

Presented by Kevin Young



Getting Better with Practice
....but more to be done!

HEI Seminar



THE PAST

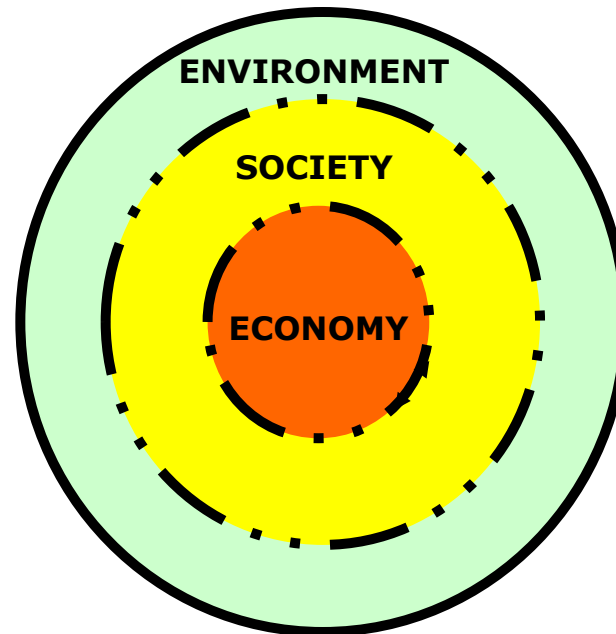


- A dramatic shift from an environmental charter to a sustainability focus.
- A complete change of vision.
- Major backlog sewerage schemes of \$500M providing sewerage services to 20,000 homes.
- Upgrading of all wastewater treatment works – clean, safe beaches and river systems.
- A focus on recycling.

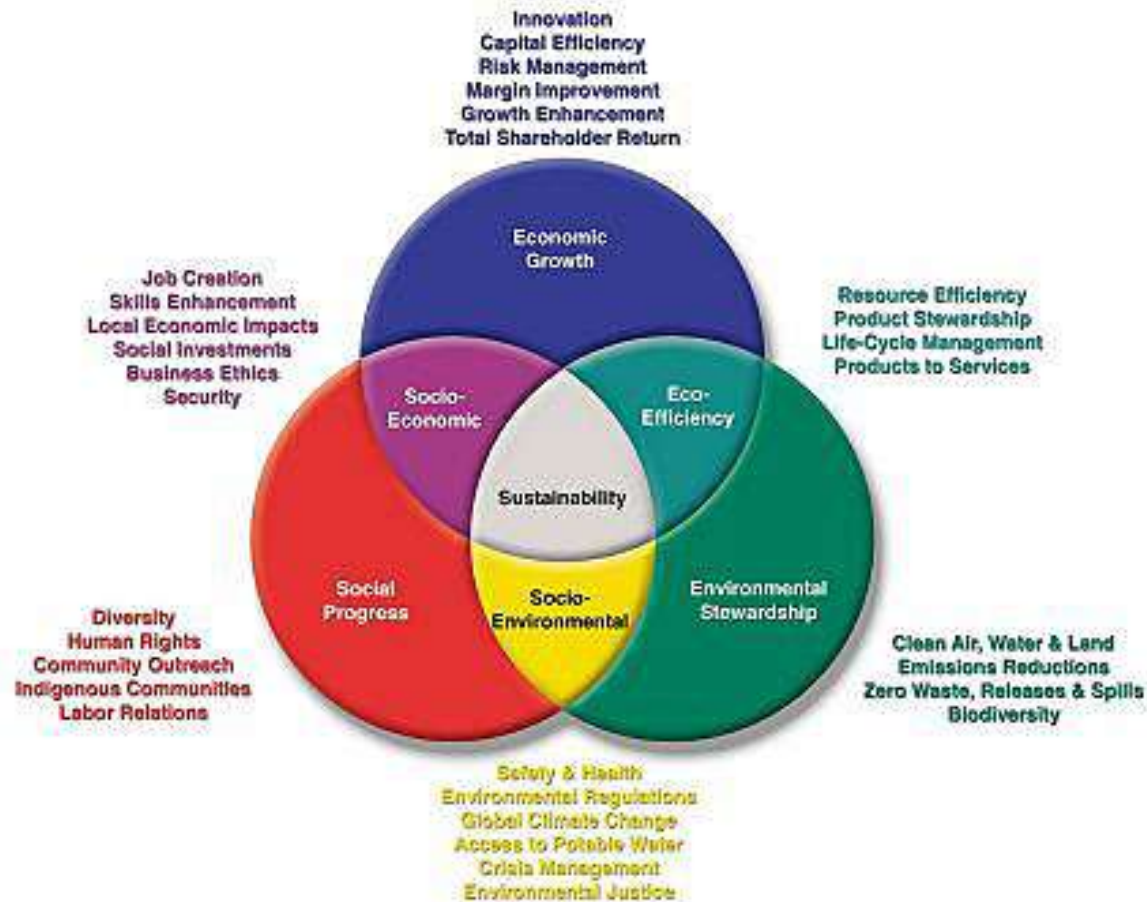
THE PRESENT



“To make the sustainability concepts and principles outlined in the Strategic Business Plan and Sustainability Strategy operational for Hunter Water.”



A REMINDER... WHAT IS SUSTAINABILITY?



HUNTER WATER SUSTAINABILITY STRATEGY



FOR HUNTER WATER,
IMPLEMENTING SUSTAINABILITY
BEST PRACTICE MEANS:

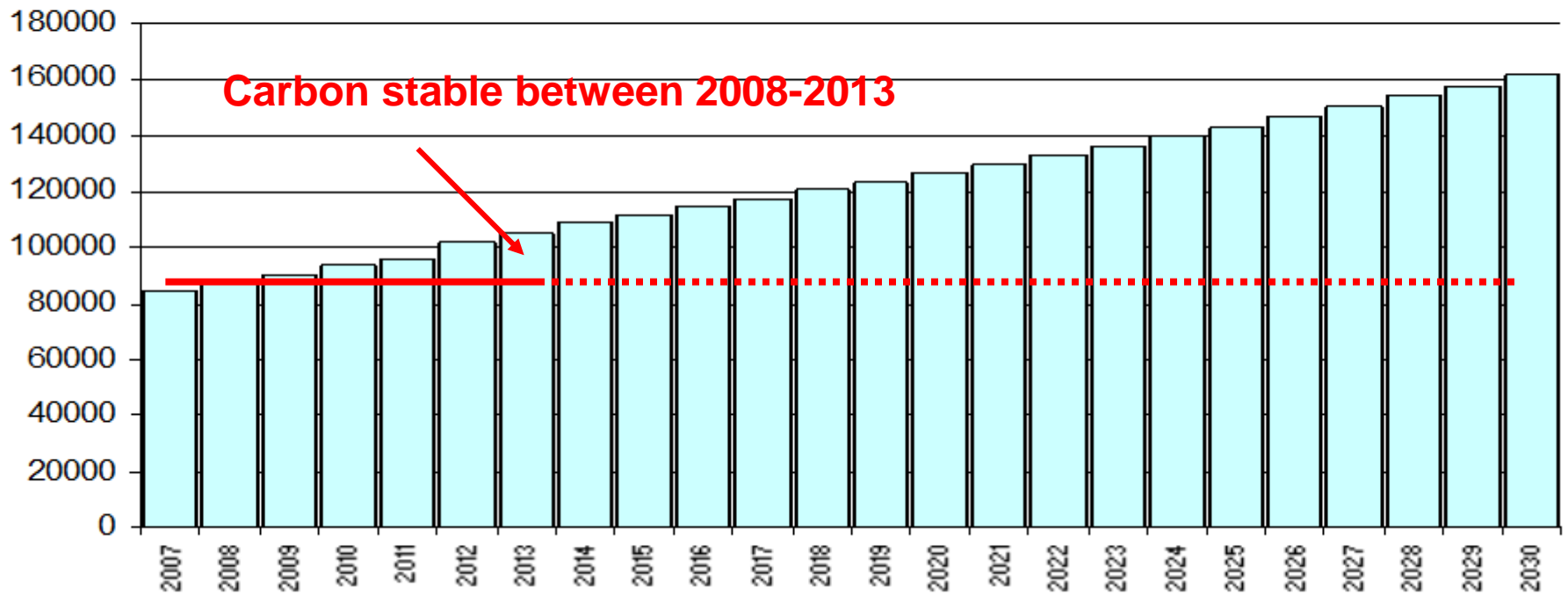
- Water, wastewater and drainage integrated into one system.
- Reliable climate resilient supply while enhancing the environment.
- Enhanced environmental resilience.
- Energy efficient and low carbon organisation.



MANAGING GHG EMISSIONS



**Business As Usual Growth in GHG emissions to 2030
(Total t CO₂-e)**



VARIABLE SPEED DRIVES TO CUT ENERGY

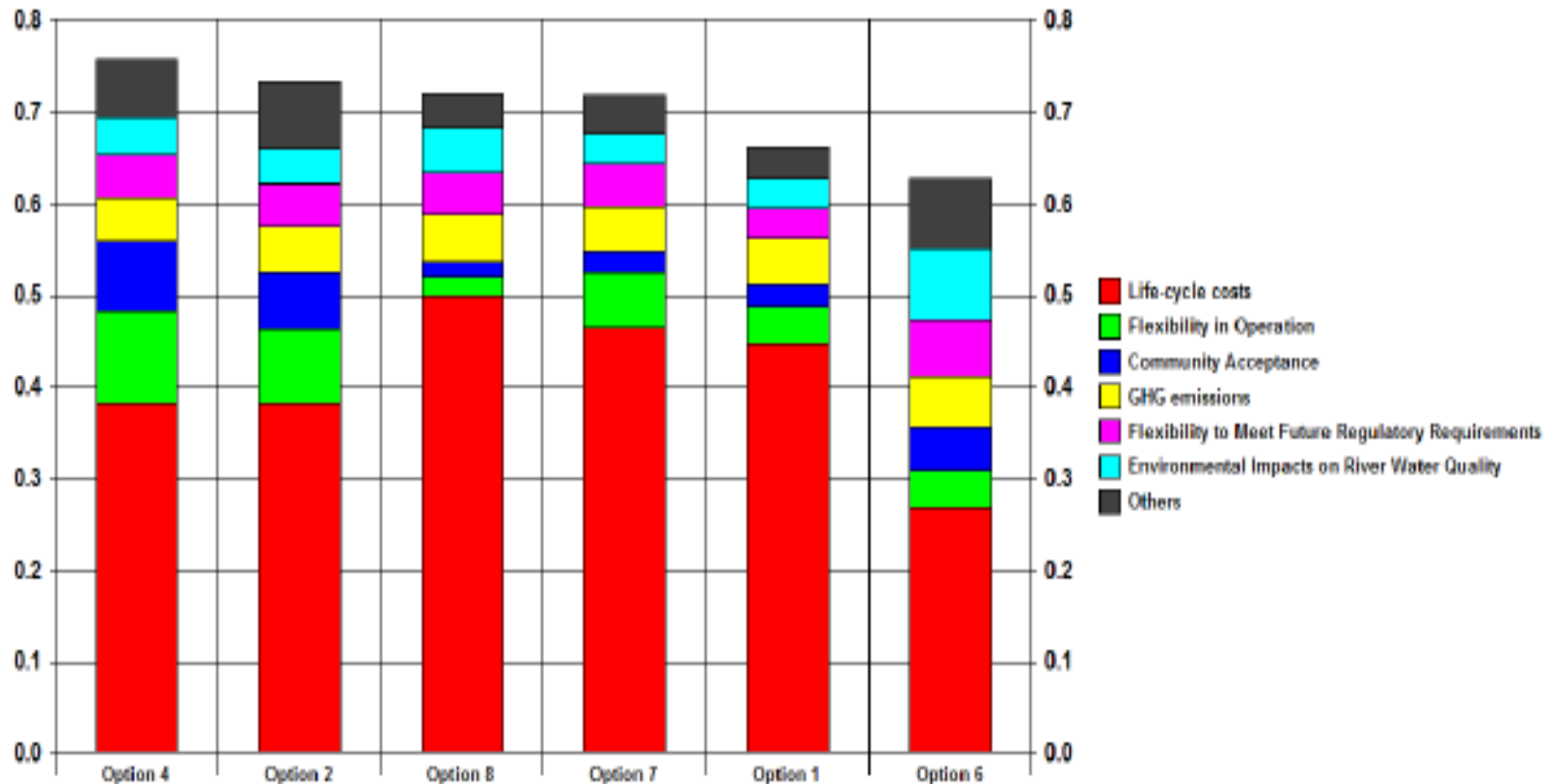


- Savings this year \$350K
- 800 tonnes reduction in GHG

DECISION MAKING – eg MCA



Figure 7-3 Cost and Non-Cost Criteria - Breakdown of Final MCA Scores for Financial Weighting of 50%



EDUCATION



- 55,000 students involved

TREE PLANTING – ENVIRONMENTAL FLEET



- 80,000 trees planted in last 15 years
- Plan to plant over 1M in next 10 years

ENVIRONMENTAL TRAINING



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SUSTAINABLE LIFESTYLE



THIRD PIPE RECYCLING TO NEW HOMES



6,200 homes to be
connected



AUSTRALIAN GOVERNMENT GRANTS



Lower Hunter Water
Recycling Initiative \$90M
- \$8.85M in grants



Smart Grid Smart City
1000 smart water meters



CASE STUDY 1

BURWOOD BEACH WWTW – REGENERATION AREA



Regeneration
area

BURWOOD BEACH WWTW – NATURAL BIOFILTERS TO TREAT ODOURS



Odour control
upgrade



BURWOOD BEACH



- Energy efficiency
- Biosolids to sea

CASE STUDY 2

RELATIVE WATER SUPPLY COSTS

What is sustainable?



Supply	Levelised Cost (\$/kL)
<i>Stormwater Reuse¹</i>	
Reticulated new subdivisions	\$10.44 – \$11.07
Reticulated existing subdivisions	\$12.18 – \$12.96
Reticulated combined treated stormwater/recycled wastewater – combined with Kooragang Industrial Scheme	\$3.36 - \$3.76
Onsite stormwater capture and reuse ²	\$0.52 to \$42 (Average \$10.80)
<i>Alternatives</i>	
Desalination ³	\$4.80
Indirect Potable ³	\$3.29
Reticulated recycled wastewater ⁴	\$4 - \$5
Rainwater Tanks ⁵	\$2.15 - \$5.41 (2 to 10 times energy use)

Source Documents:

¹ 1000 lot residential scheme, low estimate is for aquifer storage, Kooragang Industrial Scheme same demand as residential schemes

² Managing Urban Stormwater – Harvesting and Reuse, DECC, 2006. Lower end costs relate to schemes with minimal treatment and storage costs.

³ Draft Tillegra Dam Planning and Environmental Assessment Socioeconomic Assessment, HWC 2008

⁴ Thornton North residential dual reticulation levelised cost

⁵ The economics of rainwater tanks and alternative water supply options, Marsden Jacobs 2007. HWC estimate \$8 - \$9/kL – higher due to inclusion of higher maintenance costs.

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TILLEGRA DAM



RELATIVE COSTS OF WATER DROUGHT SECURITY MEASURES



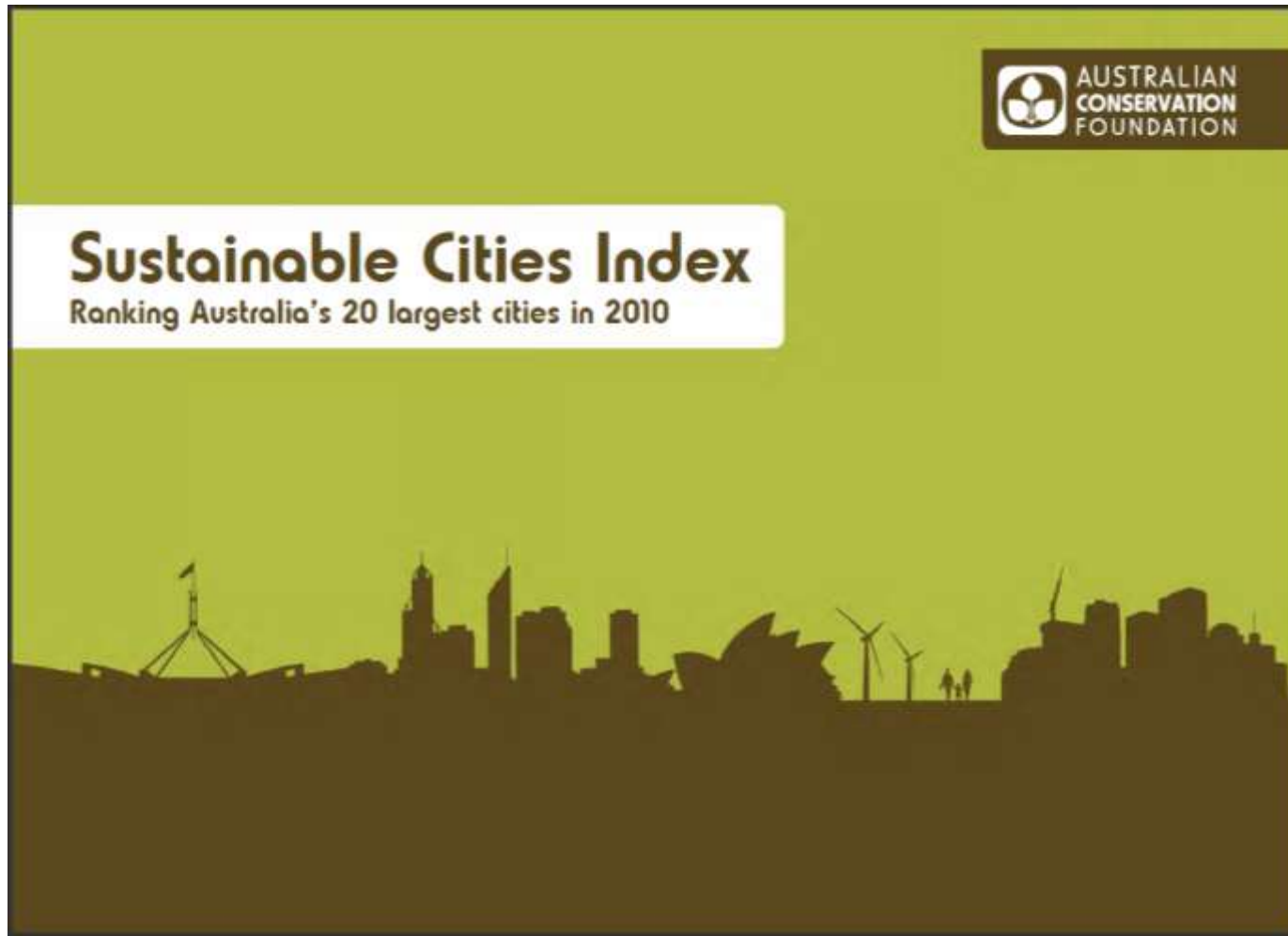
			Yield ML/day	Cost per ML/day
• Melbourne	Desalination	\$3,500m	400	\$8.8m
• Sydney	Desalination	\$1,800m	250	\$7.5m
• Adelaide	Desalination	\$1,800m	150	\$12.0m
• South East Queensland	Desalination	\$1,200m	125	\$9.6m
• Perth	Desalination	\$1,000m	130	\$7.7m
• Central Coast NSW	Linking sources	\$120m	16	\$7.5m
• <i>Hunter</i>	<i>Tillegra Dam</i>	<i>\$406m</i>	<i>150</i>	<i>\$2.7m</i>

LEVELISED COSTS



	Yield (ML/yr)	Capital Cost (\$m 2008-09)	\$ / kL
• Tillegra Dam	56,000	397	1.66
• New Chichester Dam	48,500	586	2.45
• Mammy Johnson's Dam	27,500	565	2.73
• Grahamstown Dam upgrade	30,000	656	3.04
• Indirect Potable Reuse	26,300	523	3.29
• Lostock Dam upgrade	9,500	425	4.76
• Desalination	46,200	990	4.80

ACF REPORT



WATER SENSITIVE CITIES

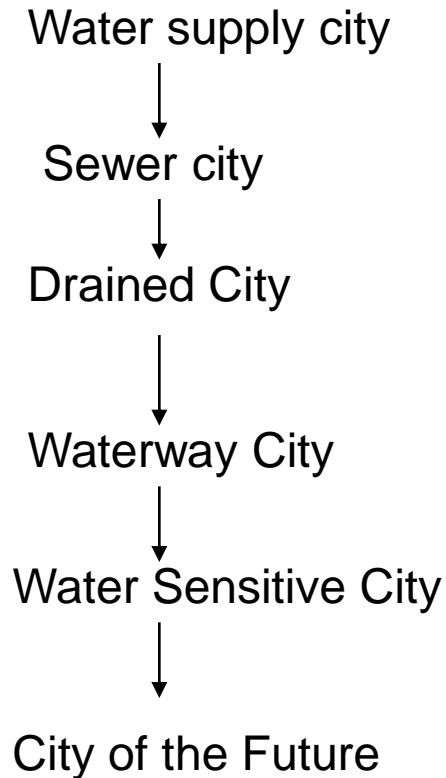


- Improved natural environment
- Improved microclimate – urban heat island effect
- Improved lifestyle for residents
- Improvement in property values and social benefits

Seoul, Korea



EVOLUTION OF WATER MANAGEMENT IN CITIES





QUESTIONS

CASE STUDY 2

SUSTAINABLE SOLAR CELLS AND RAINWATER TANKS?

