Australian Government

National Water Commission

Water for urban and local communities – what are the challenges?

2009 Infrastructure Colloquium

Parliament House Canberra

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Ross Martin

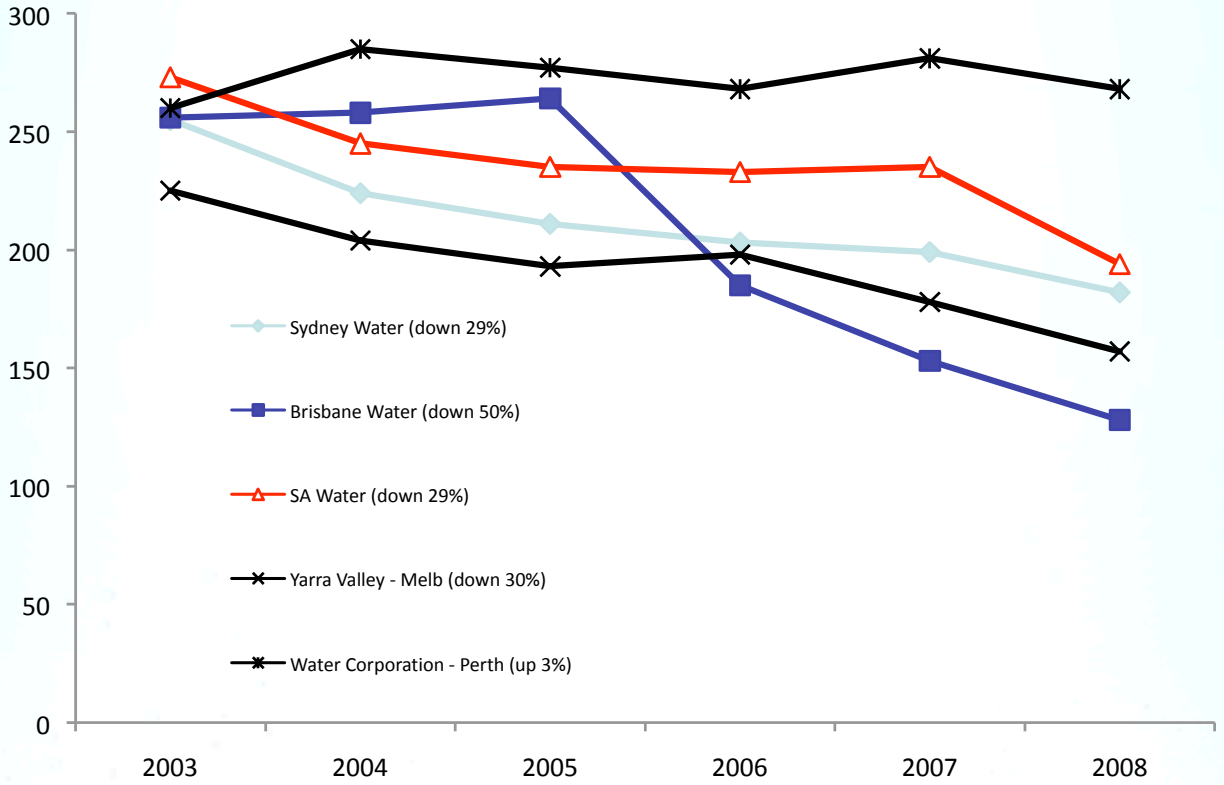
Outline

- Challenges arising from the responses to the "crisis" in water supply
  - Restrictions
  - major capex and water pricing
  - industry restructuring / transitioning
- Water sensitive cities
  - slow up take
- Take up of new water supplies
  - Indirect potable reuse
  - Streamlining business processes of regulators

Challenge: Urban Water Restrictions

Average annual residential water supplied

(kL per property)



Source: National Performance Reports, NWC and WSAA, 2008

Urban Water Restrictions – continued

- Unexpectedly long duration
  - Restrictions in all 5 major cities since 2002
  - Challenge – imposed significant 'external' costs
    - PC estimate of $1 billion per year
  - Challenge – supply/demand forecasting
    - Climate change
    - Household investments
      - *garden: new designs, more efficient irrigation systems*
      - *bores, water tanks, grey water systems*
      - *pool covers*
      - *more water-efficient appliances*
    - Changed attitudes / behaviours of households
      - *over-watering our gardens*
      - *Hosing v sweeping of driveways / paths*
    - Industry investments
      - *re-use systems*

Challenge: Major capex and water pricing

- Desalination investments in all the major urban areas
  - Productivity factor of 10x over last 10 years
    - *Membrane technology including use of RO*
    - *Now considered a relatively mature technology*
    - *Ref: Emerging Trends in Desalination, NWC, 2008*
- Indicative costing
  - ~$2/kL for capex and ~$0.4/kL for opex
  - Varies between the sites

Urban water pricing structures

- For water supply
  - an “inclining block” usage charge
- For wastewater services
  - a fixed charge
- Additional charges apply in some jurisdictions
  - Stormwater levies collected by some NSW councils
  - “abstraction” charge in ACT
- Pricing levels regulated in the major urban centres
  - In essence, a “cost plus” approach

City	2004/05	2005/06	2006/07	2007/08	2008/09
Sydney	$1.013	0-100kL: $1.20 >100kL: $1.48	$1.26 $1.63	$1.339 $1.829	$1.61 $1.81
Melbourne (Yarra Valley Water)	0-440L/day: $0.75 441-880L/day: $0.88 >880L/day:$1.30	$0.782 $0.918 $1.356	$0.8184 $0.9601 $1.4185	$0.8517 $0.9992 $1.4763	$1.0192 $1.1957 $1.7666
Melbourne (Southeast Water)	0-440L/day: $0.75 441-880L/day: $0.88 >880L/day:$1.30	$0.78 $0.92 $1.44	$0.81 $0.96 $1.55	$0.84 $1.02 $1.65	$1.0052 $1.2206 $1.9745
Melbourne (City West Water)	0-440L/day: $0.75 441-880L/day: $0.88 >880L/day:$1.30	$0.782 $0.918 $1.355	$0.8205 $0.9628 $1.4223	$0.8564 $1.0049 $1.4846	$1.0248 $1.2025 $1.7766

City	2004/05	2005/06	2006/07	2007/08	2008/09
Adelaide	0-125kL: $0.44 >125kL: $1.03	$0.46 $1.06	$0.47 $1.09	$0.50 $1.16	0-120kL:$0.71 120-520kL: $1.36 >520kL: $1.65
Brisbane	$0.85	$0.89	0-200kL: $0.91 200-300kL:$0.94 >300kL: $1.20	0-255kL: $1.19 256-310kL:$1.23 >310kL: $1.69	$0.59 $0.63 $1.12
Perth	0-150kL: $0.416 150-350kL: $0.674 350-550kL: $0.91 550-950kL: $1.20 >950kL: $1.50	$0.425 $0.689 $0.93 $1.226 $1.533	$0.493 $0.732 $0.95 $1.268 $1.588	$0.57 $0.78 $0.98 $1.32 $1.588	$0.643 $0.828 $0.997 $1.423 $1.714

Water Billing – international comparisons

	Water Bill	Median Water Price	Water consumption per property	Bill as % of Income
	Euro	Euro/kL	kL/year	%
Australia	226	0.66	190	0.6
Canada	332	0.88	200	0.7
Italy	270	0.93	200	0.9
Norway	318	1.72	140	0.5
Netherlands	230	1.93	110	0.8
Sweden	394	2.35	130	1
France	373	2.88	100	1

Sources: 1) Quentin Grafton, ANU and 2) National Performance Reports, NWC and WSAA, 2008

Challenge: Industry restructuring / transitioning

- Structures differ between the 5 major cities
  - Evolved over history and in context of local hydrology
  - A “water supply city” (supply access and security) to a “sewered city” (public health)
  - A “sewered city” to a “drained city” (flood protection)
  - A “drained city” to a “waterways city” (social amenity and environmental protection)
  - Climate change and population growth lead to a “water restrictions” city
- Major restructure in S.E. Qld over last few years
  - The restructure based around a grid manager
  - Key benefits being targeted
    - *Operate the dams as a “portfolio”*
    - *Improved transparency on costs of the services*
- Challenge: transitioning out of a “water restrictions” city to ???

Challenge – Water Sensitive Cities

Keep more of the available water in the urban landscape and keep it there for longer

Can deliver a range of public benefits making our cities more live-able

- Visual amenity
- Ecosystem benefit
- Leisure amenity
- Greening of the city
- Cooling of the city
- Mitigating impact of floods and bush fires

Leisure amenity value

Photo by Ian Kennins. Sourced from exhibition “Beyond reasonable drought” by Old Parliament House. Shows Lake Wendouree Rowing Club’s coxed four. 2007 photo.

Ecosystem benefit (valued by grandparents and grandsons everywhere)

THE KEY POLLUTANTS

ARSENIC: Exceeds drinking water guidelines near the power station

COPPER: between 30 and 50 times the natural levels near the station

FLUORIDE: levels in the river make it unsuitable for drinking

Salinity downstream of the station is 17 to 50 times higher than upstream.

Heavy metals, fluorides and salinity 'likely to be toxic to acquatic ecosystems'

TODAY'S FRONT PAGE OF SMH

SMH article:
"water in the Coxs River on public land did not meet drinking water guidelines"

Surf's up at Coogee ... for cars

Flood mitigation benefit

Source: SMH of 4th May 2009

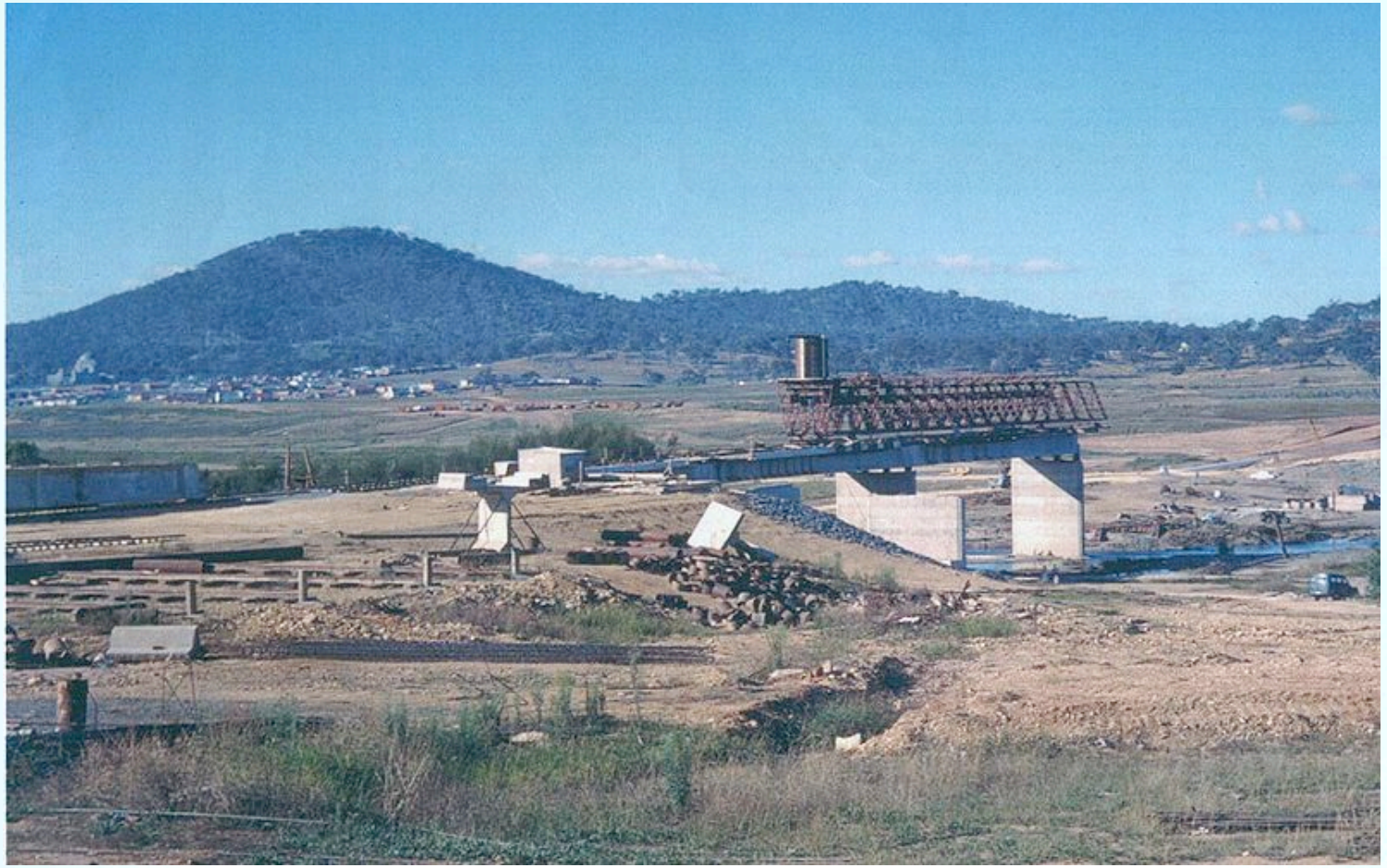
Storm impact, Dolphin Street, Coogee in Sydney's eastern suburbs
7pm to 9pm, Saturday 2nd May 2009

Visual amenity value – Fairfield (western Sydney suburb)

Source: Fairfield City Council, Sydney

Visual amenity - Canberra with Lake Burley Griffin

Visual amenity – Canberra without Lake Burley Griffin



Water Sensitive Cities - continued

- also a private benefit
  - a sale of water to a customer
  - Typically a minor component of the total benefits of a WSC project
- water in the urban landscape
  - NOT JUST ANOTHER COMMODITY!

Water Sensitive Cities - continued

- Many good projects are still difficult to fund
- Contributing challenges
  - Lack of (easily-communicated) vision
  - Engaging public and political support
  - Integration – difficulties to co-develop
  - Legislation limits

Challenge – take up of new water sources

- Indirect potable reuse
- A fit-for-purpose regime
  - COAG processes have produced national guidelines
    - State regulators are implementing these guidelines
    - opportunities to streamline business processes

Summing Up:Emerging Challenges for Urban Water

- Challenges arising from our response to the “crisis” in water supply security
  - restrictions
  - major capex and urban water pricing
  - industry restructuring / transitioning
- Water Sensitive Cities
  - slow take up
- Take up of new water sources
  - indirect potable reuse
  - streamlining the business processes of water quality regulators