Changing the way water is used, supplied and managed

A South East Queensland perspective

Californian Water Policy Conference

4 March 2010

Hon. Peter Beattie

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OVERVIEW

- Drought in SEQ
- The SEQ response
  - Using less
  - Supplying more
  - Managing efficiently
- Observations and suggestions

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Challenges of growth

- 2.7 million residents
  - 80% of Queensland population
- Since 1980s, fastest growing metropolitan region in Australia
  - 50,000 to 60,000 new residents a year
- Forecast population of:
  - 4 million by 2026
  - 5.2 to 6.2 million by 2056

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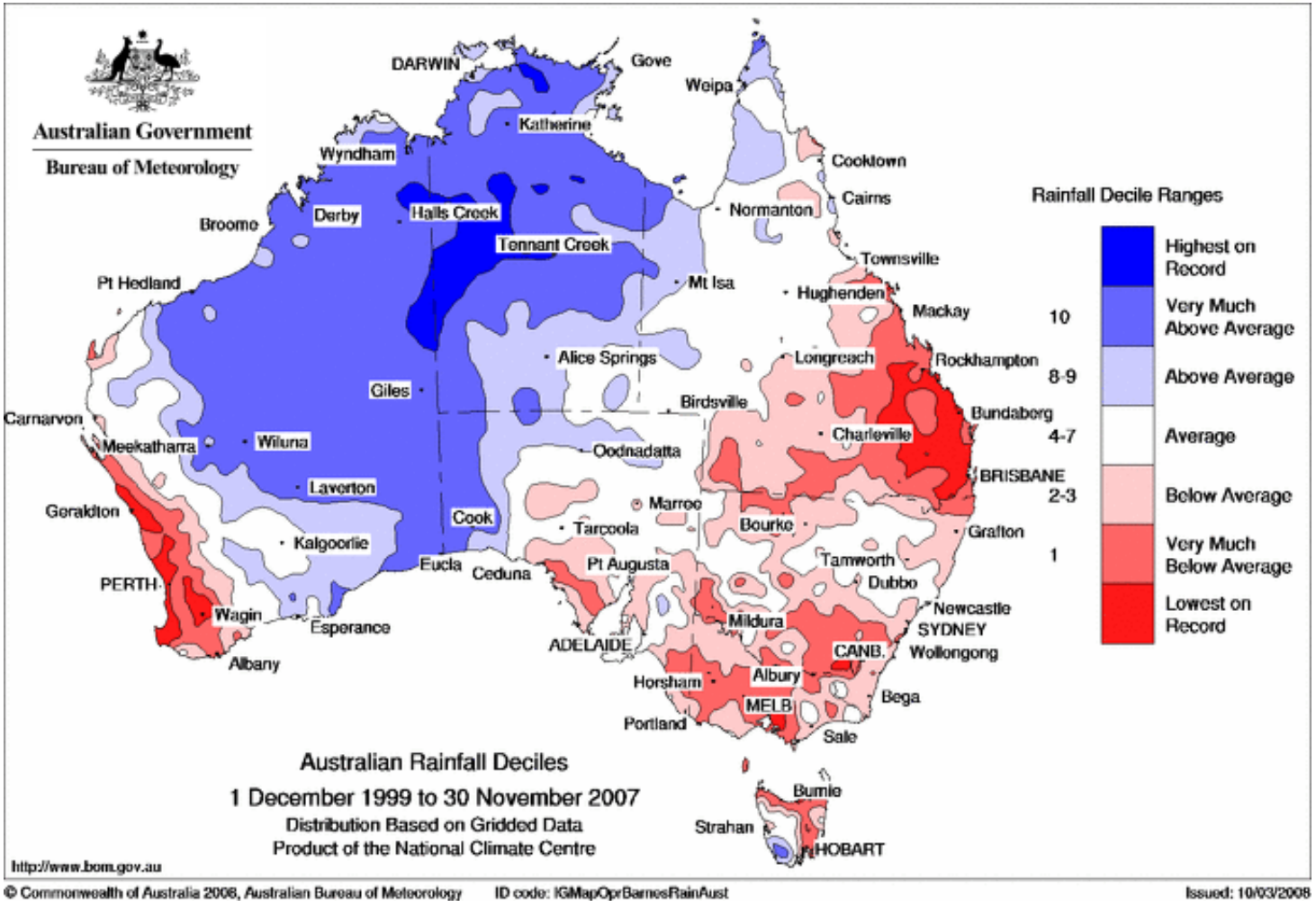
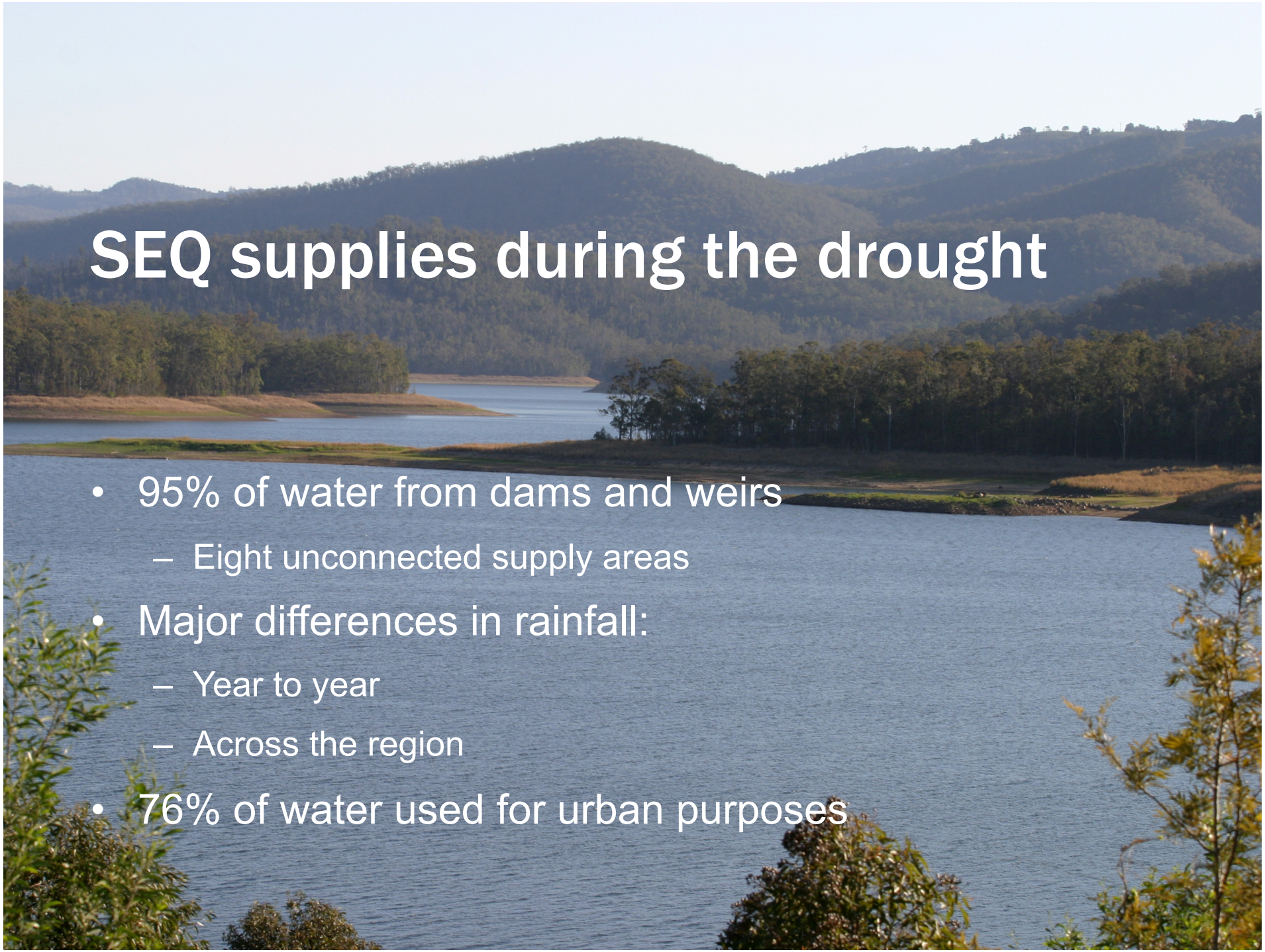
Challenges of climate variability and change





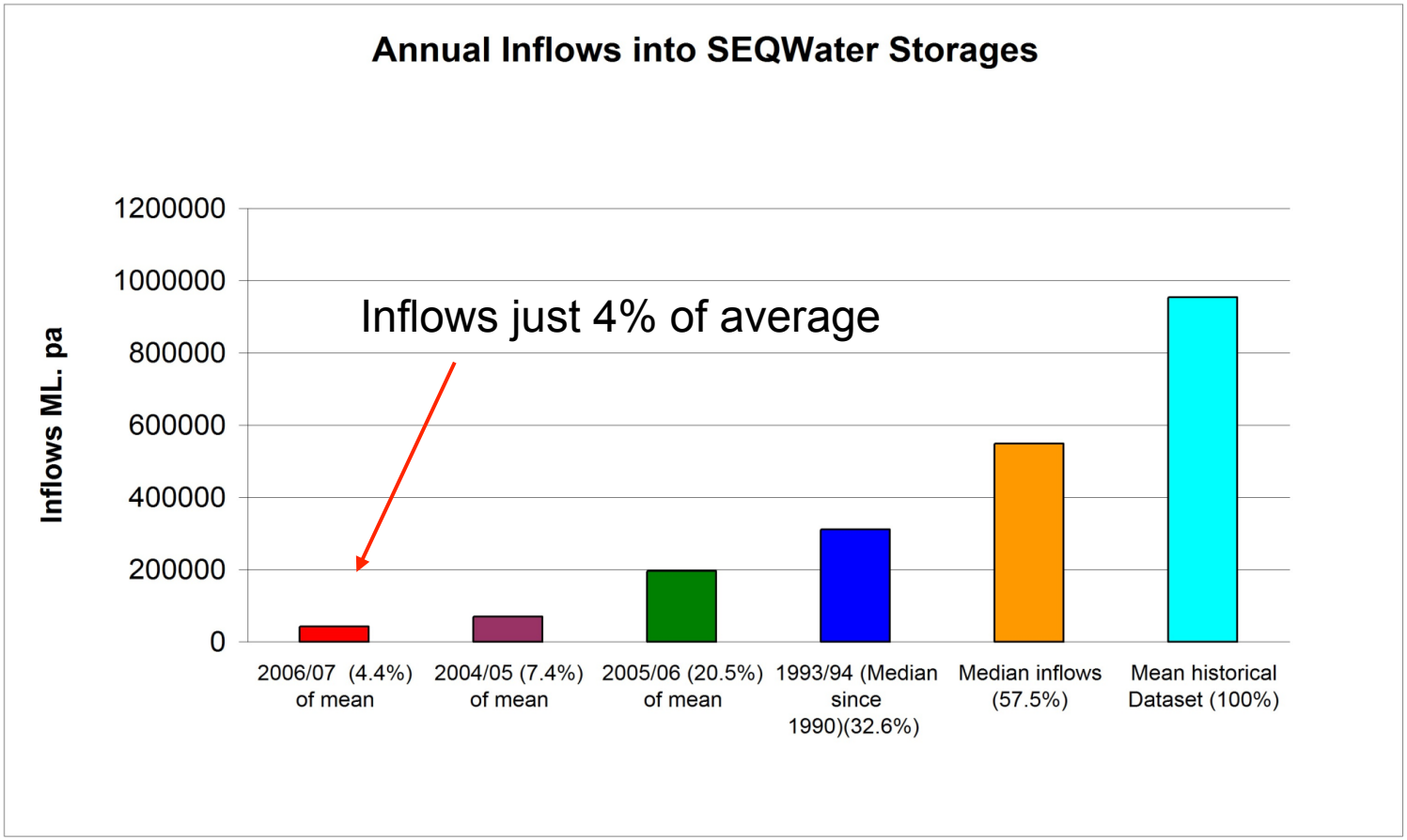
SEQ supplies during the drought

- 95% of water from dams and weirs
  - Eight unconnected supply areas
- Major differences in rainfall:
  - Year to year
  - Across the region
- 76% of water used for urban purposes

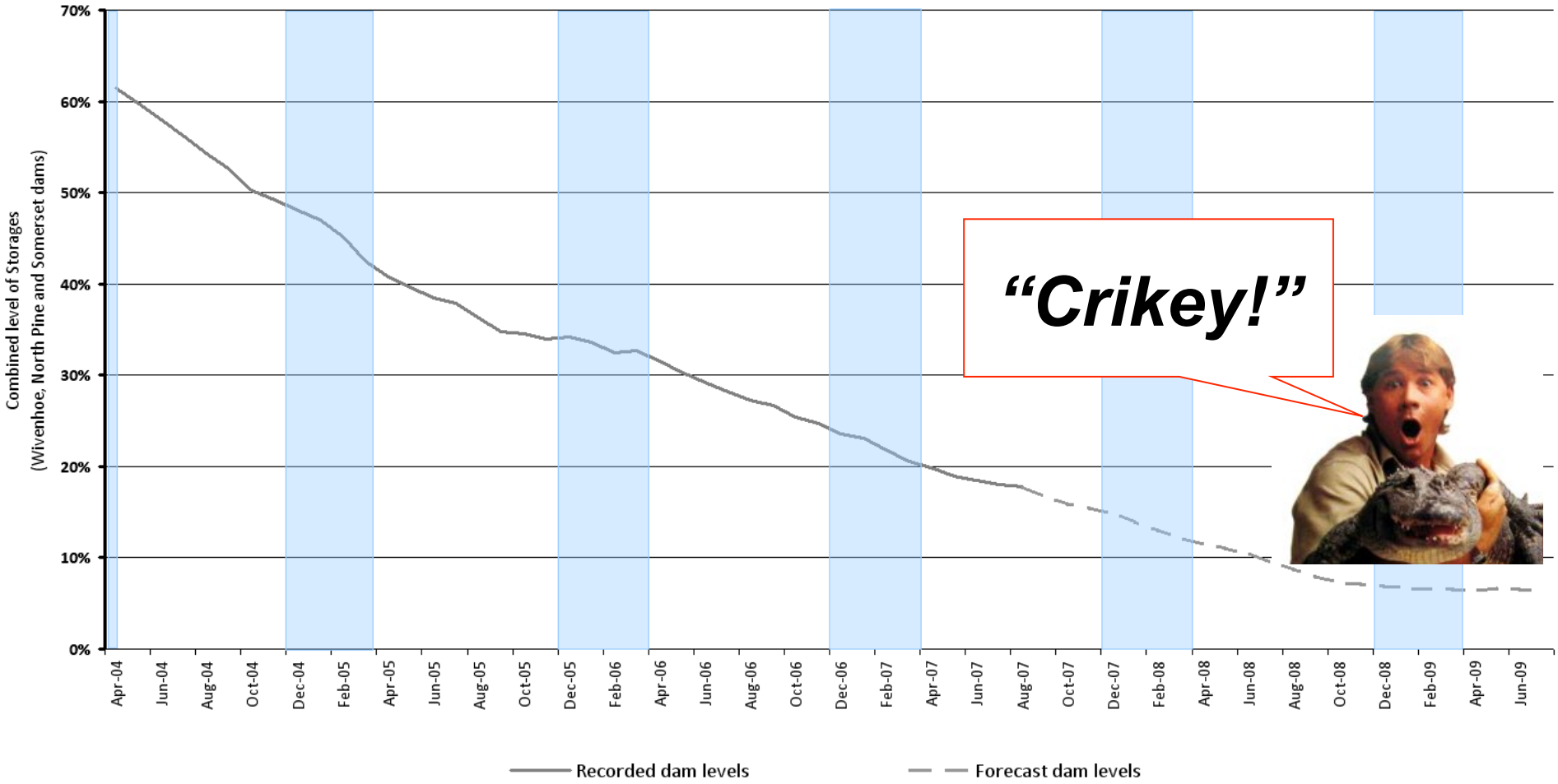
Supplies across SEQ

- During the drought

Inflows to major storages



Millennium drought – predicted levels



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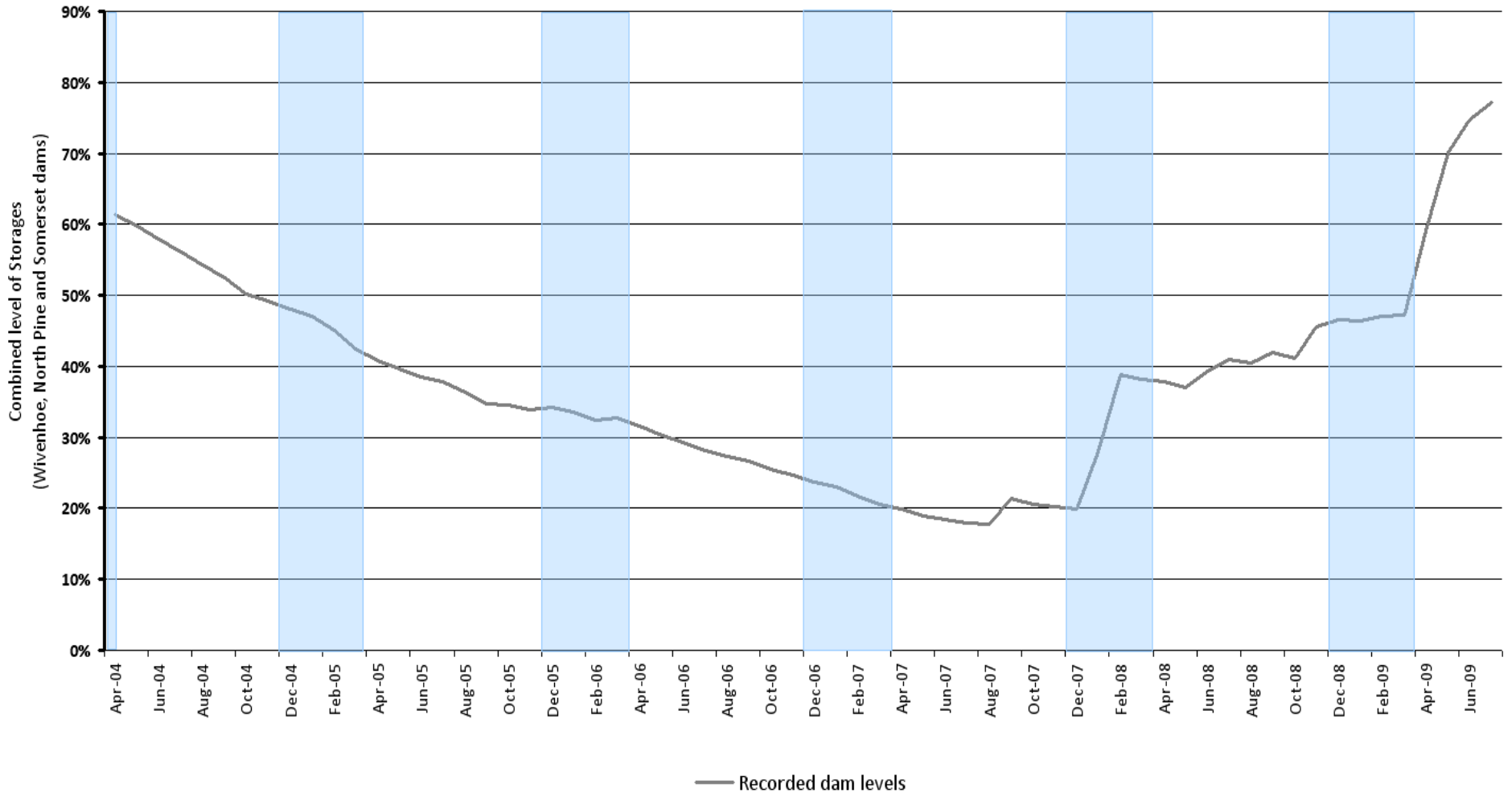
Actual storage levels



Our solution

- Using less
- Sourcing more
- Managing efficiently


USING LESS

Stages of behavioural change

Pre-contemplation	Contemplation	Preparation	Action	Maintain
Change not considered	Something prompts thinking about making a change	Information gathering	Behavioural change	Consistent practice of changed behaviour

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Pre-contemplation

Base case

- By mid 2006:
  - Dams had declined to 30% of capacity
  - Level 4 restrictions in place, largely prohibiting outdoor water use
  - Average residential consumption declined to about 180 litres/day
  - Residents reported restriction fatigue
- Further savings needed to be made within the home
  - 70% of total use was residential
  - Showers one-third of residential water use
  - Average shower time 7 minutes
- A new approach was required

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Pre-contemplation

Understanding through research

- Extensive qualitative and quantitative research undertaken
- Research identified three barriers to change
  - Having an understanding of the problem
  - Knowing regional consumption patterns
  - Believing individual behavioural changes could make a difference

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Contemplation

Dam shocked SEQ into action

Preparation

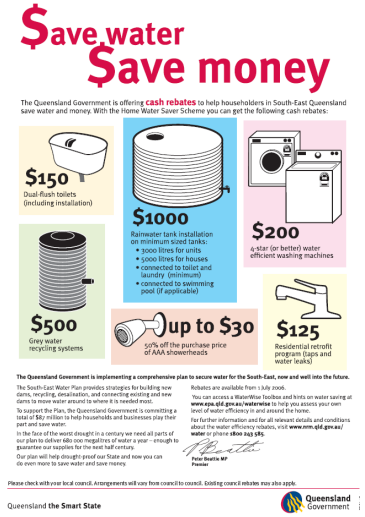
Target 140

- Challenged the community to reduce average consumption to 140 L/person/day
  - Overarching campaign message of **shower for 4 minutes or less**
- Extensive communications campaign
  - Shower timer and information booklet delivered to 1.1 million households
  - Television, print, outdoor and radio advertising
  - Average consumption reported weekly
- Supported by rebate and retrofit schemes

Preparation

Rebates and incentives

Home waterwise rebates
- Largest rebate program in Australia
- $238 million in subsidies for water efficient devices
- Around 250 000 rainwater tanks had been installed in SEQ



$20 home waterwise service
- Government subsidised service
- Licensed plumbers installed water efficient devices

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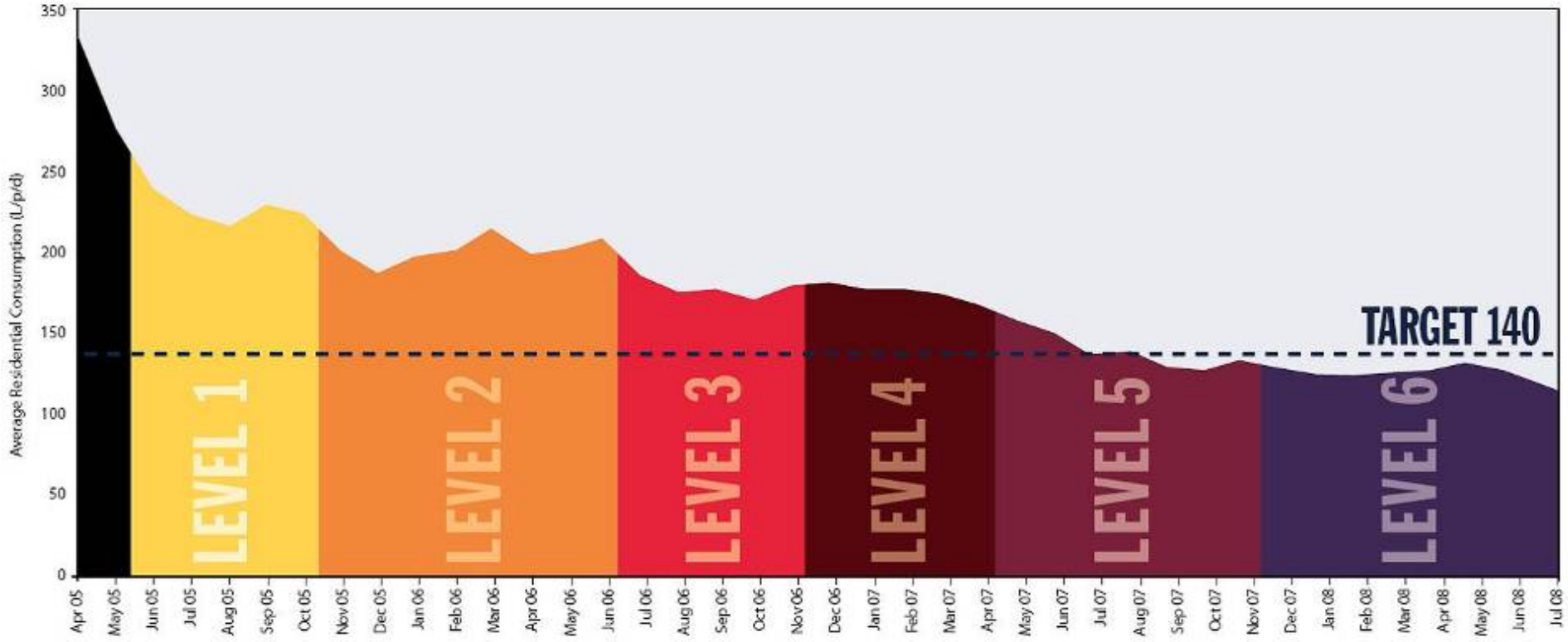
The campaign worked

Action



Compliance measures…

Household consumption	Proportion of total households	Proportion of total residential use
800 to 2000 L/day	6.5%	15.9%
More than 2000 L/day	0.4%	5.6%

- Households using >800 litres/day required to account for their consumption
- Half had a reason or promptly reduced their consumption
  - 47% had large families or multiple unit dwellings
  - 34% promptly reduced their water use
  - 9% identified and fixed a leak
- Outdoor watering bans applied where consumption is not explained and remains high

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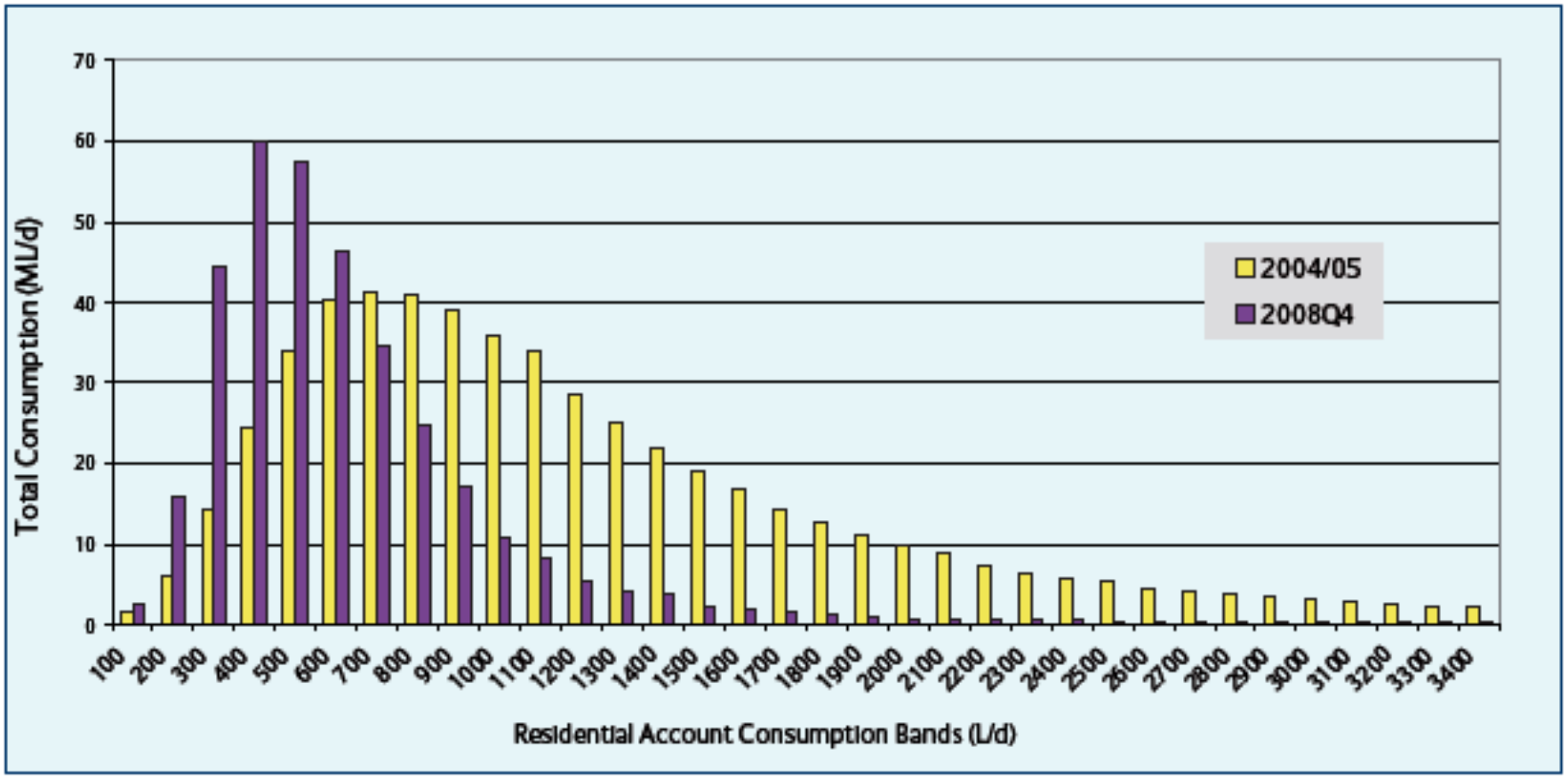
…also worked



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Beyond the drought…

Maintain

- Restrictions eased and consumption target increased
  - Consumption consistently below target
- Consistent restrictions and target apply across SEQ for the first time
  - Consumption reduced in new areas, but not to same extent
  - Triggers for behavioural change will be different
- Consulting on long-term consumption target
  - Likely to reduce from 230 to 200 L/person/day
  - If achieved, the next supply will be deferred by five years
  - One of a series of objectives that form the basis for Water Grid planning, operations and contracts

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Pricing

Maintain

- Since October 2004 water use information provided to residential owners
- Tenants received from April 2008
  - Interim step to tenants receiving bills
- From January 2009 separate bills issued to residential owners
- From 2014 issued to tenants
  - Separate meters required in new multi-unit buildings
- Minimum billing requirements being introduced
  - Considering pricing policies to encourage conservation

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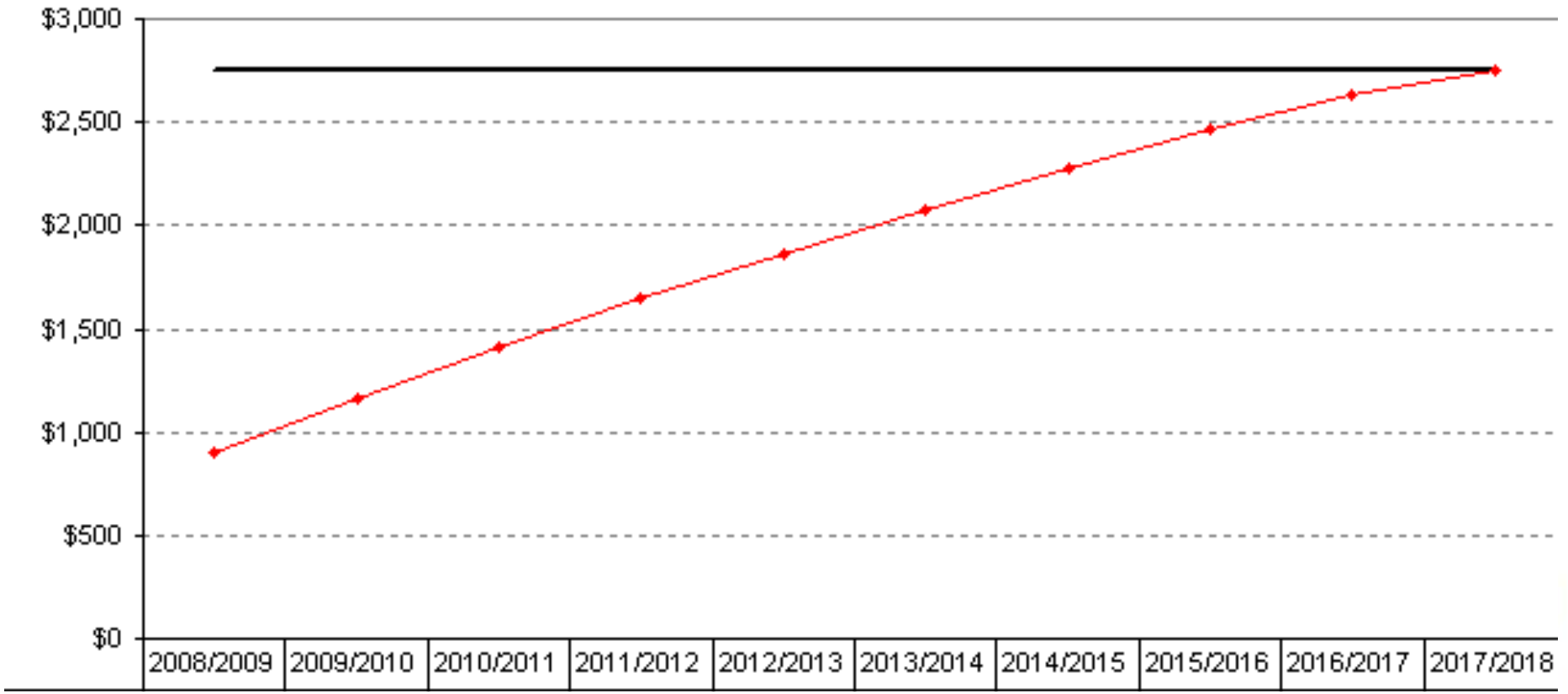
Price paths

Maintain



Off-Grid supplies

Maintain

- Minimum requirements for most new buildings
  - Houses must aim to save 70 000 L/year through local supplies
  - Most commercial and industrial buildings must install a tank
  - In addition to minimum requirements for appliances
- Reduce demand for Grid Water by:
  - 35 000ML/year in 2026
  - 60 000ML/year in 2056
- Acceptable solution rainwater tank
  - Connected to toilet and washing machine
- Best solution will vary, depending on local conditions
  - Alternatives include recycled water and stormwater harvesting
  - Range of research and demonstration projects underway

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Non-residential savings

- Consumption reduced by 35% from pre-drought levels
  - Achieved despite a 6% increase in number of businesses
- Focus on major and moderate water users
  - Around 9000 customers
  - 90% of use
  - 97% of savings achieved

	Consumption band			
	<1 ML/a	1 to 10 ML/a	>10ML/a	Total
2004/05	17.3 ML/d	43.3 ML/d	151.0 ML/d	211.6 ML/d
2008	15.3 ML/d	29.0 ML/d	93.7 ML/d	138.1 ML/d
Savings	2.0 ML/d	14.3 ML/d	57.3 ML/d	73.5 ML/d
% Savings	3%	19%	78%	34.7%

Major users (more than 10 ML/a)

- Required to implement a Water Efficiency Management Plan
  - Demonstrate 25% reduction in use or best practice
  - Ongoing requirement
- Currently applies to about 1100 businesses
  - 77% of plans approved and implemented
- Annual audit and inspection program
  - Minimum of 20% of premises
  - In 2008, 76% of business complied with requirements
- Regulatory requirement, but also a business case
  - Should be a key consideration in business planning and investment
  - Benefits in terms of reduced overheads and improved productivity
  - Being integrated with energy efficiency requirements

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Moderate users (more than 1 ML/a)

- Required to install water-efficient devices
  - Kitchen, laundry and ablution facilities
  - Includes shopping centres, restaurants, clubs, hospitals, educational facilities, hotels, motels, warehouses, nurseries and service stations
- Audit and inspection program commenced 2008
  - Annual target of inspecting 20% of business
  - Overall, 75% of businesses compliant at first inspection
  - Increased from 60% in first quarter of program to 90% in the last


SOURCING MORE

Proactive approach

- Major investment in infrastructure to build new supplies and create water grid
- 12 regulated projects delivered in record time

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SEQ Water Grid

1. Cedar Grove Weir
2. Brisbane Aquifer Project
3. Bribie Island Groundwater Project
4. Bromelton Off-stream Storage
5. Western Corridor Recycled Water Project
6. SEQ Desalination Facility
7. Southern Regional Water Pipeline
8. Eastern Pipeline Interconnector
9. Northern Pipeline Interconnector Stage 1
10. Hinze Dam Stage 3
11. Wyaralong Dam
12. Northern Pipeline Interconnector Stage 2

Construction timeframes (announced mid 2006)

Projects	Status at mid 2007	Status at mid 2008
SEQ (Gold Coast) Desalination Facility	Tunnel boring and site works underway	Site works and marine intake near complete
Western Corridor Recycled Water Project	Stage 1A completed, supplying Swanbank power station	Stage 1B completed, supplying Tarong power station
Southern Regional Water Pipeline	37 of 100 kilometres laid	92 of 100 kilometres laid
Northern Pipeline Interconnector Stage 1	Design and estimate completed	42 of 51 kilometres laid
Cedar Grove Weir and Bromelton Off-stream Storage	Construction commenced	Complete

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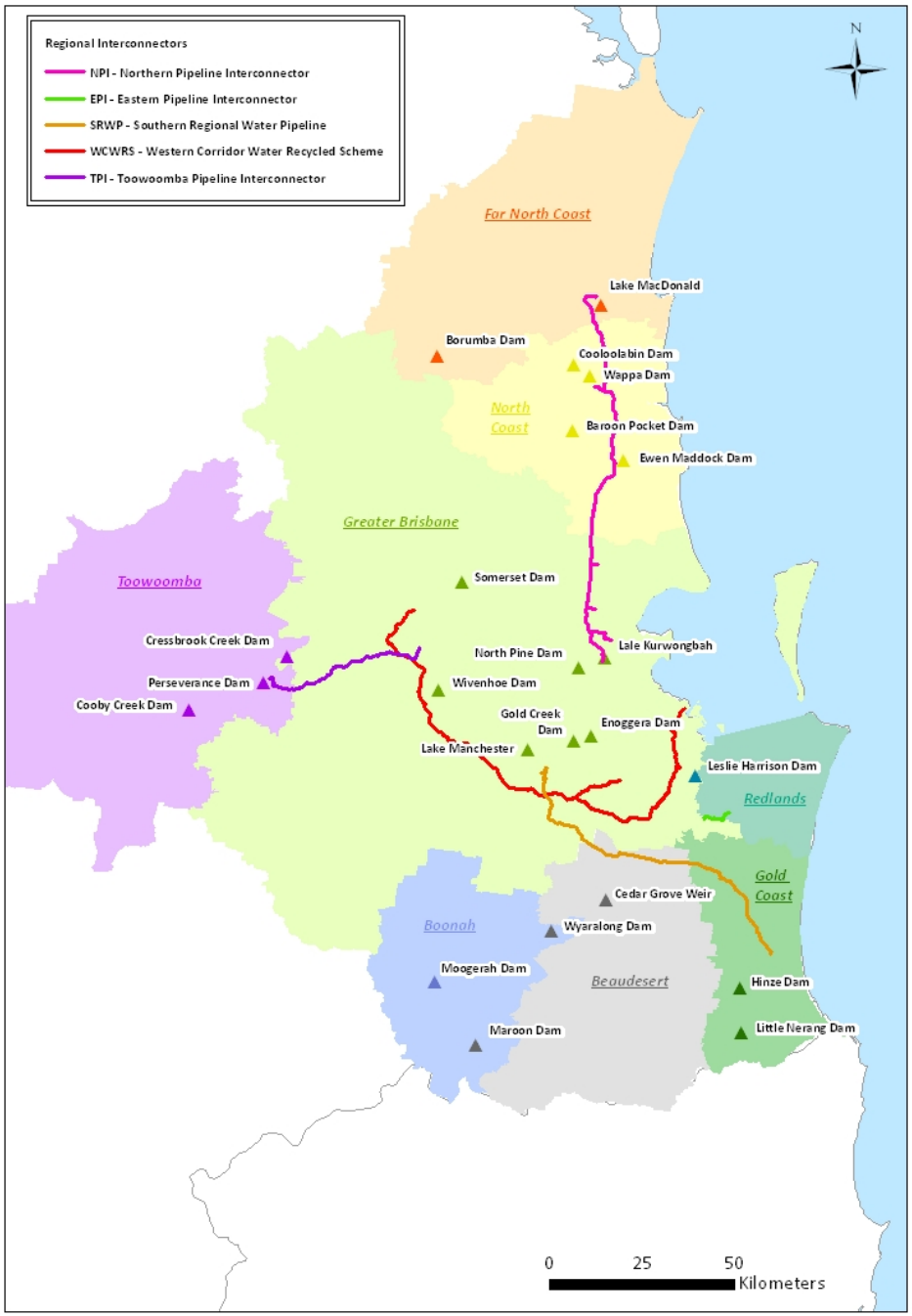
Supplies in 2006

- 95% from dams and weirs
  - Combination of coastal and inland storages
- Eight unconnected systems

Supplies now

- 79% from dams and weirs
- One connected system
  - Some virtual connections



Benefits of connection and diversity

- Interconnection increases system yield by 14%
- Diversity also increases system yield:
  - LOS system yield in 2012 will be 560 000 ML/a
  - Without WCRWP, LOS system yield would be 470 000 ML/a (based on current policy)
- Do not need to operate infrastructure to deliver benefits

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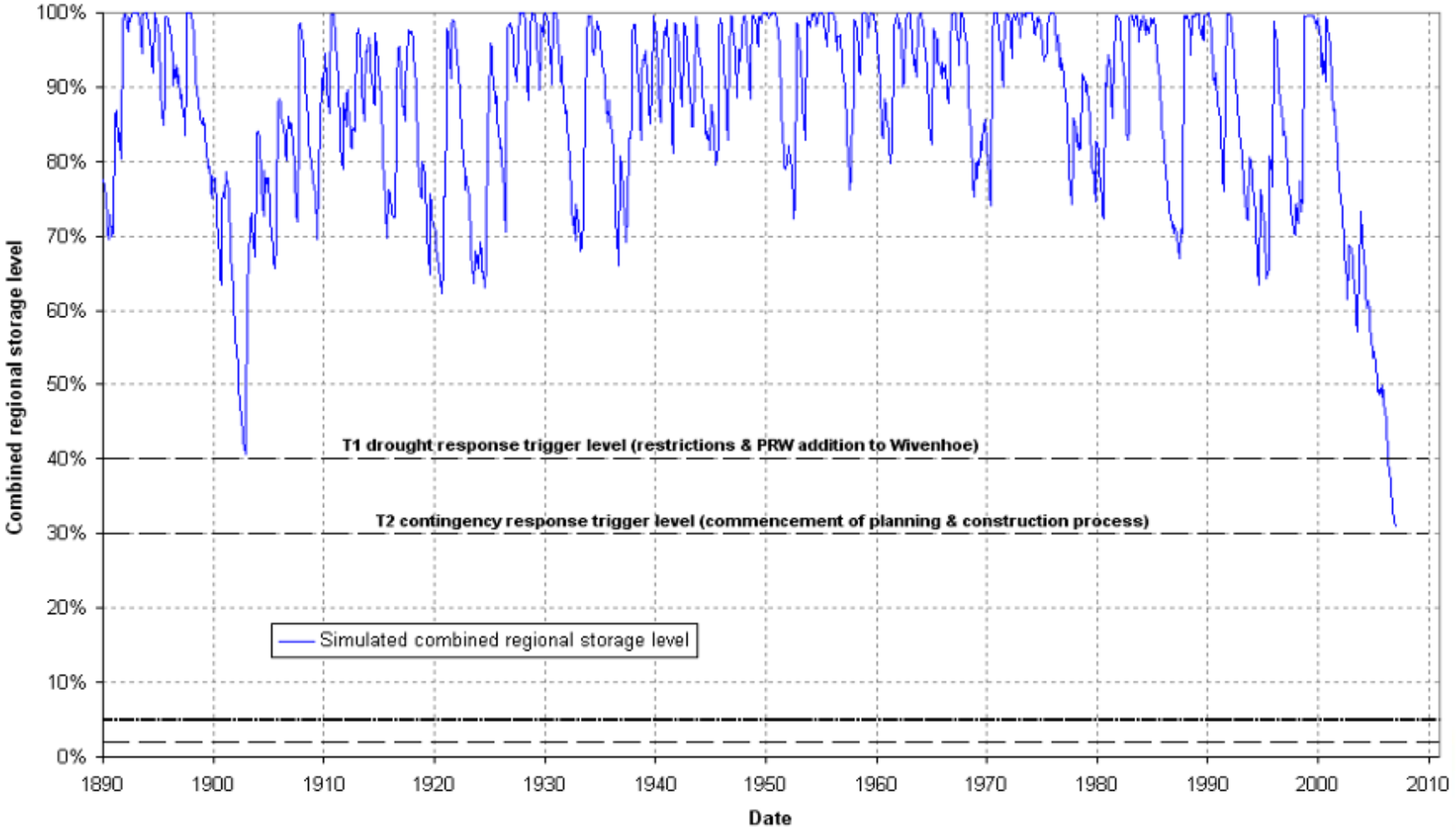
Long-term water security



Sourcing more

- New bulk water supplies will be required
  - Next supply required from 2017, but could be deferred to 2030
  - Planning must start now
- Minimal options remain for large supplies
  - Desalination is part of SEQ's future water security
  - Alternatives will continue to be investigated

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MANAGING EFFICIENTLY

Managing efficiently

- Reform to institutional arrangements
- Optimise SEQ Water Grid operation
- Total water cycle planning

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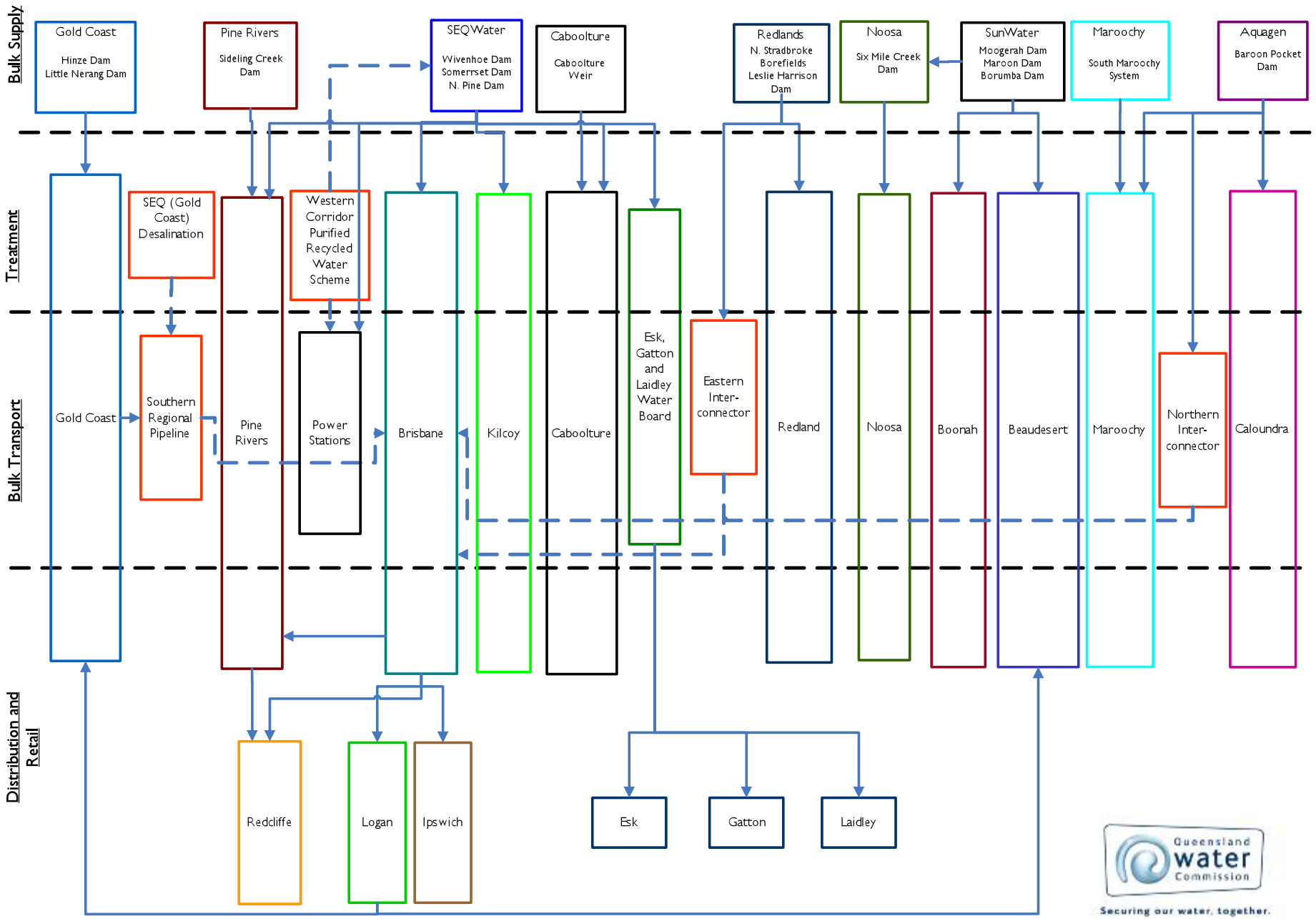
Bulk Supply
Treatment
Bulk Transport
Distribution and Retail
Gold Coast
Hinze Dam
Little Nerang Dam
Pine Rivers
Sideling Creek Dam
SEQWater
Wivenhoe Dam
Somerrset Dam
N. Pine Dam
Caboolture
Caboolture Weir
Redlands
N. Stradbroke Borefields
Leslie Harrison Dam
Noosa
Six Mile Creek Dam
SunWater
Moogerah Dam
Maroon Dam
Borumba Dam
Maroochy
South Maroochy System
Aquagen
Baroon Pocket Dam
SEQ (Gold Coast) Desalination
Western Corridor Purified Recycled Water Scheme
Gold Coast
Southern Regional Pipeline
Pine Rivers
Power Stations
Brisbane
Kilcoy
Caboolture
Esk, Gatton and Laidley Water Board
Eastern Inter-connector
Redland
Noosa
Boonah
Beaudesert
Maroochy
Northern Inter-connector
Caloundra
Redcliffe
Logan
Ipswich
Esk
Gatton
Laidley
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Need for change - Legacy issues

- Fragmented ownership and skills
- Confused accountability
- Lack of regional integration
  - Pricing
  - Demand management
  - Development requirements
- No means of equitably sharing costs
- Limited regulation of asset management

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Need for change – Levels of Service

- Water in SEQ is a shared resource
- Explicit Level of Service objectives
  - Average residential consumption of 230 litres/person/day
  - Restrictions once every 25 years, on average
  - 15% reduction in total consumption
- Underpins all aspects of the SEQ Water Grid
  - System operation
  - Demand management
  - Pricing and contracts
  - Planning

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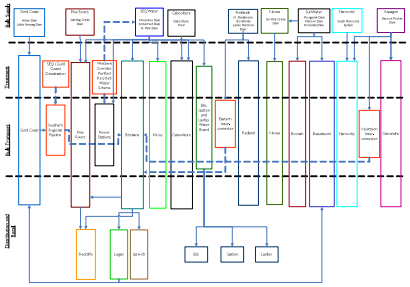

SEQ Water Grid manager

This authority is responsible for managing the Water Grid to secure and efficiently manage South East Queensland's water supply. It purchases water services from State-owned bulk water authorities to sell treated water to councils.
www.seqwgm.qld.gov.au

WaterSecure

This authority supplies water from the Gold Coast Desalination Plant and the Western Corridor Recycled Water Scheme to the Water Grid Manager.
www.watersecure.com.au

seqwater
WATER FOR LIFE

This authority supplies water from dams, weirs and borefields; and is responsible for the catchment management, storage and treatment of bulk drinking water for the community of South East Queensland.
www.seqwater.com.au

State-owned bulk water providers

LinkWater
Moving water to where it's needed most

This authority moves drinking water from treatment plants and reservoirs through bulk pipelines and into the distribution networks.
www.linkwater.com.au

Queensland Urban Utilities

Distribution and retail business for Brisbane, Scenic Rim, Ipswich, Somerset and Lockyer Valley areas (Operates from 1 July 2010) Sells and delivers water to customers and collects, transports and treats sewage.

Allconnex Water

Distribution and retail business for Gold Coast, Logan and Redlands council areas (Operates from 1 July 2010) Sells and delivers water to customers and collects, transports and treats sewage.

Unitywater

Distribution and retail business for Sunshine Coast and Moreton Bay Regional Council areas (Operates from 1 July 2010) Sells and delivers water to customers and collects, transports and treats sewage.

Local government owned water service providers

Domestic and business customers

Legend

→ Water supply

Comparison with energy in California

Role	SEQ water arrangements	Californian energy arrangements
Water security policy and planning	Queensland Water Commission	California Energy Commission
Bulk supply	Watersecure and Seqwater	Various
Bulk transport	Linkwater	California Independent System Operator
Market coordination	SEQ Water Grid Manager	California Independent System Operator
Retail and distribution	Unitywater, Queensland United Utilities and Allconnex	Various
Economic regulation	Queensland Competition Authority	California Public Utilities Commission

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Benefits of reform

- Separation of institutional roles
  - Policy and planning, regulatory, operational
  - Clear accountability under a regulatory framework
  - Economic incentives where effective, regulation where required
- Consolidation of assets and skills
  - Scale to develop specialist asset management and skills
  - Single corporate focus
- Efficient costs
  - Economies of scale from asset amalgamation
  - More active asset and economic regulation

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Transparent and need based

- Objectives and regulatory requirements specified
  - For quality, Queensland Health specifies standards
  - For quantity, Commission specifies acceptable level of risk
- WGM optimises system operation to achieve these needs
  - For quality, water quality needs at transfer points
  - For quantity, level of production
- Supported by contractual arrangements
  - For bulk entities, efficient costs passed onto WGM
  - For distribution entities, LOS product at common charge
- Supported by economic regulation
  - For bulk entities, based on Grid Manager needs
  - For WGM, focus on optimisation decision making

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Potential for competition

- Initial focus on local supplies
  - Driven by Water Saving Target
- Platform for competition for bulk supply
  - Statement of Needs process
  - New entrants known to be interested
- Competition has to pay its way

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OBSERVATIONS & MOVING FORWARDS

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An opportunity for transformational change?

California is facing one of the most significant water crises in its history…

- Like SEQ in 2005:
  - Multi-year drought
  - Reduced water supplies
  - Growing population
  - Climate change
  - Court decisions and new regulations
  - In some areas, ecosystems and surface waters are unhealthy

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Enlist the community

- Like SEQ, you have many programs aimed at achieving structural water efficiency
  - Likely to achieve 20% by 2020
- SEQ illustrates that major behavioural change is possible
- Consider a uniform consumption target (Target 140)
- Consider a simple metric for water security
  - Something that cabbies will talk about
  - Ours was combined dam levels

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Consider some explicit targets

- In SEQ, we plan and operate based on:
  - Average residential consumption of 200 litres/person/day
  - Restrictions once every 25 years on average
  - 15% reduction in total consumption in droughts
- What can the current system in California deliver?
  - Does this vary between areas and utilities? (Both in theory and practice)
- What are you trying to achieve?
  - How should the costs be shared?

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Tackle institutional arrangements

- Without the right arrangements, you will not:
  - Sustain the benefits of demand management
  - Maximise the benefits of a more diverse water supply
- Like SEQ in 2005:
  - Many utilities doing similar things
  - Some utilities world leading, others lack resources
  - No clear legal responsibility for ensuring security of supply
  - In the public eye, Governor will be held responsible
  - No top down planning process
- Consider the alternatives
  - Your solution will be different to SEQs
- Opportunity to build on highly capable utilities
- Change might take longer, due to different political process

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Optimise your portfolio

- Like SEQ, your portfolio of supplies is becoming much more complicated
  - Recycling
  - Desalination
  - Storage upgrades
- Could you benefit from more coordinated management?
  - Could you actively use of aquifers as drought storage reserves?
  - Do all sources need to operate at capacity all of the time?
  - Could you save energy and costs through optimisation?

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COMMENTS & QUESTIONS

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