

Melbourne Water has experienced a number of unanticipated changes in its operating environment since the Essential Services Commission set prices in mid 2005:

- Climate variability, the worsening drought and the introduction of tighter water restrictions has reduced revenues, increased operating costs and brought forward capital expenditure
- New legislative and regulatory obligations have seen material increases in expenditure
- There have been higher than planned increases in some input costs.

These considerations will continue to be important determinants of Melbourne Water's financial and non financial performance over the 2008 regulatory period.

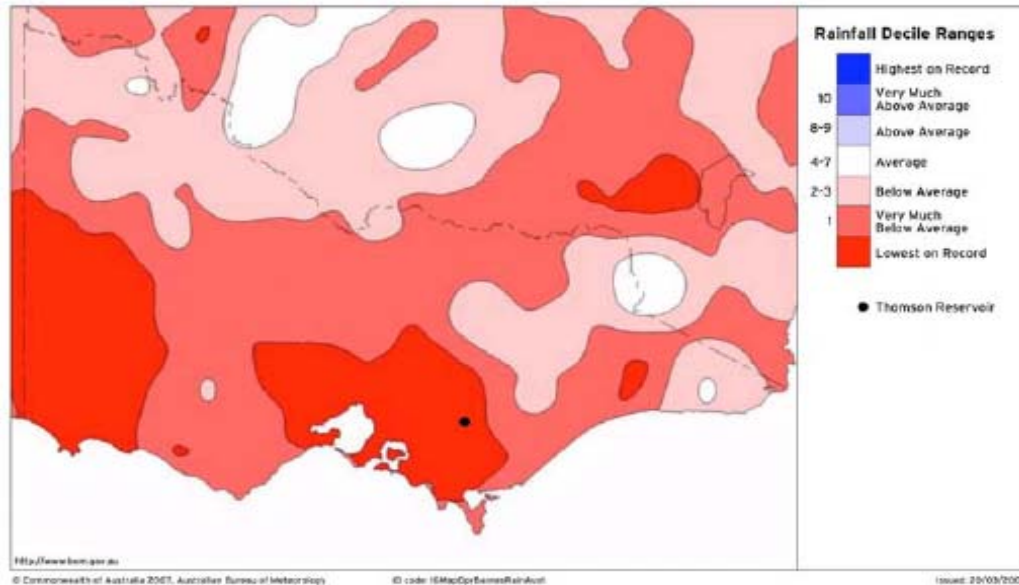
This chapter discusses factors that have impacted on business performance over the 2005 regulatory period and that are important to establishing business requirements and forecast expenditures for the 2008 regulatory period. Further information on the implications of these issues on Melbourne Water's financial and non-financial performance over the current regulatory period is provided in Chapter 3. Later chapters discuss their implications for the regulatory framework (Chapter 4), future business requirements (Chapter 5) and the associated capital and operating expenditures (Chapters 8 and 9).

2.1 Operating environment

Climate uncertainty

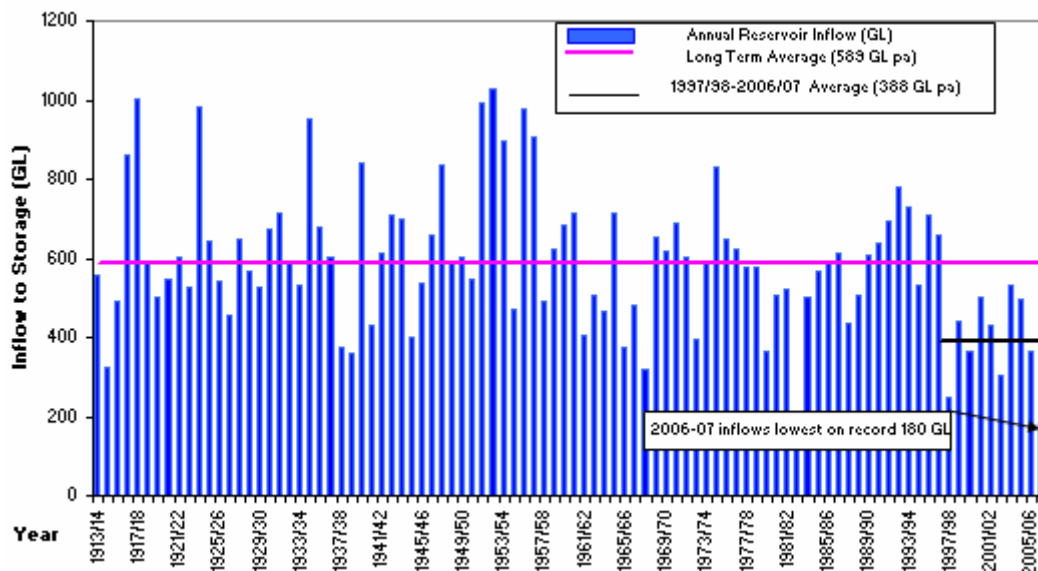
The last decade has seen some of the lowest rainfall on record across Melbourne's water supply catchments and its rivers and creeks (Figure 2.1). For example, Yarra River stream flows for the 2006 calendar year were the second lowest on record and for the period 1997/98 to 2006/07 were about 63% less than the long term average (1892/93 to 2006/07).

Figure 2.1 – Rainfall deciles for Victoria – 1997 to 2006



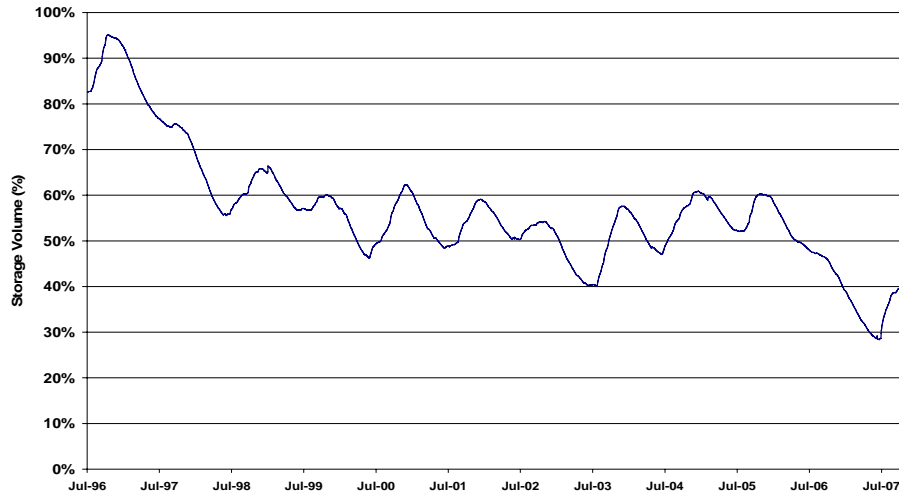
Inflows to Melbourne Water’s major water storages for the 2006 calendar year were the lowest on record, while average inflows to Melbourne’s four major harvesting storages for the period 1997/98 to 2006/07 were about 35% less than the long term average (1913/14 to 2006/07). This is illustrated in Figure 2.2.

Figure 2.2 – Melbourne Water storage levels – 1913/14 to 2006/07



The community has responded well, changing water use behaviour significantly and reducing per capita consumption by 22% on 1990s consumption levels. However, this behavioural change, along with increased water restrictions over the last 12 months, and a range of contingency measures implemented by Melbourne Water and the retail water businesses, has not fully offset the significant reduction of inflows and as a result Melbourne Water’s storages have fallen significantly (Figure 2.3).

Figure 2.3 – Melbourne Water storage levels – 1996/97 to 2006/07



In addition to the effects of the drought, Melbourne has also experienced a number of major storms in recent times. Events in 2003, 2004, and 2005 led to localised flooding, disruption and property damage.

Figure 2.4 - Localised flooding in 2005

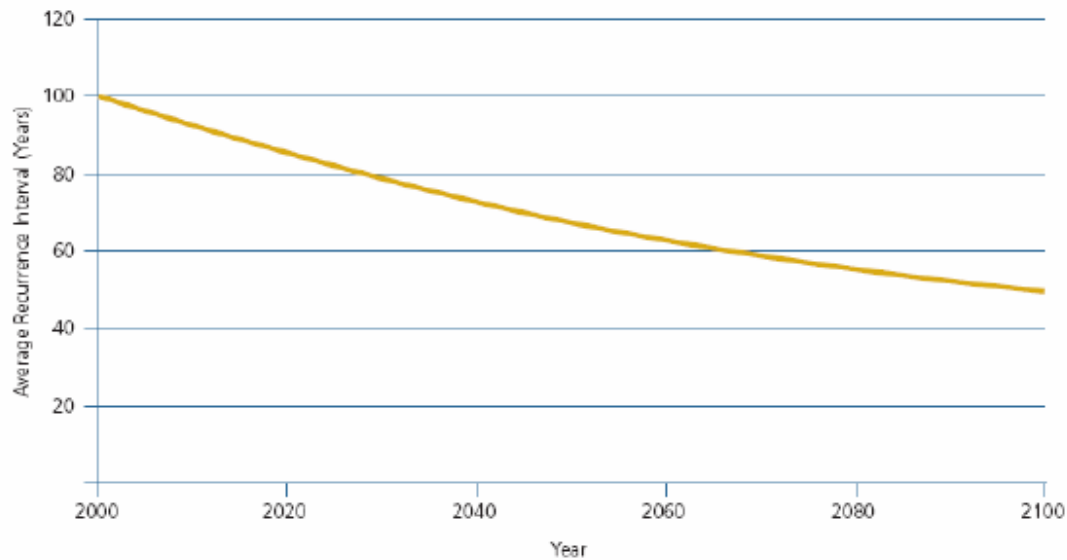


Dandenong Creek, Dandenong, 2005

Kororoit Creek, Deer Park, 2005

The Melbourne Climate Change Study was completed by CSIRO in March 2005. The study anticipates that while the amount of overall rainfall received each year is predicted to decrease, the rainfall may occur in more intense storm events rather than our normal winter and spring rains. This change in rainfall patterns is more likely to result in an increase in overland flows than riverine flooding because the short, sharp nature of these intense storms results in sudden large volumes of water. As illustrated in Figure 2.5, it is likely that storms that occurred on average every 100 years in 2000 are likely to occur once every 50 years by 2100, which could also result in more frequent flooding above existing floor levels.

Figure 2.5 – Change in average storm recurrence intervals



Implications for Melbourne Water

Melbourne Water has previously been able to rely on historical records as a basis for planning for the future. Recent experience and an increasing body of scientific information¹ suggest that Melbourne may have experienced a “step” change in the frequency, magnitude, location and duration of our weather events. While there is still some uncertainty as to the exact size of this change, it is clear that there is a need for:

- Ongoing research on climate change/variability and its implications for water businesses
- Effective planning and investment that optimises the use of available water supplies, strikes an effective balance between community and environmental needs and includes appropriate provision for contingency measures
- Adaptive program delivery
- A regulatory framework that not only creates incentives for improved performance but also ensures a reasonable allocation of risks in an uncertain operating environment.

Melbourne Water’s planned capital investment and forecast operating expenditure over the 2008 regulatory period incorporates measures to manage the impacts of climate change and prolonged drought (see Figure 2.6 and Figure 2.7 below)². In particular, Our Water Our Future, The Next Stage in the Government’s Water Plan contains a number of major water supply augmentations including:

- Funding construction of a seawater desalination plant which will provide up to an additional 150 GL per year by the end of 2011
- Constructing the Sugarloaf pipeline linking the Melbourne supply system to the Goulburn River and contributing to the Food Bowl Modernisation project to secure up to 75 GL per year by mid 2010

¹ For example, The Intergovernmental Panel on Climate Change’s Fourth Assessment Report 2007 concludes that the evidence supporting warming of earth’s climate system is unequivocal. The Melbourne Climate Change Study was completed by the Commonwealth Scientific and Industrial Research Organisation (CSIRO) in March 2005 and identified the potential for higher average and summer temperatures, reduced rainfall and more extreme weather events.

² For the purpose of this Water Plan, Melbourne Water has assumed that seawater desalination is delivered as a public private partnership (PPP)

- Constructing a water treatment plant at the Tarago Reservoir by the end of 2009 which will add around 15 GL to annual supply
- Upgrading the Eastern Treatment Plant to tertiary standard by 2012 to facilitate increased water recycling opportunities and improved environmental outcomes.

Figure 2.6 – Actual and forecast Melbourne Water capital expenditure – 2004/05 to 2012/13

(2006/07 dollars)

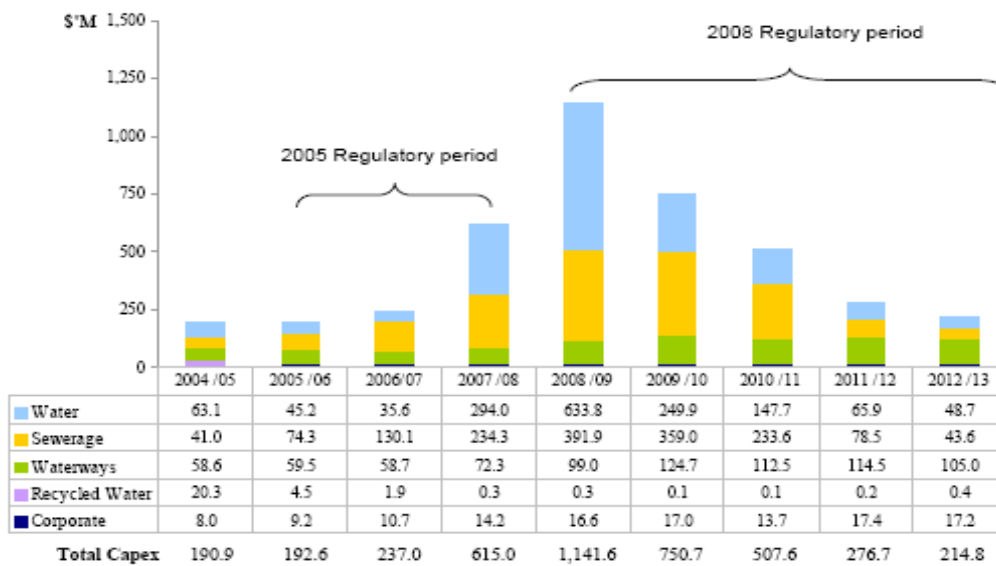
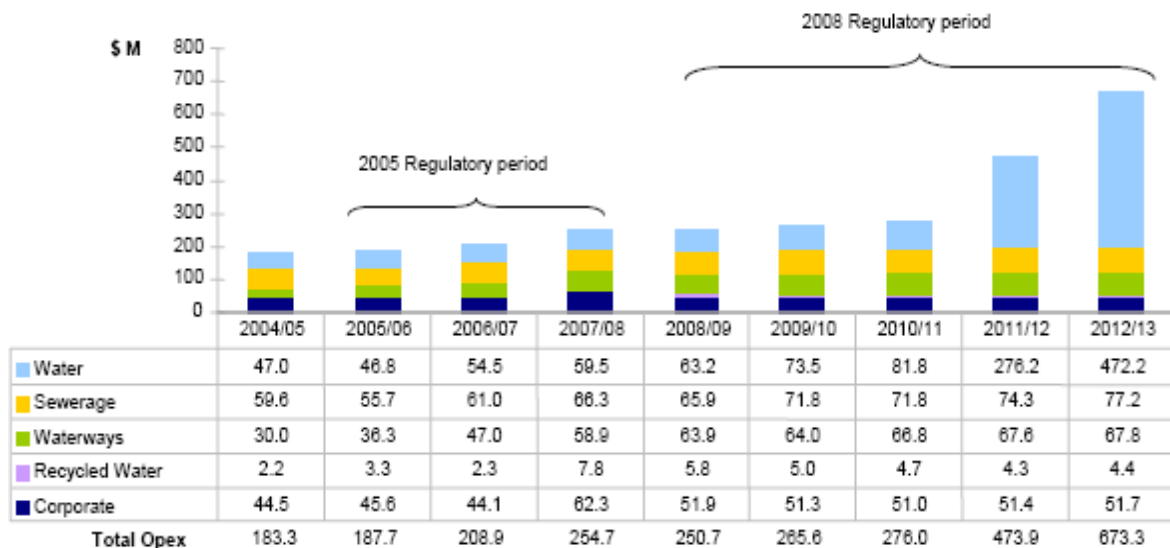


Figure 2.7 – Actual and forecast Melbourne Water operating expenditure – 2004/05 to 2012/13

(2006/07 dollars)



Climatic conditions also pose challenges in delivering waterways and drainage services. Melbourne Water works in partnership with Government agencies, industries, landowners and the community to manage environmental flows for river health and to support a wide range of beneficial uses. The challenge for Melbourne Water is how to manage environmental flows given competing demands for water, particularly when a reduction in stream flows is anticipated with climate change.

The degree of impact on river health will depend upon the magnitude and variability of the change in stream flows. The current extreme drought has seen a temporary reduction in environmental flows. More frequent or intense droughts will require environmental flows to be carefully monitored and managed in consultation with Government and the community to avoid environmental decline of rivers and creeks. The current drought has also resulted in river diverters' access to water being restricted or suspended to avoid environmental impacts necessitating effective customer engagement and enforcement.

More frequent, intense storms in different locations have the potential to place increased demands on both Melbourne Water and local government stormwater assets. Further, as experienced in the 2005 regulatory period, there may be significant expenditures associated with responding to the effects of flooding where there is inadequate provision for overland flows. Increasing urbanisation is also likely to increase run-off, and infrastructure upgrades may be necessary to preserve required service levels.

The effects of climate change on the intensity and duration of storms are not well understood. The challenge, therefore, is to develop a greater understanding of the likely timing and impacts of climate change to enable the development of appropriate adaptation strategies.

New obligations

Melbourne Water's operating environment has also changed as a result of ongoing industry reform and policy development that was not known at the time of the Commission's 2005 Price Determination. For example, additional expenditures have arisen from:

- Undertaking initiatives in the Yarra River Action Plan to reduce the environmental impact of stormwater on waterways in urban areas
- Managing waterway environmental flows in line with newly established bulk entitlements and environmental entitlements

Industry wide cost increases

Unanticipated industry wide increases in some key input costs have, and will, impact on expenditure levels and financial performance. For example, infrastructure providers in Australia, including water, electricity, gas and transport businesses, have, and will continue to, experience significant construction cost pressures. Industry wide increases are also being experienced in labour and contract rates.