

Sustainability and the Built Environment

The True Cost of (Fire) Water in Australia

How much? Who knows? Who Pays? Who cares?

Graeme Thom AFSM

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Queensland Fire and Rescue Service

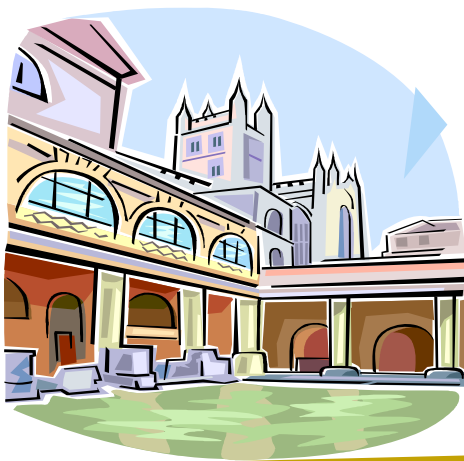
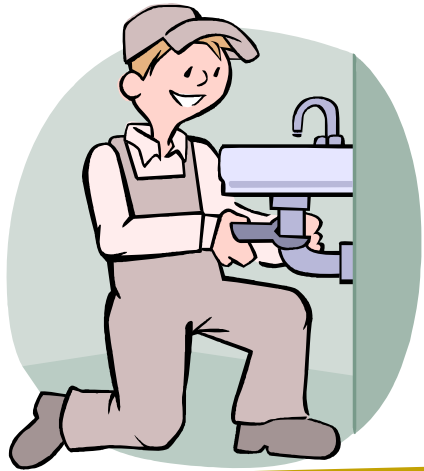


Plumbing



Community Ablutions

Roman baths



Vigils



How Important is Water today ?

“World Risks More War”

“US warns about danger of global conflicts and terror attacks”

Mr McConnell, America’s intelligence chief, said 1.4 billion people in 36 countries are likely to suffer a lack of water for drinking and agriculture. This many people without these basic necessities will create significant global tensions, expected to be further exacerbated by global change.



Courier Mail – 17th Sept 2005

“Water – wasting away”

- 52,800 megalitres of water each year is *lost* through leaks and burst water mains
- *Or stolen?*
- *Or used for firefighting!*





CALGARY

50m H
10000 L

30 2:39 PM

10



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30 2:54 PM



MISSISSAUGA

30 3:05 PM



30 4:01 PM







30 4:02 PM

The True Cost of (Fire) Water in Australia

Who cares?

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A Daily Super pill for men over 50

- The UK's Department of Health's national director for heart disease said recently "All men over 50 should take a polypill to cut heart attacks and strokes". It would contain cholesterol-busting statin, aspirin and other drugs to cut blood pressure.
- It would transform the nations' health and relieve pressure on the national health scheme.
- While mass *prescription* of a polypill would cost \$15 billion a year, heart disease and strokes claim more than 200,000 lives a year and cost the health service \$35 billion a year to treat.
- Should the UK spend the 15 billion per year to save 20 billion per year, can the UK afford to be that proactive about good health?
- Would the UK still need a health system – yes.



PRO-ACTIVE ABOUT PLUMBING AND FIRE SAFETY

That all high risk to life buildings in Australia be fitted with an appropriate sprinkler systems by 2030

Without a sprinkler system		With a sprinkler system	
<ul style="list-style-type: none"> • Uninhabitable for up to 6 months or • May need to be completely rebuilt • Water and heat damage = major loss 		<ul style="list-style-type: none"> • Room uninhabitable for 2 days • May need airing, carpets dried out • Replace sprinkler head • Damage limited 	
Total water used	Total damage	Total water used	Total damage
12,500 Its	\$300, 000 ++	300 -700 Its	\$1000



That all high risk to life buildings in Australia be fitted with an appropriate sprinkler systems by 2030

Can Australia afford to be proactive about Fire Prevention and Fire Protection ?

Can we afford not to be pro-active about Fire Prevention and Fire Protection ?

Would Australia still need it's Fire Industry & Fire Services, including contributions from the plumbing industry ?

YES !!!

But what's the Balance between how much we spend and how much we saveand how do we know when we get it right?



Background

- Productivity Commission review (2004).
- Review the Bldg Regulatory Reform Process implemented over the last 10yrs (including the BCA).
- Draft ABCB research study (2005) “The Cost of Fire in Australia = \$\$\$
- Key stakeholder response to the ABCB paper.
- Brian Ashe (ABCB) – PHD – TCF Australia.
- AFAC Draft report, Estimating the Economic Cost for Fire 2005/08.
- World Statistics Centre – Geneva (comparative statistics for past 27 years)



Total Cost - Categories

- Anticipation ?
- Response ?
- Consequences ?

Total

\$ 100%



True cost – Total

- **Anticipation**

Incidents averted or minimized,

therefore losses averted or minimized ?

- **Response**

Incidents minimized and property loss prevented ?

- **Consequences**

Opportunity value generated/lost ?

Total

\$ 100%



Total cost of fire – Australia

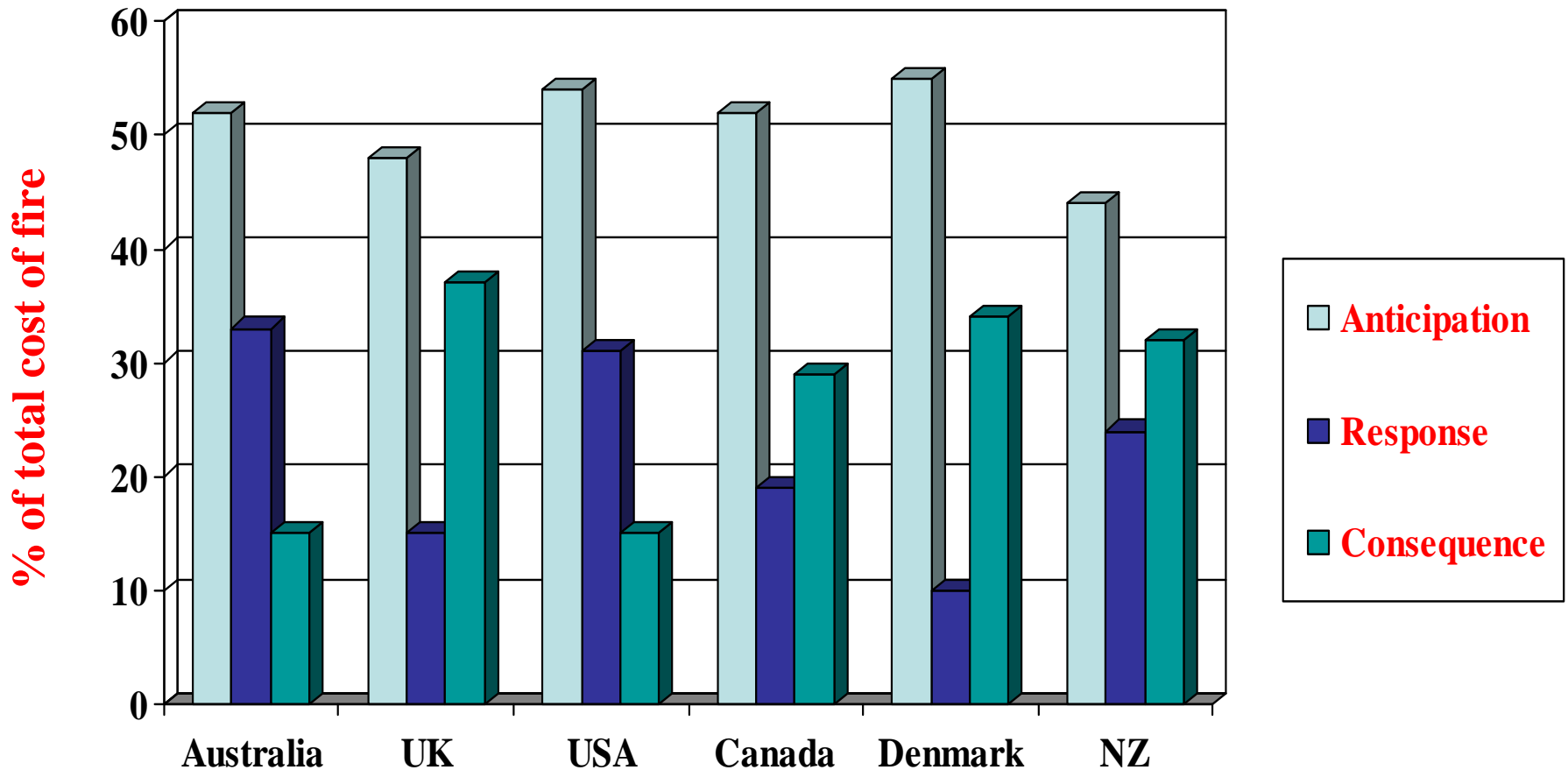
(Draft ABCB Paper 2005)

● Anticipation	\$4.7 billion (55%)
● Response	\$2.5 billion (30%)
<i>Managing Risk</i>	<i>\$7.2 billion (85%)</i>
<i>.5% – 1.2% of total water use in Australia</i>	
● Consequences	\$1.2 billion (15%)
<u>Total</u>	<u>\$8.4 billion 100%</u>

1.1 % GDP - \$420 per capita



International Comparison



Anticipation

Cost component	(\$ billion)
Fire safety of consumer items	1. 60
Fire safety measures in infrastructure	1. 20 (1.9BA)
Fire safety in buildings	1. 00 (1.7BA)
Maintenance of measures	0. 50
Insurance administration	0 .33
Fire safety research	0 .01
Education & Training	0. 01
<u>TOTAL</u>	<u>4. 7Billion</u>

Response costs

Cost component	\$Billions
Fire service costs What % is the amount & cost of water ?	1.28
Volunteer fire service. What % is the amount & cost of water ?	1.20
Private fire brigade responses	0.01
Criminal Justice costs and investigation of arson fires	0.05
<u>TOTAL</u>	<u>2.54</u>

Consequence Costs

Cost component	Mean annual cost estimate (\$ billion)
Fatalities and injuries	.19 (194)
Healthcare	.11 (113)
Property losses	.54 (540) (% of total)
Loss of business / output	.10 (98)
Environmental	.17 (172)
Heritage / cultural losses	.02 (20)
Wider economic distortions	.05 (50)
<u>TOTAL</u>	<u>\$1.2 Billion</u>

Consequences (Cont)

- 100 fatalities per annum
- 3,000 injuries per annum
- 1.1% GDP - \$420 per head of Capita
- International comparison (100,000 population)

Australia 0.50

• NZ 1.08

• UK 1.11

• USA 1.55



True Cost (Water) - Australia

	Structural fires (domestic, commercial, public)	Road/rail incidents	Chemical fires	Tech rescue	Bushfire (CRC)	Arson	Unwanted alarms
Anticipation (Benefits)							
Response (Benefits)							
Csequence opportunities							
<u>Total</u>							



Thoughts & Issues

- If you don't know what it costs, you won't know if you're being efficient.
- We should be improving the efficiency of systems and devices – SA 1851 + single floor systems?
- Use of recycled water for fire fighting (class A only).
- Should we restructure consumption. Pricing suggests value – should we charge for water used on fires if no installed protection?
- Be proactive – put sprinklers in all high risk buildings (residential).
- Fire safe cigarettes and arson.
- Nationally recognised licensing of the fire industry.
- Plumbers protect the integrity of passive fire elements (water).
- National Construction Code (NCC), including Plumbing code.

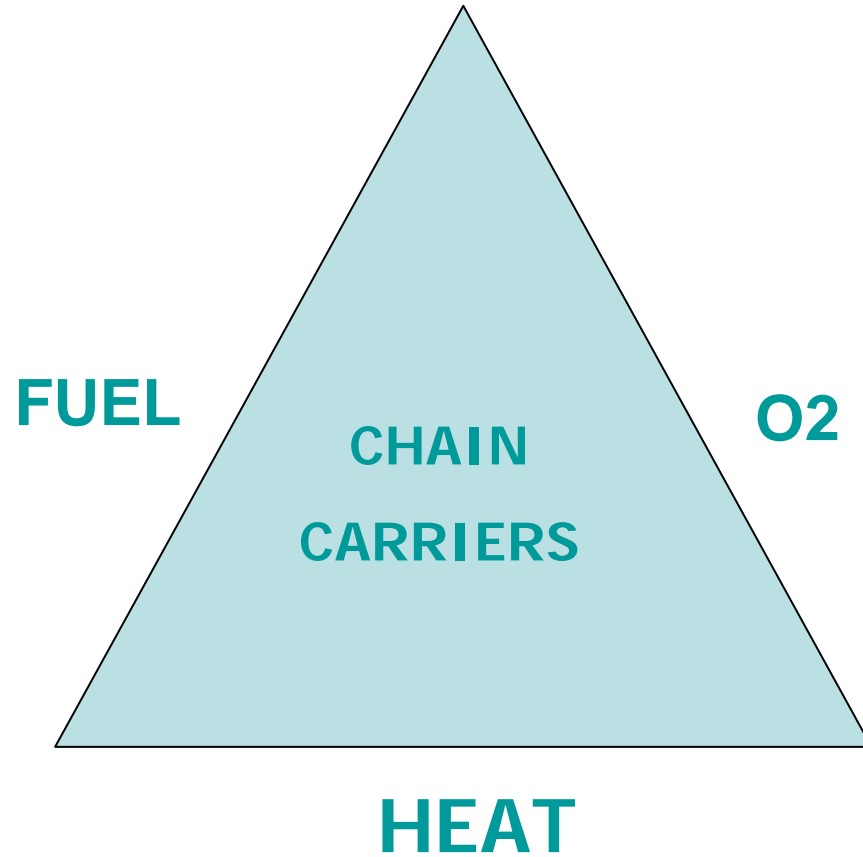


What are good measures?

Good measures have attributes that can be summarised as:

- Meaningful;
- Repeatable;
- Easy;
- Simple;
- Owned; and
- Actionable

- To Start
- To Continue
- To Extinguish



Research:

Four fundamental ideas - rhythms of our times

- **Uncertainty and turbulence,**
- **Truly socially revolutionary effects of digital technologies**
- **The exponential rate of change,**
- **The confronting choices we are asked to make.**

We have the choice to either create our own future, or allow ourselves to drift into a position where choices are made for us.



Thank You

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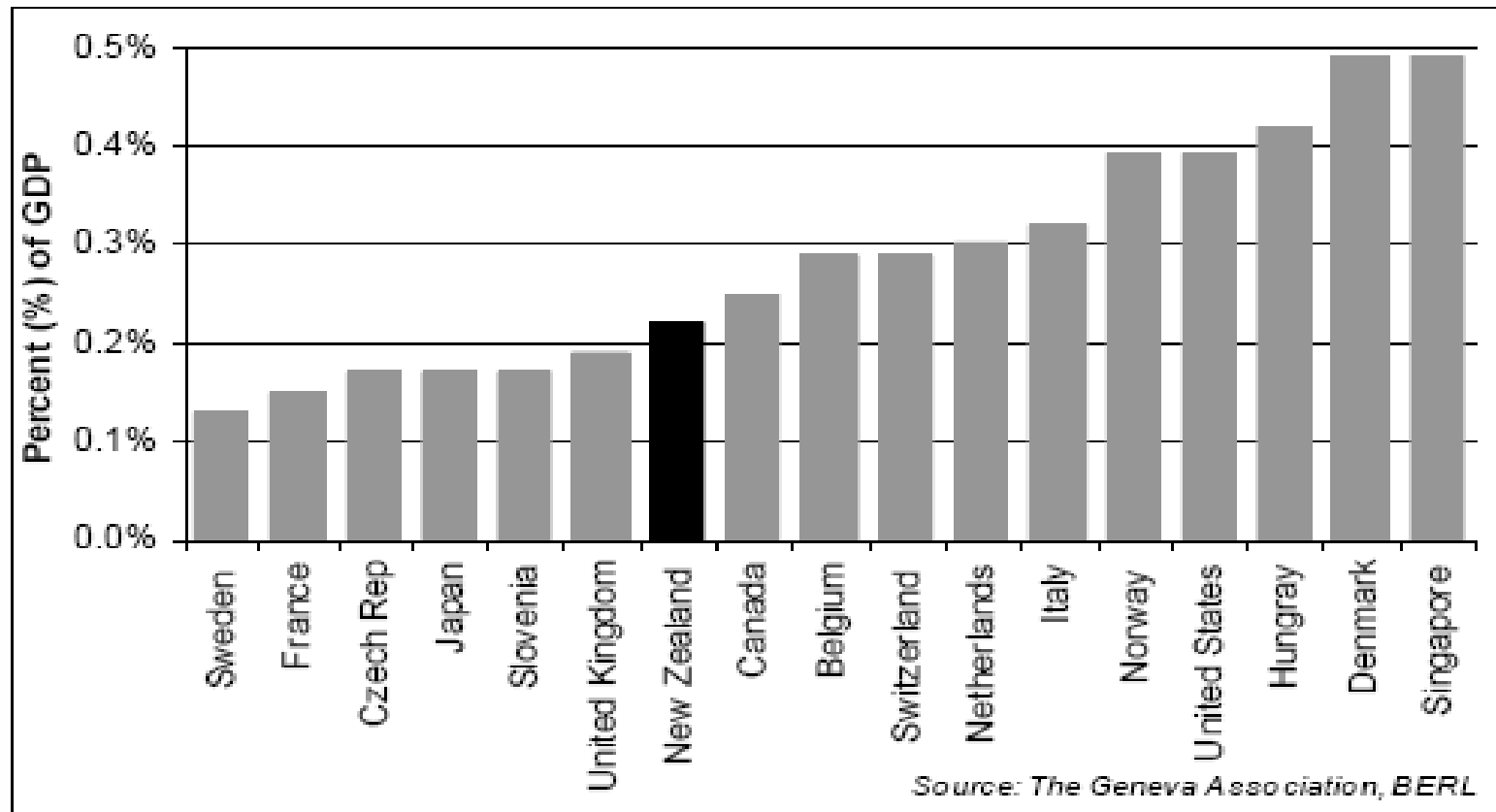
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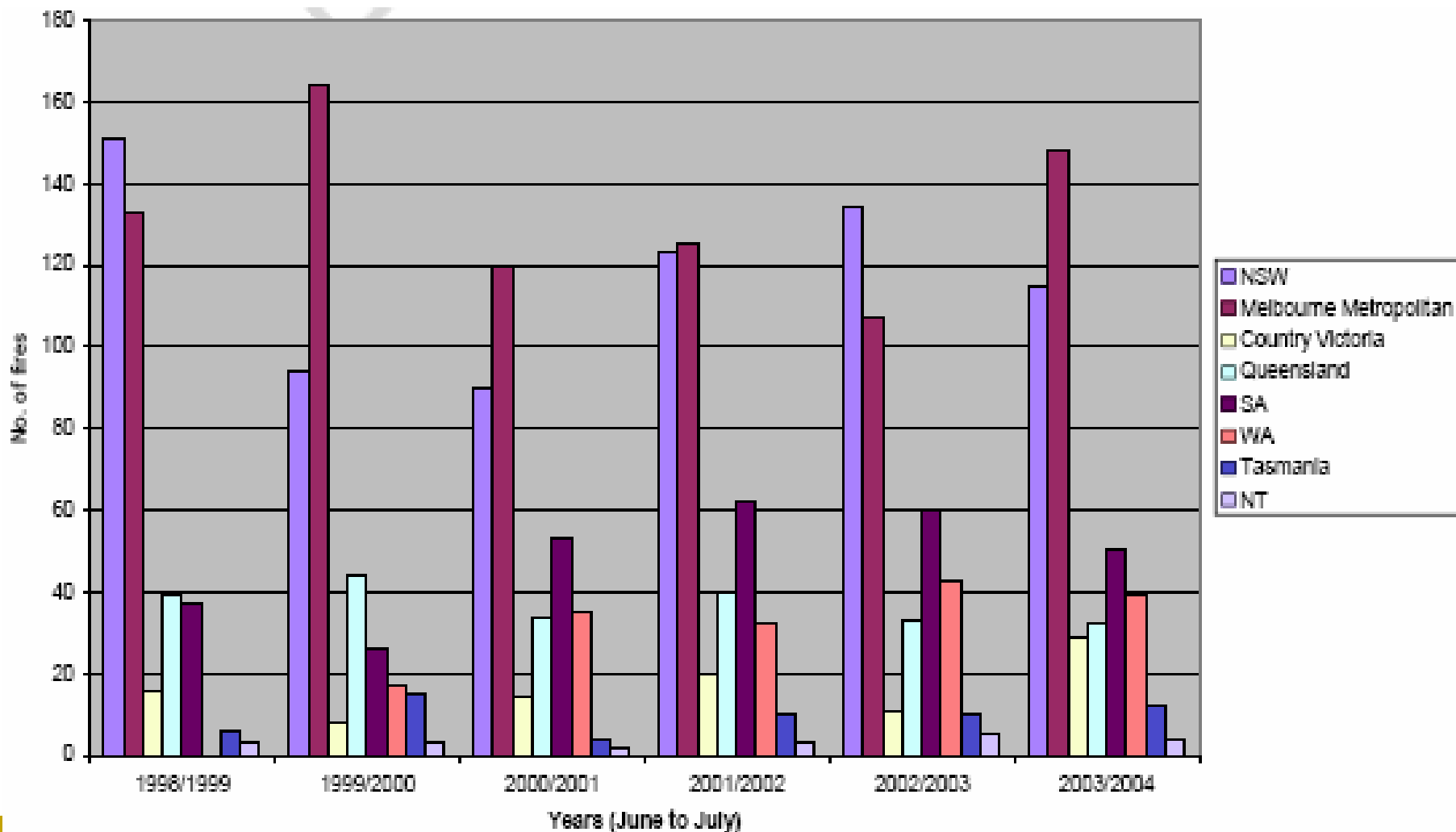


Equipment type		Upfront cost	Maintenance costs (10 years)	Total whole-of-life costs
Sprinkler System		\$47,3950	\$10,634,838	\$31,535,838
Fire Hydrants	14	\$8,400	\$31,528	\$39,928
Fire Hose Reels	52	\$31,160	\$23,885	\$55,045

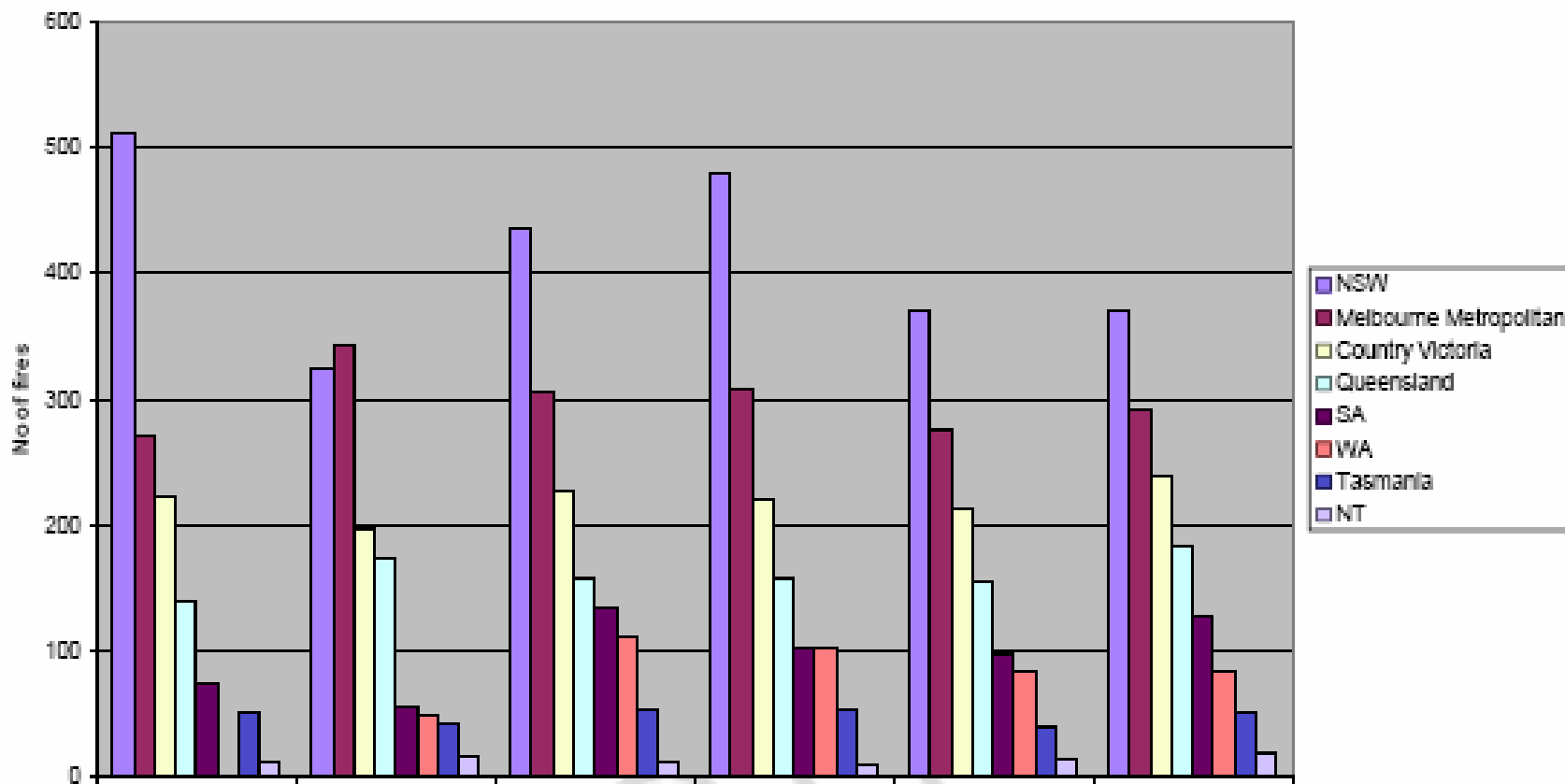
Figure 2.1 Fire protection in buildings as a percent of GDP



Office fires



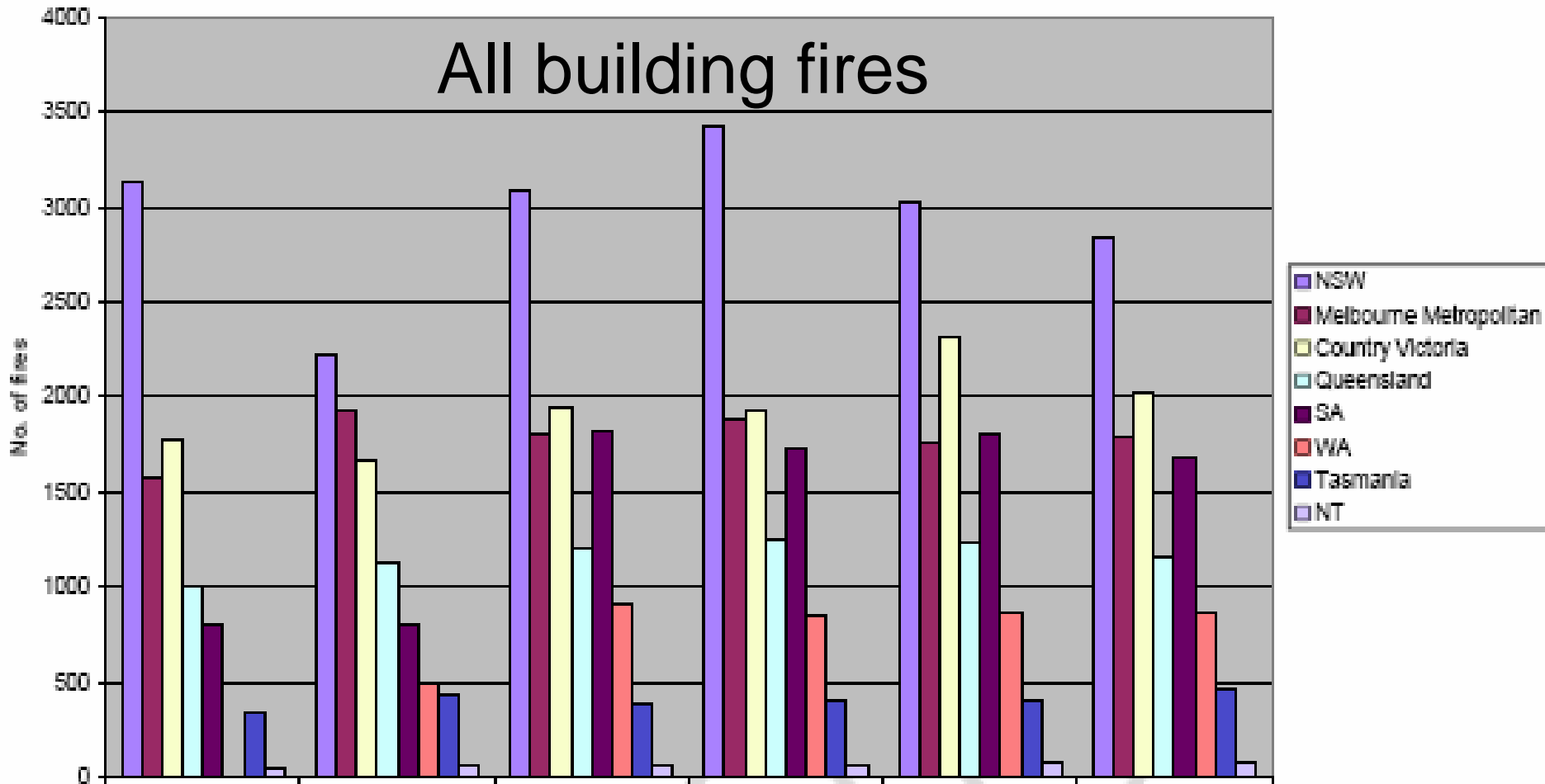
Retail Property fires



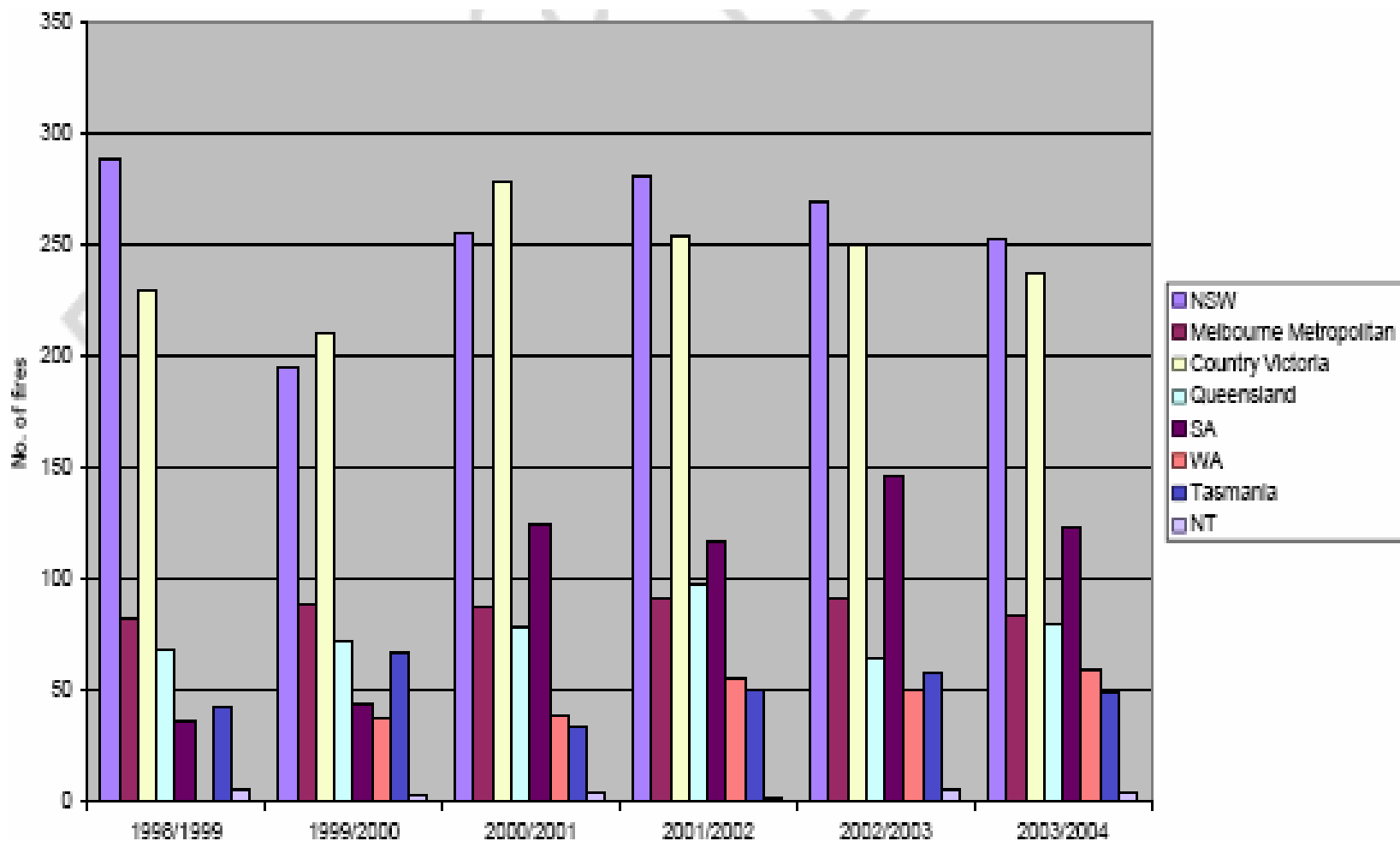
Fire Service Organisations

Performance Indicators for Fire Events (Outcomes)

- Fire Death Rate
- Fire Injury Rate
- Medium \$ losses from structure fire ???
- Total Property losses from structure fires ???



Storage Property Fires



FIRE FIGHTING WATER AVAILABILITY

- Reticulated
- Storage – On site tanks
- Pipes – On site hydrants, sprinklers

USE

- What is the quantum stored/used?
- What is the dollar value?
- Is it required?

Table 1.2 The composition of fire costs in New Zealand

	Household	Commercial	Public	All sectors
Risk reduction				
\$ million	\$77	\$297	\$72	\$446
% of total	8%	29%	7%	44%
Readiness and response				
\$ million	\$0	\$14	\$232	\$246
% of total	0%	1%	23%	24%
Recovery and consequence				
\$ million	\$248	\$60	\$16	\$325
% of total	24%	6%	2%	32%
All economic costs				
\$ million	\$325	\$372	\$320	\$1,017
% of total	32%	37%	31%	100%

Source: BERL