tropical Floods*, *BC*, 22 March 1898, 7.

well defined the borders may be thereafter protected, but encroachments beyond this must in the long run prove futile.¹¹⁴

Despite this warning, and the opinions expressed in the newspapers and by the Hydraulic Engineer, that evacuating the floodplain could mitigate floods or at least reduce the hazard, this action seemed unlikely. Floodplain farms were fertile and productive and riverside land provides a rich source of rates for local councils. The river continued to provide transportation and facilitate commerce, provide fuel and dispose of effluent. Nature was fulfilling its utilitarian and economic purpose. The hazard of flooding remained an engineering problem that could be solved, providing environmental security to ensure the progress of civilisation. The Brisbane River had a real problem – landowners and business people who had no desire to move and a citizenry who wanted the government to control nature.

Conclusion

Four settler responses identified here highlight the various relationships between the Brisbane River and its human metropolis from accounts of the river systems' economic and utilitarian potential; to incredulity at the intensity of flooding in 1893; the desire to control nature and a growing realisation that human action may have created the flood hazard. These understandings reflected prevailing nineteenth century economic and cultural values, evident in other European settler societies, where immigrants regarded the floodplains as an exploitable resource, ready for the improvement afforded by settlement, the risk of flood initially overlooked through ignorance or arrogance. Despite growing knowledge of the different sub-tropical environment, with its intense rain and cycles of drought and flood, climatic experience did not modify human settlement or prompt movement off the floodplain. Instead after the 1893 floods settlers turned to engineering, as they had done in Europe and North America, to control nature. The dominant desire for economic progress demanded a solution to flooding. The river was dammed first by Somerset Dam (completed 1959) and then Wivenhoe Dam (1984), transformed into an 'organic machine' to borrow Richard White's term, a hybrid of nature and human change.¹¹⁵ As engineering reduced the frequency and intensity of floods below the dams, Brisbane residents arrogantly believed that nature had been successfully controlled. Resultant poor land legislation, introduced by the state government, allowed development on the floodplain to proliferate. Christof Mauch noted that 'Americans, unlike Europeans, saw themselves at war with nature well into the nineteenth century'.¹¹⁶ In South-east Queensland this same battle continues, as does the reliance on dams to control floodwaters.

Despite decades of record keeping, experience and growing scientific knowledge of Queensland's flood and drought cycles, Brisbane residents are arguably no more responsive to the natural rhythms of the river, its geography or hydrology than the early British settlers. Brisbane will

¹¹⁴ Letter from J W Powell, Director-General, US Geological Survey to Mr JP Thomson, cited in *Proceedings and Transcripts of the Queensland Branch of the Royal Geographical Society*, Volume XV 1899–1900: 53. John Wesley Powell, soldier, scientist, explorer of the Colorado River and conservationist was Director-General, US Geological Survey from 1881–1891. See Donald Worster, 'A River Running West: Reflection on John Wesley Powell', *Journal of Cultural Geography*, Volume 26, (June 2009): 113–126.

¹¹⁵ Richard White, *The Organic Machine: The Remaking of the Columbia River* (New York: Hill and Wang, 1995).

¹¹⁶ Mauch, 'Nature in German History', p. 1.

continue to experience episodic monsoonal heavy rain, with the potential to cause flooding. Climate change may make this phenomenon more extreme. The effect of urban settlement has been to physically separate residents from the river, as it is largely hidden from view by buildings and other structures, and reduce environmental understanding. Many living on the Brisbane River floodplain would have no idea that the rain that floods their city falls in the headwaters over 100 kilometres away and flows within a catchment system of which only 40 per cent is regulated by dams. Dams have made floods less frequent and reduced their heights, but in doing so have further removed floods from human consciousness.¹¹⁷ Resilience has been reduced with urban expansion, as modern settlers are no more inclined to adapt their behaviour to accommodate floods than were the early settlers. Dams have created a false sense of security with the reduced frequency of floods, but in doing so, both the social memory of floods and environmental knowledge required to assess and manage the risks have been reduced. The perception of risk has been greatly confused.

Large floods occurred in 1974 and 2011, where the continuing urban development greatly increased the extent of damage. These floods were received with the same degree of incredulity as the 1893 floods with demands to prevent a re-occurrence. Media accounts of the 2011 floods suggest that societal and cultural values and environmental understanding had made limited progress since 1824, and the language had changed little from the four narratives prevalent between 1824 and 1893. South-east Queensland has continued to pursue development on the floodplain for short-term commercial gain or longer term bragging rights. Riverside land offers expensive, elite housing for the wealthy, cheap accommodation for industry and the required workforce, as well as rich alluvial farmland upstream — all considered too valuable not to exploit. While dissenting minority voices argue that human action is increasing the flood hazard and engineering cannot prevent extreme floods, reliance on dams to protect urban development continues. The river's need for a floodplain has been ignored. Now, more so than in the nineteenth century, the Brisbane River has a city problem.

¹¹⁷ This dislocation from the environment has been noted in New Orleans in Colten and Sumpter, 'Social Memory and Resilience', 48.