

# Sustainable Water Cycle Management

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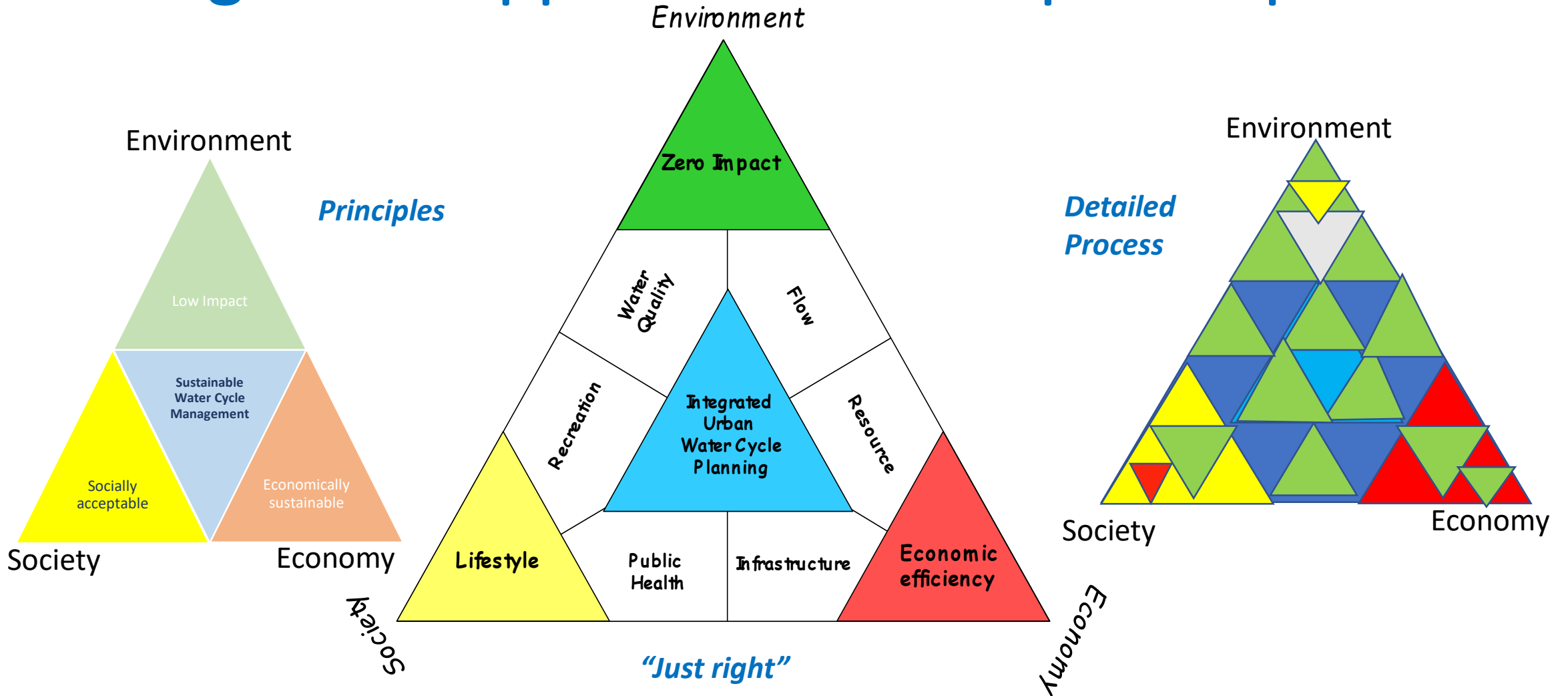
***Sustainable Water Solutions Pty Ltd***

*Sydney, Australia*

***Sustainable Water  
Solutions Pty Ltd***

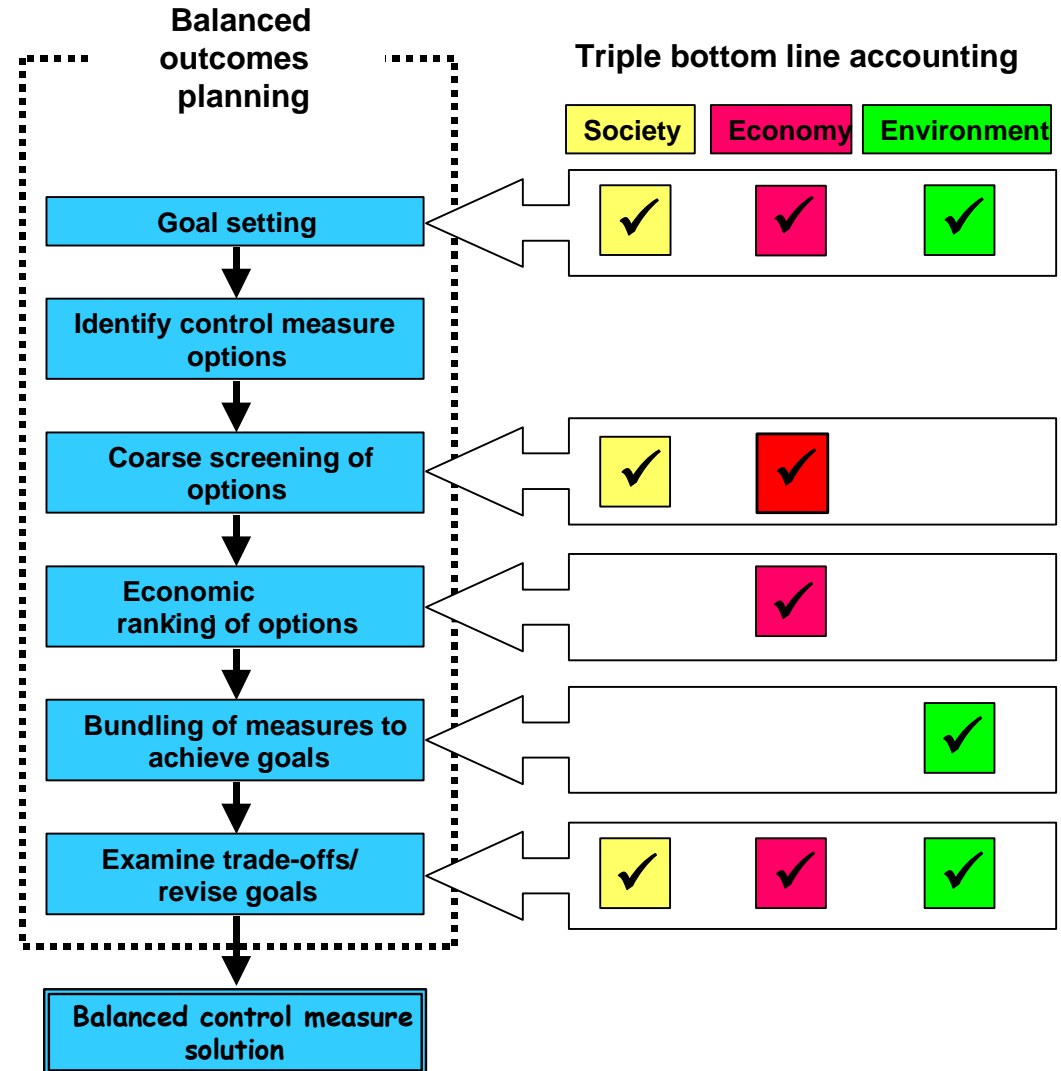


# Triple dimensions of Sustainable Water Cycle Management approach - but keep it simple



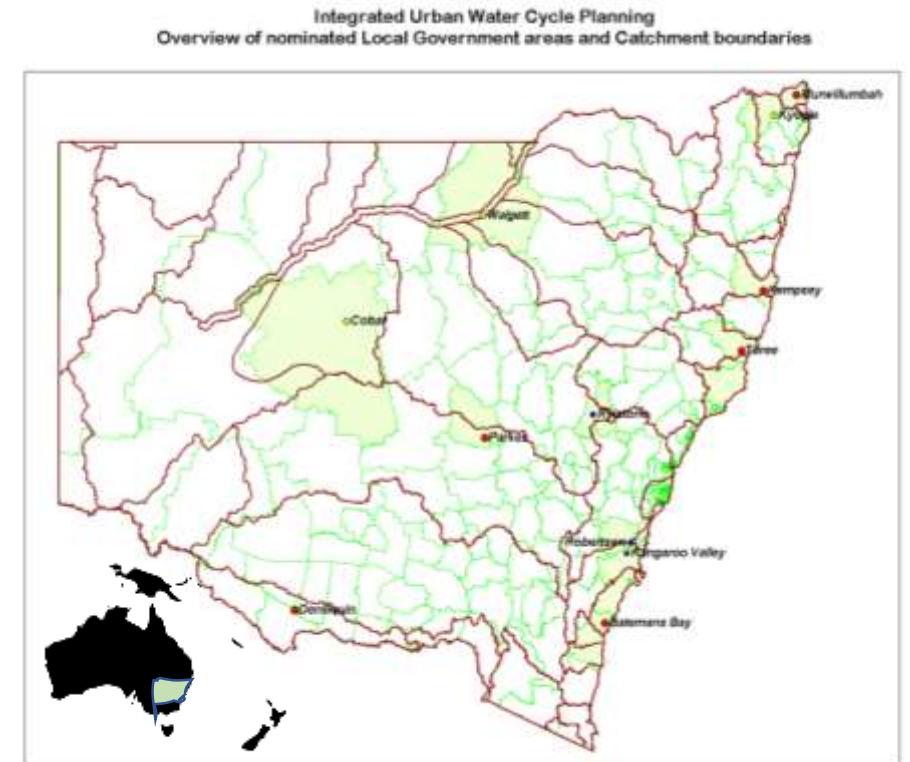
# Sustainable Water Cycle Management Approach in a nutshell

Key Elements are:-  
Triple Bottom line analysis, accounting evaluation, performance and delivery.



# SWCM/IWCM is it really that difficult? Some history!

- Examination of the likely impact of urban “ explosion” destined for SW and NW Sydney. (1990-92). *ARC Funding declined, would not fit within one Grant Silo.*
- 1992-2003 -Draft IWCM approach conceived by Charles Essery as an Principal Scientist & then NSW Statutory Position **Chief Water & Sewerage Engineer.**
- 2000 - 12 Pilot IWCMs commenced with utilities across Country NSW.
- 2003 – Charles Essery Summarily dismissed for advising Expert Water Panel that Desalination was the last option out of 7 scenarios for Sydney's water Strategy.
- 2004 “Sanitised” IWCM guidelines released. Consultants had a field-day trying to convince all 100+ LWU that they could deliver their IWCMs using NSW government’s IWCM guidelines.
- **2004 Sustainable Water Solutions** commences **SWCM** approach that complies with the stringent IWCM envelope, but also delivers solutions that use full/calibrated **TBL evaluation to assess scenarios.**
- 2005-06 - NSW commits to one of the worlds largest RO desalination plant and by 2010 Australia is in the top ten of desalination water producers.
- 2015 - Then the Dams that will never fill... FILL AGAIN!
- 2021 - **Cycle of restructuring** and **“new approaches”** continues across NSW Water Sector.
- **Sustainable Water Cycle Management Book** by Charles Essery launched in late 2021!
- 2022 - NSW “Super Department” of Planning, Industry and Environment (DPIE) will review the 2004 IWCM Guidelines????



# True success - SWCM Strategy 2006- update 2017 – a living community and utility plan

Label	Scenario group	Scenario	Scenario Description	TRB 20455	PRG1 Key Issue Score	Env Score	Social Score	Envl + Social Score
W1	Water	More Storage	A new dam at ██████ Creek	917	41.7	-4.2	16.7	13
W2	Water	Desalination	Brackish desalination at ██████	865	-8.4	-121.0	0.0	-121
S1	Sewer	Low Reuse (25%)	Business as usual – existing level of reuse.	865	4.6	2.9	1.1	4
S2	Sewer	Medium Reuse (30%)	Expansion of agricultural reuse in ██████ area.	918	44.7	27.9	11.2	39
S3	Sewer	High Reuse (45%)	Expansion of agricultural reuse in ██████ and ██████. Additional public space irrigation at several locations.	939	194.2	123.6	87.2	211
W3 / S4	Water & sewer	Indirect Potable Reuse (65%)	Injection of recycled water into the ██████ aquifer.	1803	281.7	125.5	167.1	293
V1	Small villages	Small villages remain unserviced	Undertake planning only for the servicing of small villages (implementation outside the 30 year planning horizon)	0	-1.8	-1.3	-2.1	-3
V2	Small villages	Provide Sewer to Small Villages	Implement sewer systems only in small villages	35	3.0	1.3	3.7	5
V3	Small villages	Provide Water and Sewer to Small Villages	Implement sewer and water systems in small villages	70	4.5	0.0	6.7	7

**WHAT DOES THE COMMUNITY SAY?**  
Community input was crucial to the Our Water Our Future strategy and has allowed the community and stakeholders to help shape the future of our water supply in the region.

The options you see in this report consider environmental, social and economic factors. Community input helped us to understand

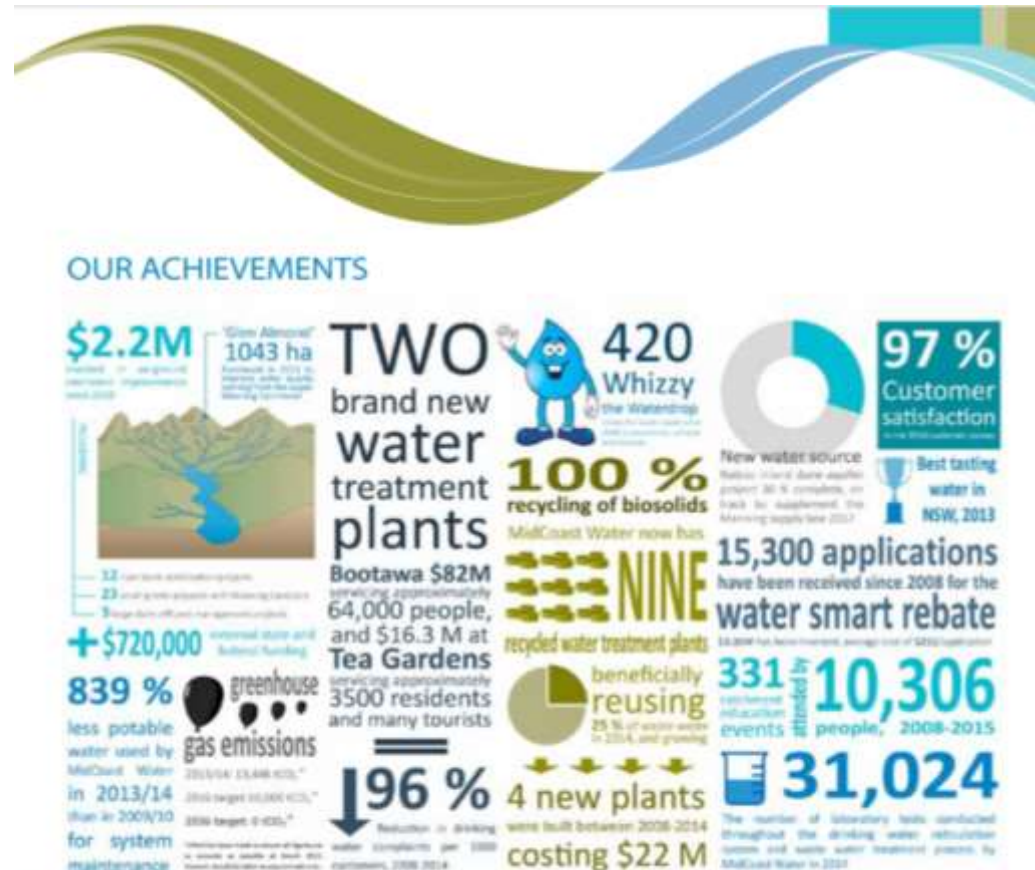
# Adopted Scenario 2009 (current 2021).

- The adopted IWCM scenario involved [REDACTED] Services undertaking the following actions:-
- Increase water security for the [REDACTED] water supply scheme by completing the [REDACTED] Aquifer water supply scheme, an alternative supply to the [REDACTED] River, sourced from groundwater
- Increase water security for the [REDACTED], [REDACTED] and [REDACTED] water supply schemes by constructing off-river water storage
- Continue our commitment to water saving through the Water Smart Rebate Program, with particular attention to our business and institutional customers
- Continue to provide safe drinking water in line with the Australian Drinking Water Guidelines, overseen by NSW Health
- Investigate and implement one of the two long term water supply augmentation options for the [REDACTED] water supply scheme – either new off-river storage dam at the [REDACTED] Creek site or supplementing our water supply with purified recycled water through an Indirect Potable Reuse scheme
- Continue to operate our recycled water schemes on farmland and public open space in a sustainable manner and increase the volume of effluent that is reused
- Reduce stormwater infiltration into our sewerage systems
- Provide sewer services to currently unserved small villages, pending government support and subsidy
- We will continue to work with our customers and community to ensure that our water and our future are environmentally, socially and economically sustainable.



# Message from a successful adopter of SWCM

## How far we have come since 2005



## Where to from here? (2015)

Label	Scenario group	Scenario	Scenario Description	TRE 2045\$	PRG1 Key Issue Score	Env Score	Social Score	Envl + Social Score
W1	Water	More Storage	A new dam at Peg Leg Creek	917	41.7	-4.2	16.7	13
W2	Water	Desalination	Backfill desalination at Bootawa	865	-6.4	-121.0	0.0	-121
S1	Sewer	Low Reuse (25%)	Business as usual - existing level of reuse	865	4.6	2.9	1.1	4
S2	Sewer	Medium Reuse (30%)	Expansion of agricultural reuse in Tea Gardens	918	44.7	27.9	11.2	39
S3	Sewer	High Reuse (45%)	Expansion of agricultural reuse in Tea Gardens, Lansdowne, Old Bar and Bulahdelah. Additional public space irrigation at several locations	939	194.2	123.6	87.2	211
W3 / S4	Water & sewer	Indirect Potable Reuse (65%)	Injection of recycled water into the Nabiac aquifer	1803	281.7	125.5	167.1	293
V1	Small villages	Small villages remain unserviced	Undertake planning only for the servicing of small villages (implementation outside the 30 year planning horizon)	0	-1.8	-1.3	-2.1	-3
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**WHAT DOES THE COMMUNITY SAY?**

Community input was crucial to the Our Water Our Future strategy and has allowed the community and stakeholders to help shape the future of our water supply in the region.

The options you see in this report consider environmental, social and economic factors. Community input helped us to understand how you value water, the impact that this precious resource has on our lives, and helped us arrive at the final solutions.

**What you told us:**

Our engagement activities revealed a strong recognition that water is a precious resource, and that climate variability and water security are important issues. When considering how we secure the Manning Water Supply Scheme, the biggest issue addressed in this strategy, new water storages and drinking recycled water were the most preferred solutions. Most people wanted us to do something to service small, currently unserviced villages and would like us to recycle more.

# Pilot projects 15 years on (plus SWC & HWC SWCM evaluation)

No.	Start	Living Plan?	Issued to be addressed	Outcomes	Econ	Soc	Env
1	2002	X	drought	none	X	X	X
2	2002	x	Water sharing	none	X	X	X
3	2003	x	Water supply	Focus on funding for wetlands, pipeline& WTP	X	X	X
4	2005	x	Water supply	Ignored sustainable options, politics prevailed	X	+	X
5	2008	yes	Water & waste	Sustainable supply, reuse and reduced pollution	+	+	+
6	2003	yes	Diverse demand	Expensive infrastructure but sustainable outcomes	X	+	-
7	2006	x	Poor infrastructure	Under investment in basic infrastructure, but gets special funding	X	+	+
8	2010	x	Widespread	Chased funding rather than addressing fundamental issues	X	+	-
9	2003	yes	Supply & pollution	Fully embraced and active engagement with community	+	+	+
10	2003	yes	Supply & pollution	Fully embraced and active engagement with community	+	+	+
11	2005	x	Poor Infrastructure	Under investment in basic infrastructure, but gets special funding	X	+	X
12	2005	yes	Recycling waste	Agricultural Recycling and ongoing support to agricultural Industry	X	+	+
SWC	2006	Yes ?	Demand/supply & pollution	Longstanding demand/supply crisis management	X	-	X
HWC	2005	Yes ?	Pollution	Limited recycling and continued dam and for new source development	X	-	X



# Sustainable Water Cycle Management approach/philosophy –Does it deliver?

- It can and does!!! BUT avoid over complication and stifling regulation
- Lack of accountability with Government/Regulators is a hinderance
- Political interference and short term “pork-barrelling” are deadly
- Can be “rorted” by professionals and bluffocrats to achieve personal agenda and retain power
- Transparency and independent review is critical
- COMMUNITY and STAKEHOLDER involvement and ownership critical
- Must be a living plan/document... not a justification to “build what you wanted to do in the first place” (common client-consultant issue)

# Sustainable Water Cycle Management approach/philosophy – give it a go!

*The further back you look, the further forward you can see,*  
(Winston Churchill)

*Wise words, unfortunately the current public sector management model ignores history, avoids risk, de-skills professionals, promotes complexity and stifles innovation with endless cycles of restructuring.*

( Charles Essery, 2021)

