

1996



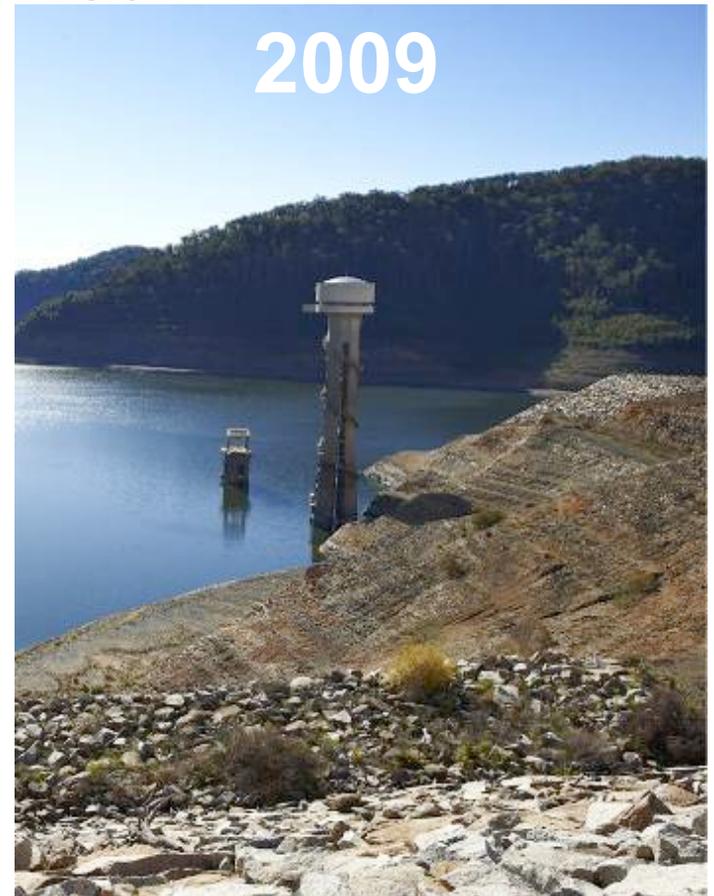
Thomson Reservoir
100% full – 1.1 billion litres

Climate Change Adaptation – Melbourne, Australia

Rob Skinner
Managing Director

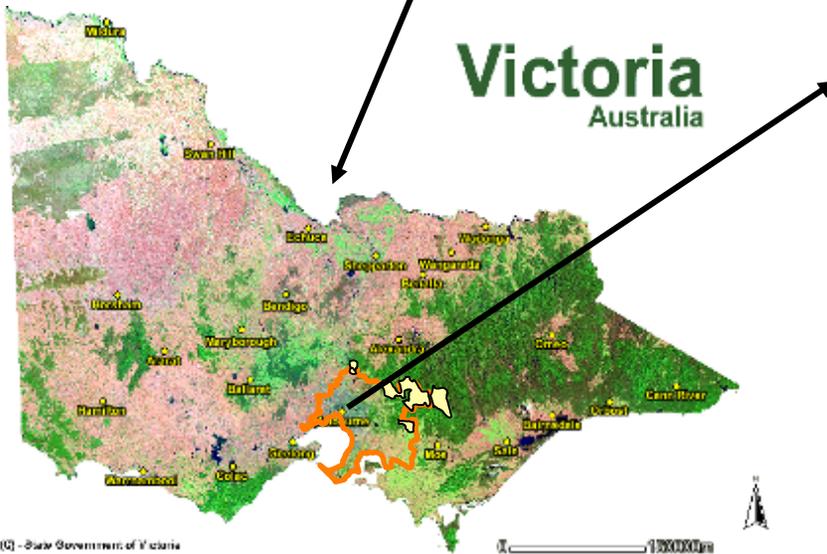
International Adaptation Forum
Washington DC
January 2010

2009



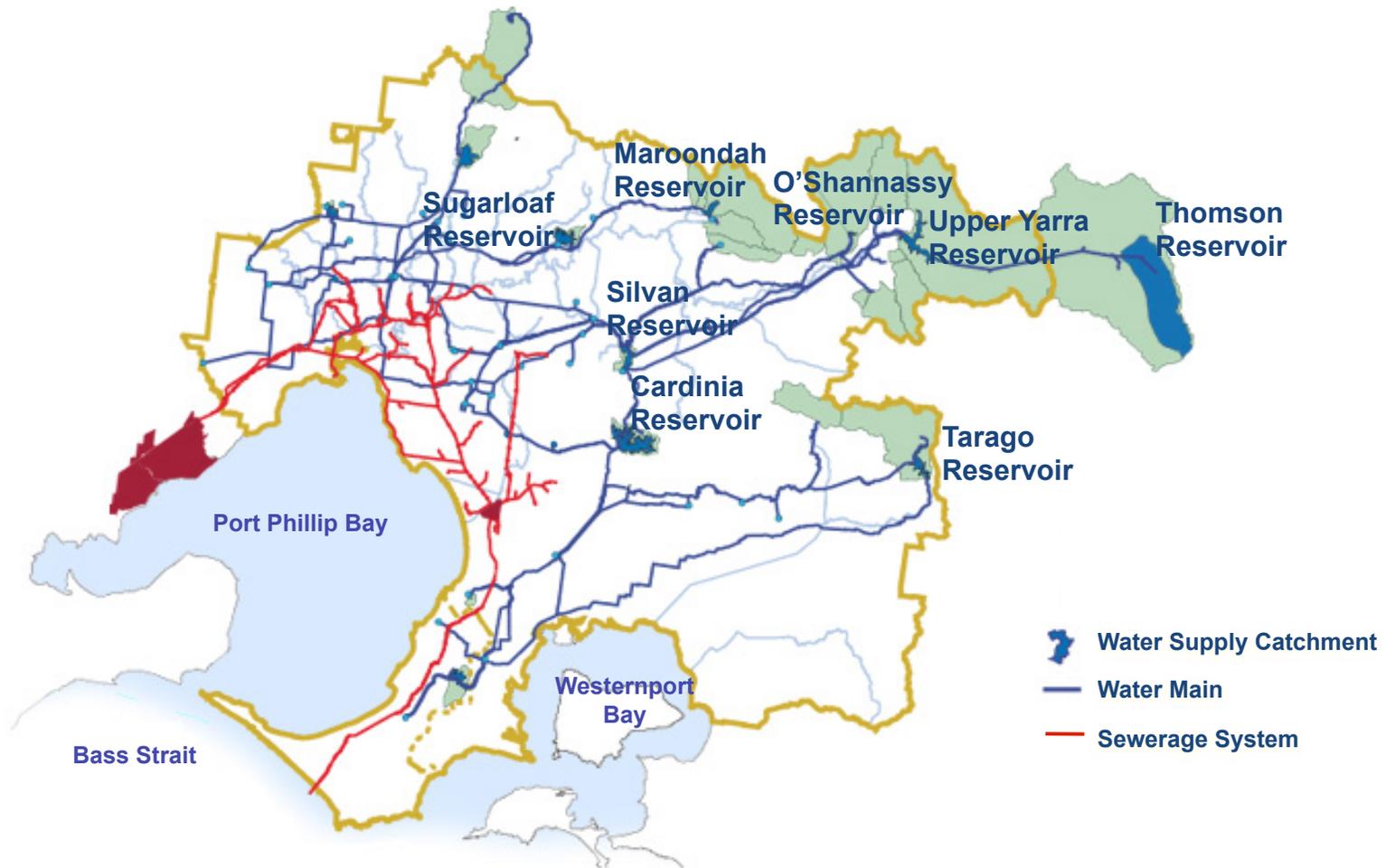
Thomson Reservoir
20% full – 0.2 billion litres

Melbourne



Melbourne – population of 4,000,000
– area of 8,806 sq km (3,400 sq miles)

Melbourne's major water supply systems



Caretaker of river health for over 8000km of streams

The Melbourne climate change experience

- Climate change/variability is affecting every aspect of our business, planning through to operations:
 - Flooding
 - Sewage flows and recycled water
 - Fire
 - Water supply and demand
- Water supply has been first and largest impacts relate to:
 - Dependency on surface water supplies
 - Large storage relative to inflow
 - Growing population

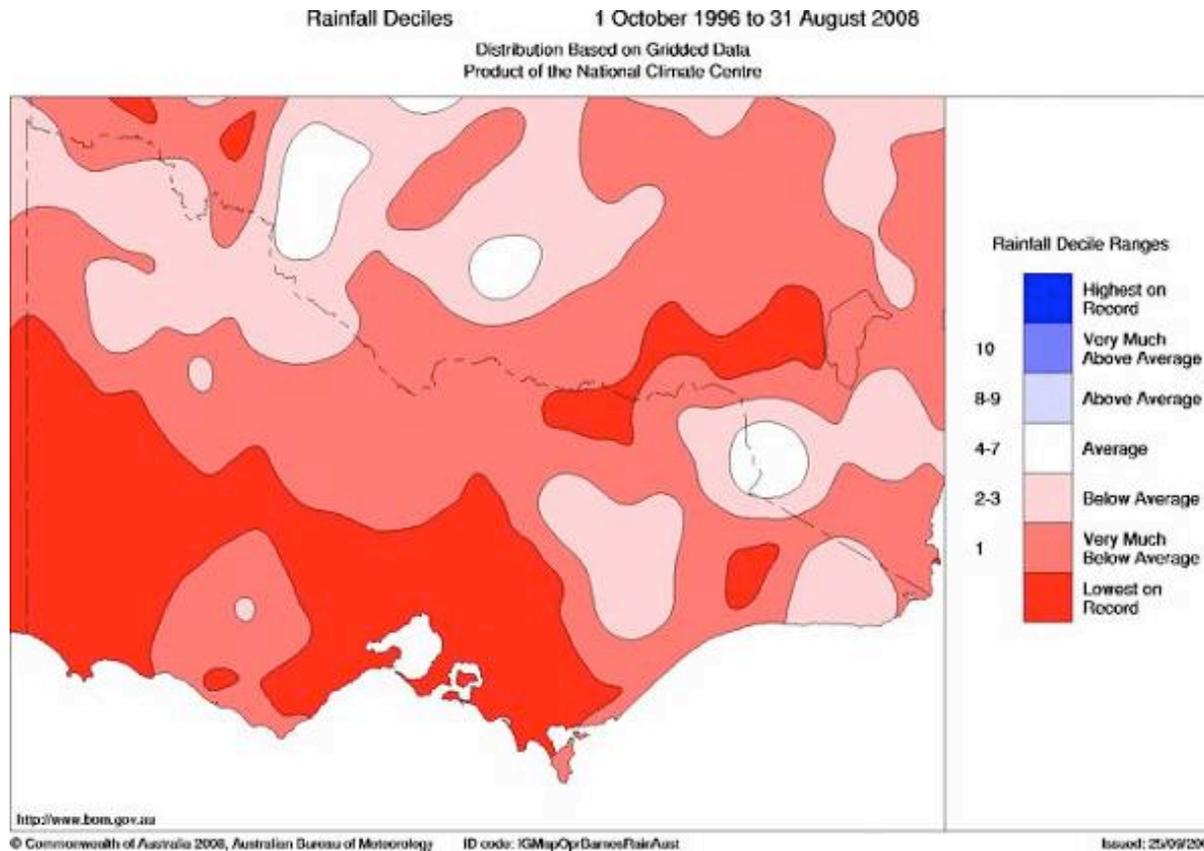


Long term water planning assumptions – Pre 2006

1. Reliable streamflow from protected catchments
2. Minimal treatment and pumping equates to low energy and cost
3. Environmental flows managed through minimum releases
4. Single water supply wholesaler with centralised solutions focus
5. Planning and evaluation reliant on use of historical data and projections
6. Community prepared to leave water strategies to Government
7. Water conservation is an essential part of water security
8. A prevailing culture of ‘business as usual’ – continuing the best practices of the past

System streamflows – 1997 to 2009

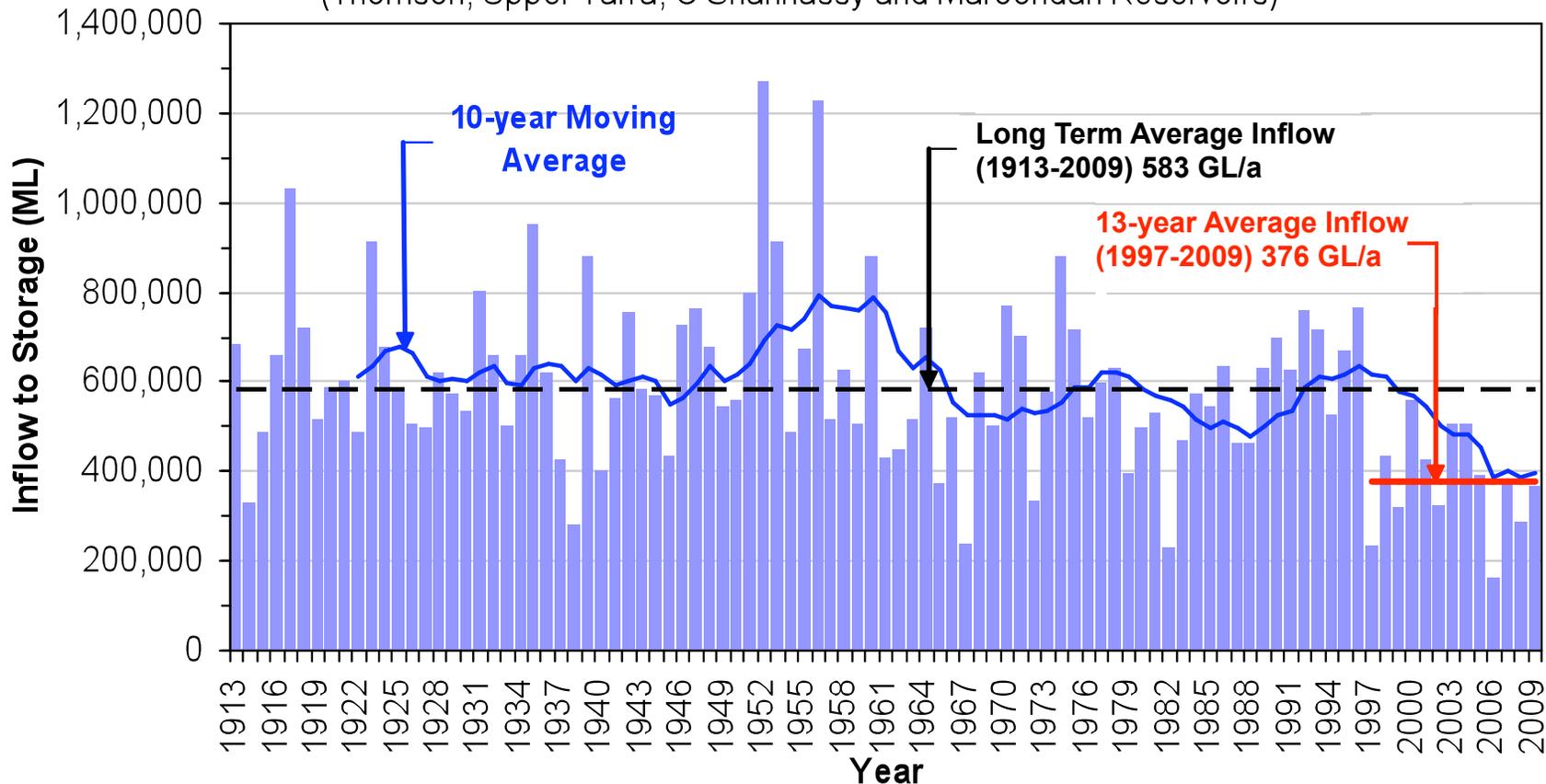
- 12 year lowest recorded streamflow
- 3 significant El-Nino events (1997,98, 2002/03, 2006/07)
- 1997–2009 streamflow 39% lower than 1913–1996 average
- 2006 streamflow 30% lower than previous lowest



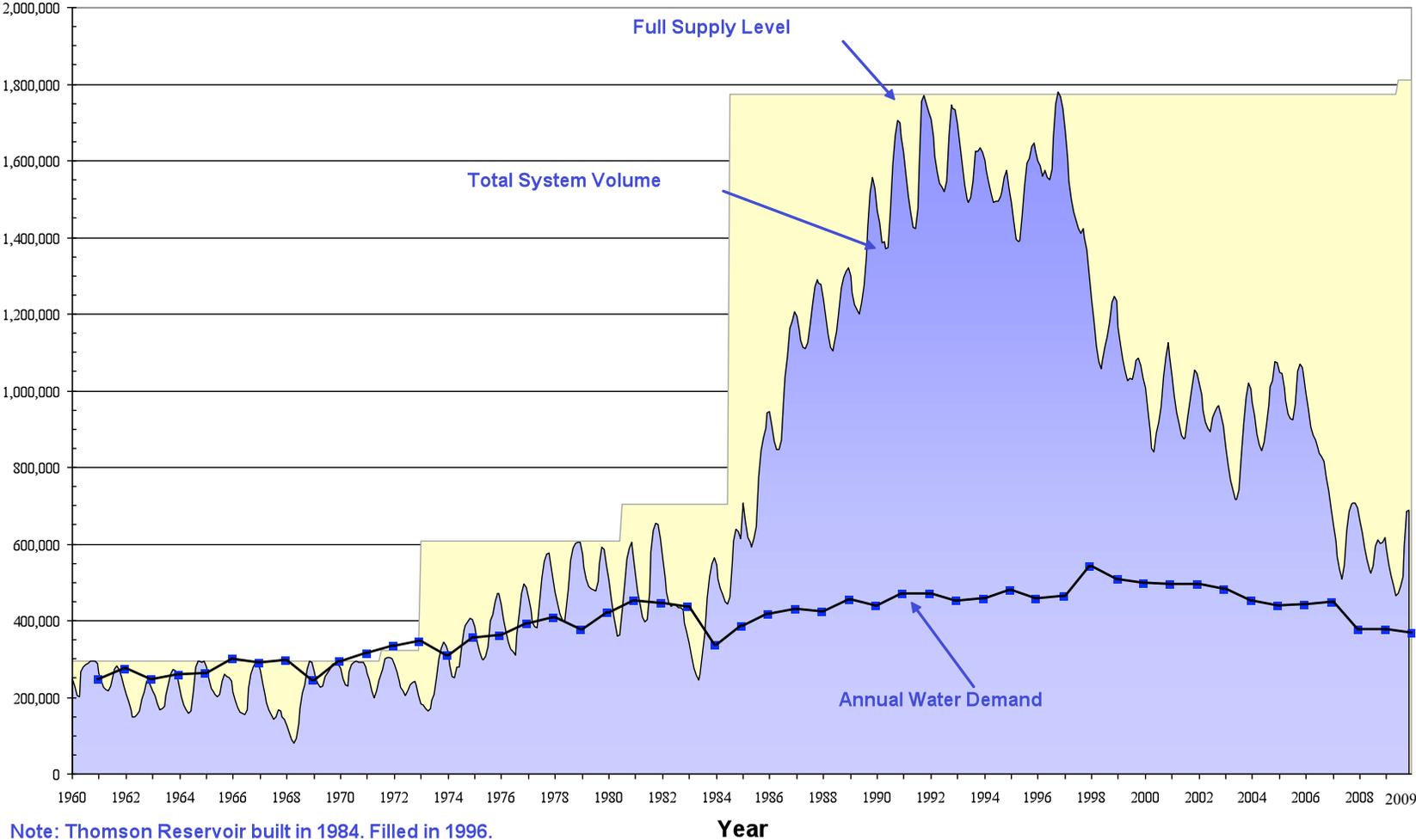
System streamflows – 1997 to 2009

Annual Streamflow at Melbourne's Major Harvesting Reservoir

(Thomson, Upper Yarra, O'Shannassy and Maroondah Reservoirs)



Total system storage capacity since 1960

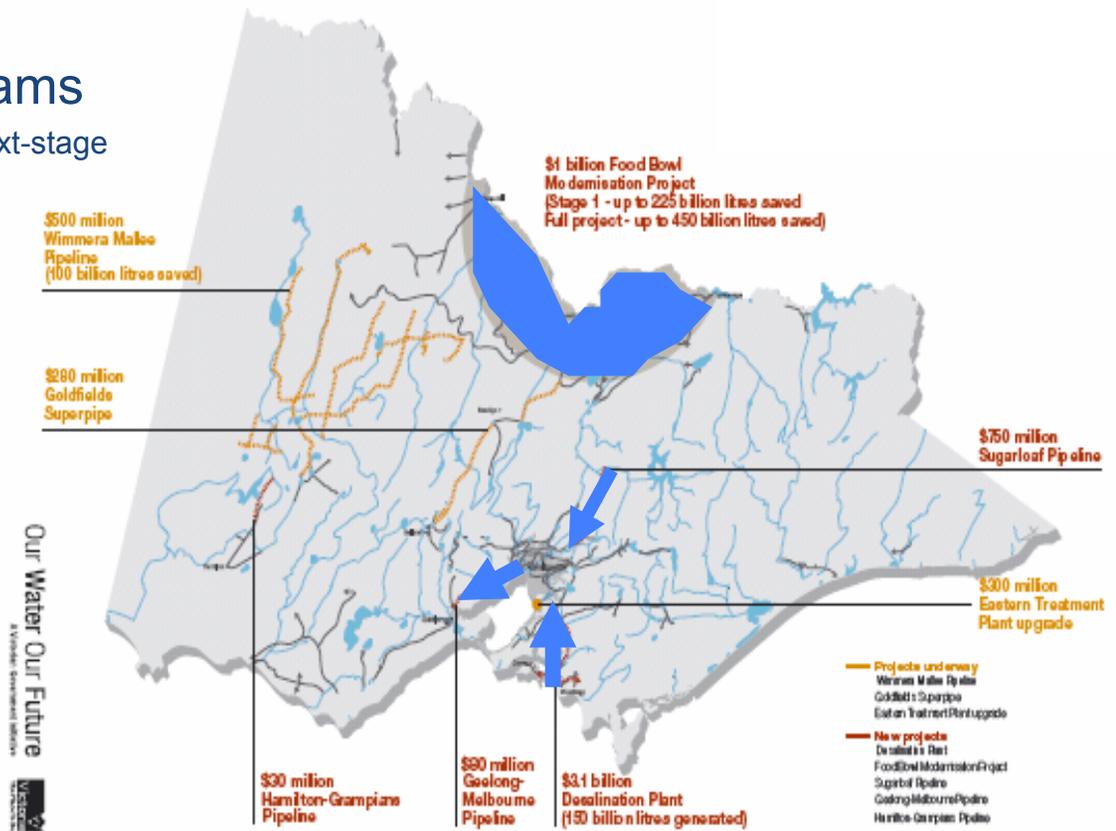


Immediate response to climate change (post 2006)

- Desalination plant for Melbourne
- Modernising irrigation infrastructure
- Expansion of the Water Grid
- Increased recycling
- Water conservation programs

See www.ourwater.vic.gov.au/programs/next-stage

Our Water Our Future
The Next Stage of the Government's Water Plan



Rewriting long term planning assumptions

1. Reliable streamflow from protected catchments



Rapid and large changes in climate are possible with implications:

- Streamflow
- Fire
- Storms

2. Minimal treatment and pumping equates to low energy and cost



Increasingly complex system with greater energy/cost optimisation challenges

3. Environmental flows managed through minimum releases



Increased sophistication of environmental flow regime and variable releases

Rewriting long term planning assumptions

4. Single water supply wholesaler with centralised solutions focus



Water sector is an integral component of sustainable smarter cities



Increased role of non-structural solutions



Increased emphasis on water cycle management and preserving all options



Multiple suppliers and sources of water



Sewage is a resource, not a waste

5. Planning and evaluation reliant on use of historical data and projections



Link city visioning with scenario planning



Increasing focus on TBL whole of life evaluation



Managing complexity

Rewriting long term planning assumptions

6. Community prepared to leave water strategies to Government



Greater community expectations for information and involvement



Customer-driven solutions

7. Water conservation is an essential part of water security



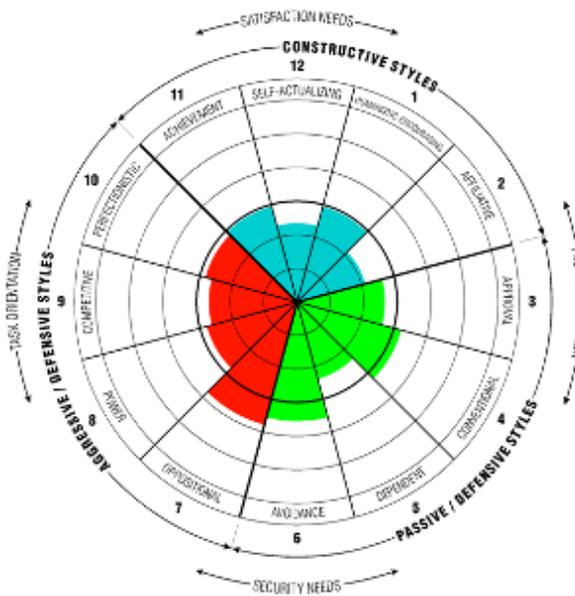
Maintain effort and lock in savings achieved

8. Culture of continuing best practice of the past

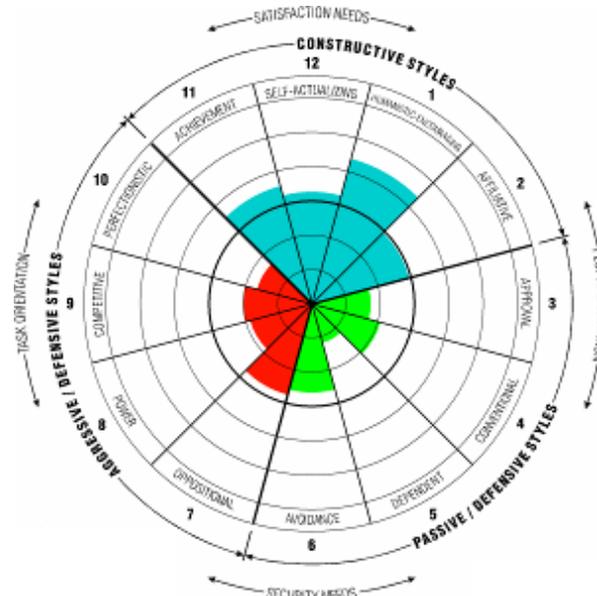


Culture of innovation and collaboration

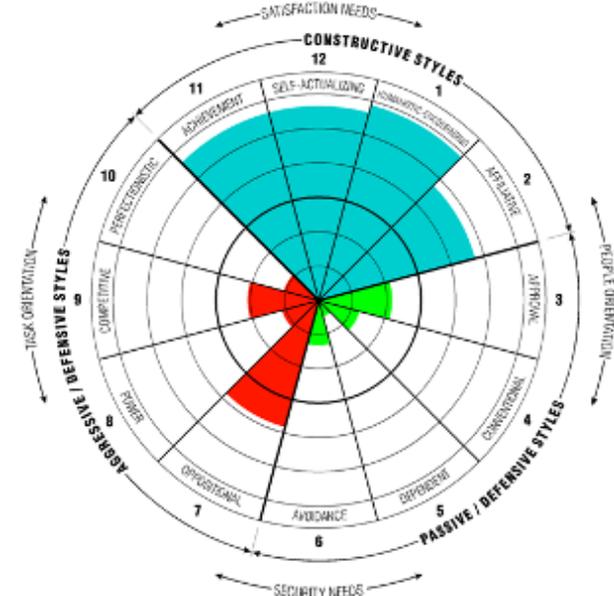
Melbourne Water – Cultural survey*



2005



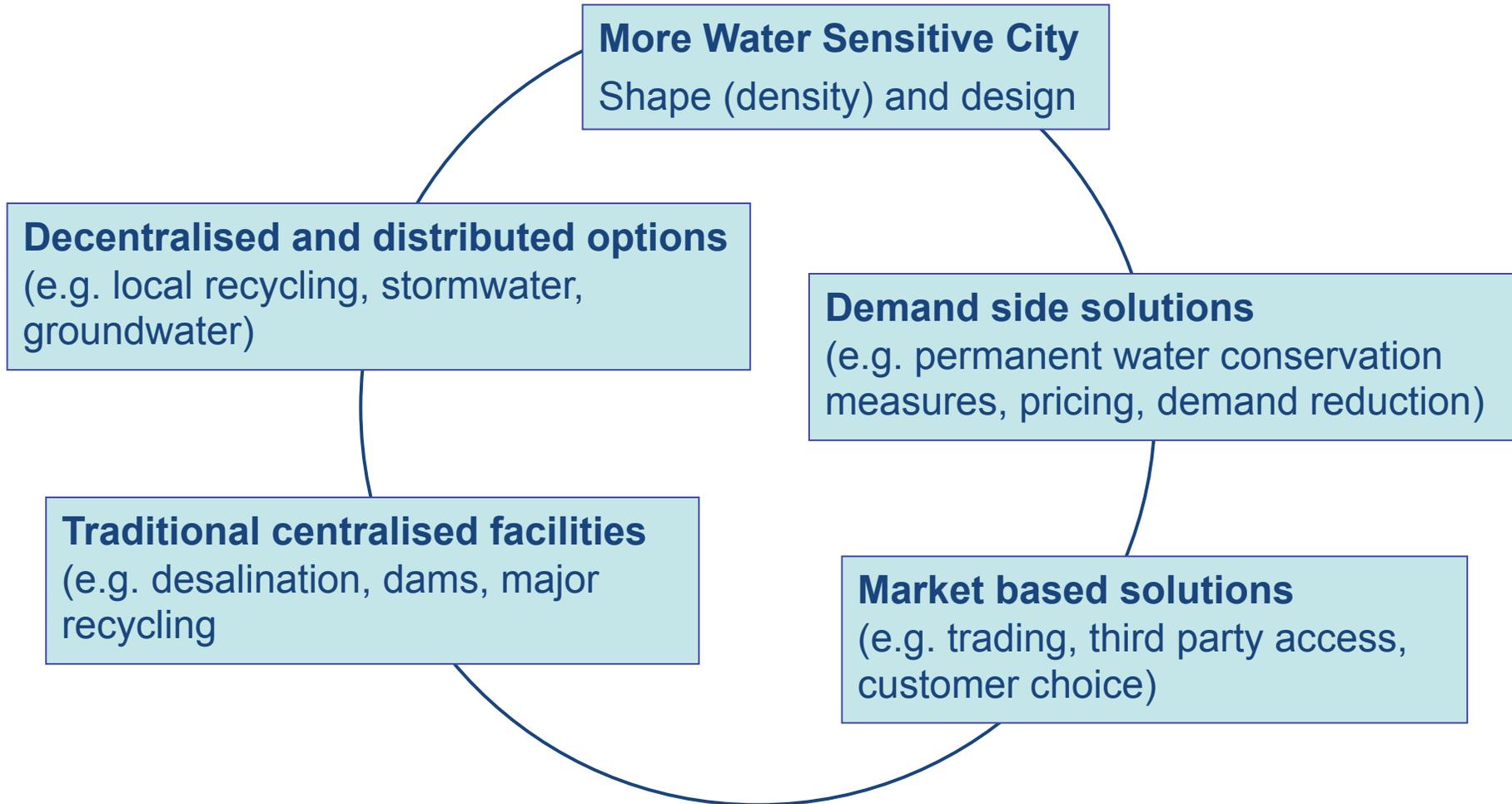
2009



Preferred Culture

* Organisational Culture Inventory as provided by Human Synergistics
Survey sample – 450 of 600 Melbourne Water Staff

Integrating strategies for meeting future needs – NOT MUTUALLY EXCLUSIVE



- The five strategic components are interdependent – need to be integrated
 - No silver bullet, different solutions for different conditions

Summary of lessons from the Melbourne experience

- Rapid and large climate shifts do occur
- Climate change/variability is impacting on all aspects of the business
 - Water supply impacts already significant
- Incremental adaptation to climate change was not sufficient
- Need for a fundamental re-think
 - Planning and assumptions
 - Range of possible adaptation options
 - Form of cities
- More sophisticated planning for uncertainty and complexity
- Individual agency response can be limited
 - Requires multi-agency and sector response
- Integrated research efforts – Global, National, Local
- Need culture of collaboration and innovation
- Water industry must be a leader in sustainable cities of the future
- Integrated solutions require long lead times

Thank You

Useful links

Detailed paper: www.melbournewater.com.au/ClimateChangeAdaptation

Melbourne Water: www.melbournewater.com.au

Our Water Our Future : www.ourwater.vic.gov.au