

# A Sustainability Action Planning Tool



---

David Kettle

PhD research, University of Auckland, NZ



# Unique Features

1. Grouping of Cultural, Social, Institutional, Financial, Natural and Built Environment into framework of **People, Processes and Places**
2. Use the tool at all stages of a project from **planning, design, construction & monitoring**
3. Can incorporate **influence of indicators across all six elements of sustainability**
4. *Clear one-page graphical summaries*



# Frameworks are not new

**Le Play  
(1800's)**

**Geddes  
(1915)**

**Le Corbusier  
(1950s)**

**Dutch Social-  
Economic Planning  
Council (2000)**

**Traditional  
Sustainability  
Trilogy**

**Family**

**Folk**

**Living**

**People**

**Social**

**Work Patterns**

**Work**

**Working**

**Profit**

**Economic**

**Environment**

**Place**

**Recreation**

**Planet**

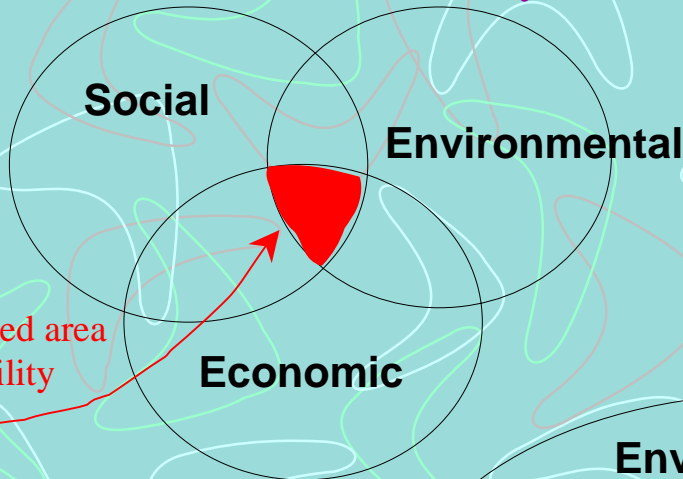
**Environment**

**Transportation**

# Sustainability Frameworks

- but what about cultural and institutional?

Weak Sustainability



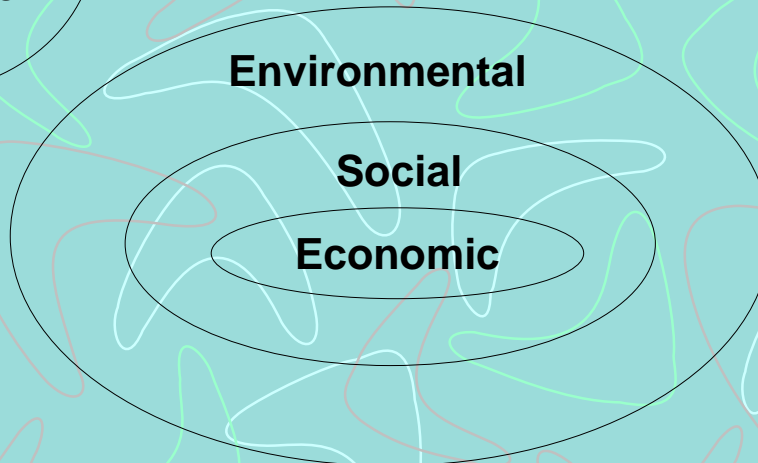
**Trade-offs?**

Only small limited area where sustainability can occur

~~Social Environmental~~



The 'bunny' diagram



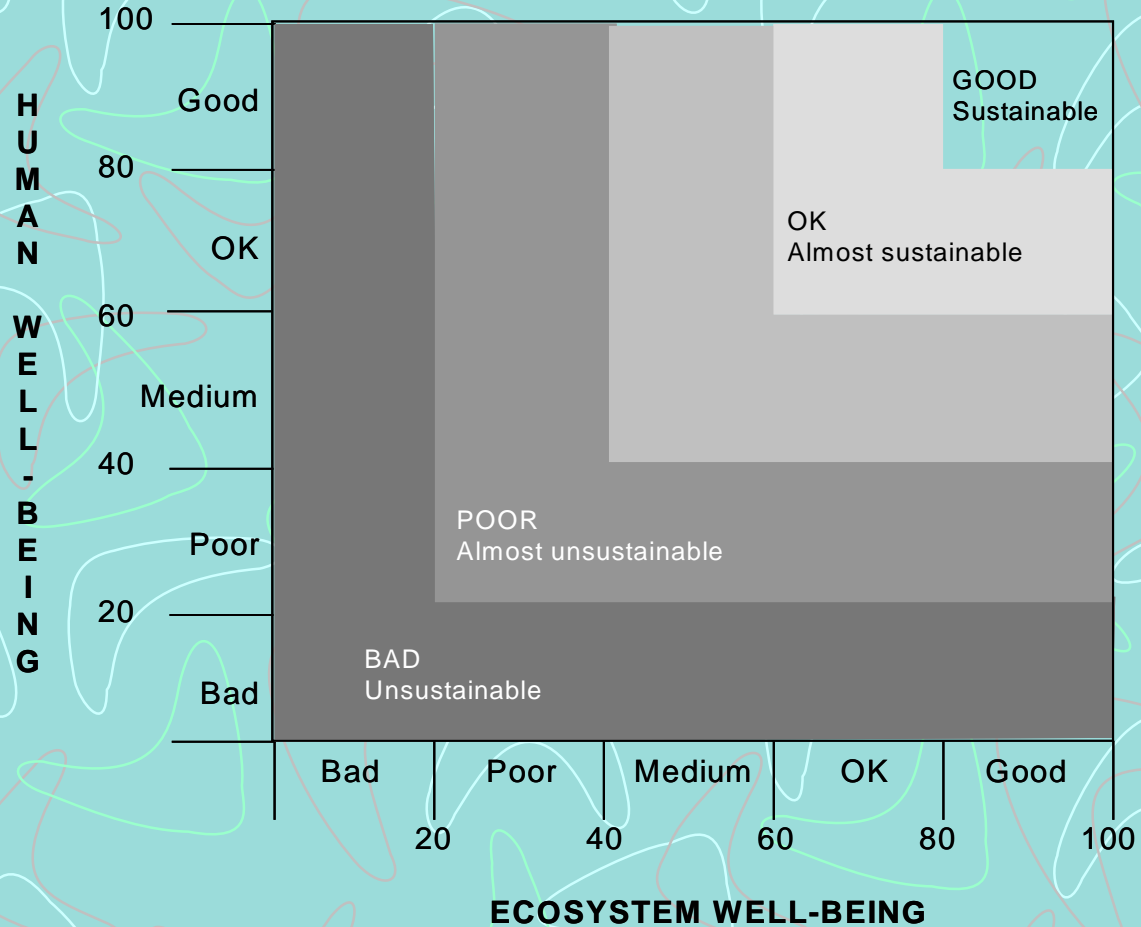
Strong Sustainability, or Ecological Sustainability

**Hierarchical?**

What is the appropriate size of each circle?

# IUCN Resource Kit for Sustainability Assessment

2001 International Union for Conservation of Nature and Natural Resources



**Barometer of sustainability**



# Natural Capitalism

Paul Hawken, Amory Lovins, L. Hunter Lovins, 1999

*“But as we sifted and distilled those new business cases, we realised that the conventional wisdom is mistaken in seeing priorities in economic, environmental, and social policy competing. The best solutions are based not on tradeoffs or balance between these objectives but on design integration achieving all of them together – at every level, from technical devices to production systems to companies to economic sectors to entire cities and societies.”*



# Other Sustainability Frameworks

## The SIGMA Guiding Principles

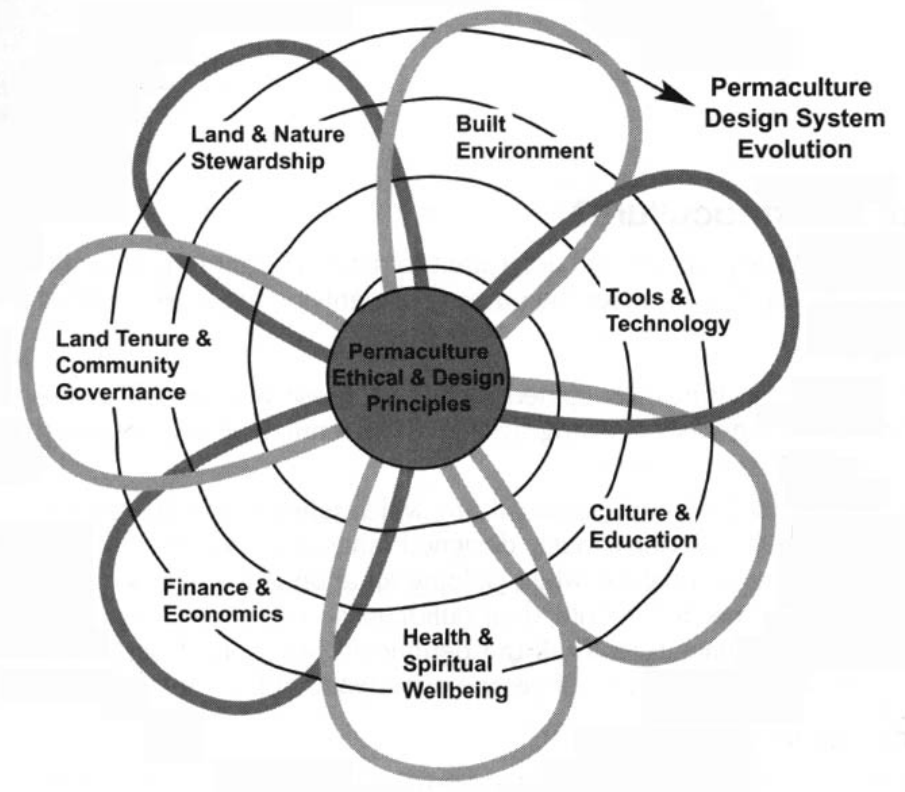


Figure 1. The SIGMA Guiding Principles.

The SIGMA Guiding Principles consist of two core elements:

1. The holistic management of five different types of capital that reflect an organisation's overall impact and wealth (in the broadest sense)
2. The exercise of accountability, by being transparent and responsive to stakeholders and complying with relevant rules and standards.

The principles, including the five forms of capitals are explained in Chapter 4.





# Proposed PhD Framework

<b>PEOPLE</b>		<b>PROCESSES</b>		<b>PLACES</b>	
<b>Cultural</b>	<b>Social</b>	<b>Institutional</b>	<b>Financial</b>	<b>Natural Env.</b>	<b>Built Env.</b>
<i>These are the more subjective qualities.</i>		<i>These are processes in the sense that they represent the interactions and linkages between people and the world around them – their built and natural environment.</i>		<i>Air/land/water quality and pipes/buildings – the more concrete, objective qualities.</i>	

**Note:** Life Cycle Analysis (LCA) International 14000 standards state that where the information is to be presented to the public, weighting and summing different categories into one number is prohibited.

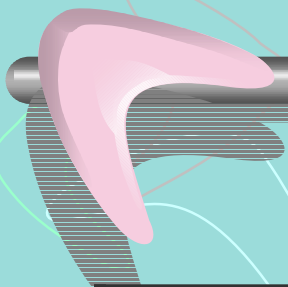


# Proposed PhD Sustainability Matrix

## - A Sustainability Action Planning Tool

The Six Elements of Sustainability

		The Six Elements of Sustainability						
		People		Processes		Places		
		Cultural	Social	Institutional	Economic	Natural Env.	Built Env.	
The Four Levels	Level 1	Pre-Screening						
	Level 2	Existing Condition						
	Level 3	Design & Construct						
	Level 4	Monitoring - Auditing						
		Cultural	Social	Institutional	Economic	Natural Env.	Built Env.	



	PEOPLE		PROCESSES		PLACES	
	Cultural	Social	Instit.	Economic	Natural E.	Built E.
Level 1: Pre-screening	Insurmountable cultural or social issues (eg. heritage/equity)		Allowed activity (rules)	Budget constraints	Energy & global warming	Practical & feasible
Level 2: Existing Conditions	Cultural Health Index	Degree of water problem	% private land owned	Net maint. costs	Water Cycle Balance	Controlled Overflows
	No. of uses / yr	Interest in alt. technologies			Biodiversity	Uncontrolled Overflows
					Pollutant loads	
		Risk to private property	Risk to public property	Risk public & private prop.		Risk public & private prop.
Level 3: Planning, Design & Construct	Impact on values & Cultural Health Index	Public acceptability	Ease & time to get consents	Mains water used	Pollutant loads	Proven, reliable tech.
		Ownership issues (private)	Ownership issues (public)		Water Cycle Balance	Ownership (priv.& public)
		Degree of pride in option	% private land ownership	Annual energy	Greenhouse gases (LCA)	Embodied & annual energy
		LCC - private	LCC - public	LCC – private & public		Controlled overflows
Level 4: Monitoring - Auditing	Cultural Health Index	Degree of water problem	No. of legal infractions	Net maint. costs	Pollutant loads	Maintenance (man hrs/yr)
	No. of uses / yr	Satisfaction with solution	Self regulation		Biodiversity	Controlled overflows

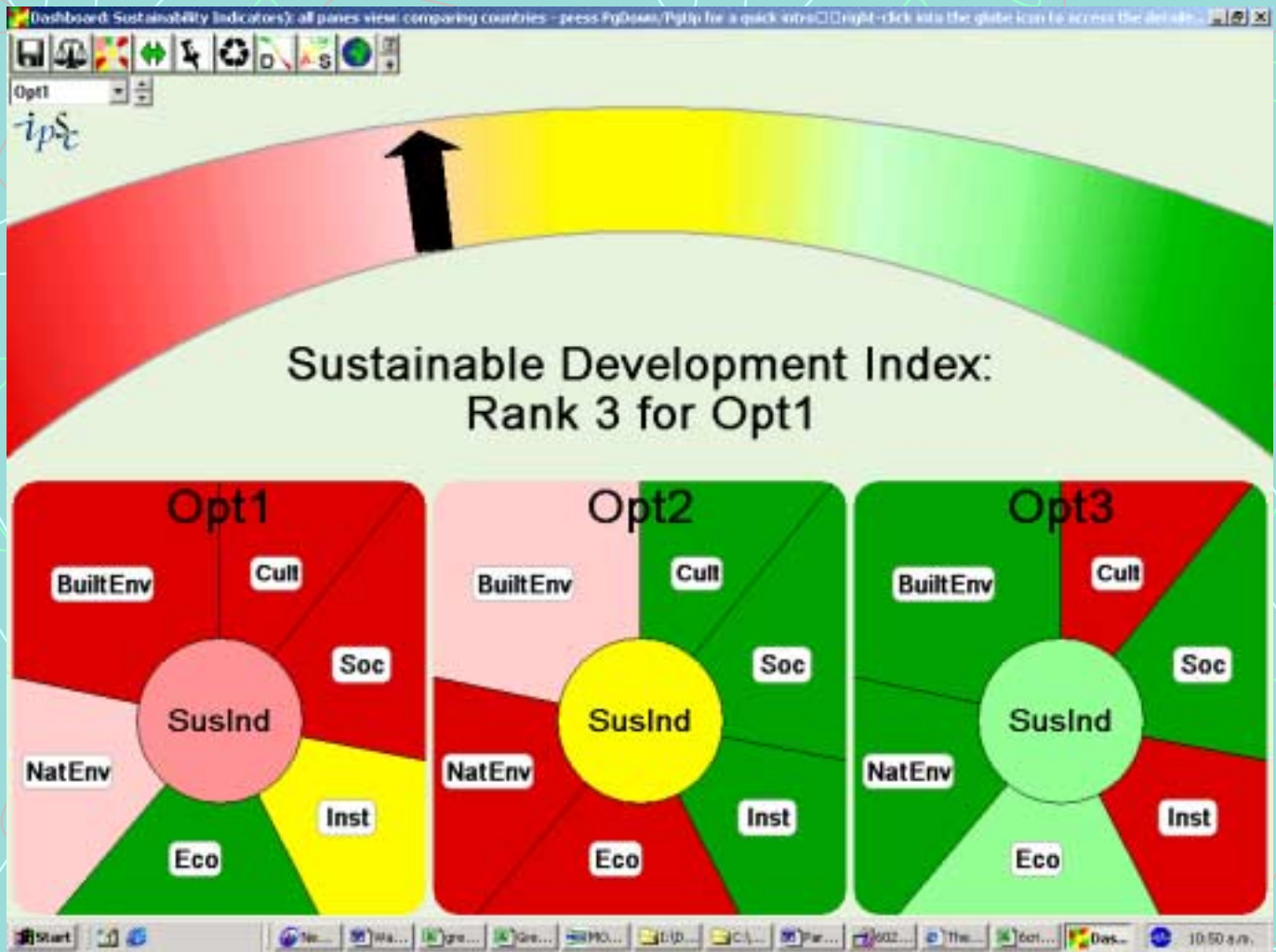
# Can handle influence of indicators across all 6 elements of sustainability

		EXAMPLE ONLY	PEOPLE		PROCESSES		PLACES			
			Cultural	Social	Inst.	Eco.	Nat.Env.	Blt Env.		
			0	40	15	35	35	40		
Planning, Design and Construction	Water quantity	Risk/Magnitude of Damage to Private Property		5				5	10	
		Risk/Magnitude of Damage to Drainage Infrastructure (Public)			5			5	10	
		Minimising hazards during flooding (Safety Risk from Flooding)		5				5	10	
		Mains water used - indicator of total demand on water supply system				5		5	10	
		Water Cycle Balance					10		10	50
	Water Quality	Suspended and pollutant load concentrations					10		10	
		Total Combined Sewer Overflow Volume per length pipe in typical year					10		10	20
	Amenity/Public Impact	Public Access (change in length accessible)		10					10	
		Public Use (Potential for greater multipurpose use)		5					5	
		Public Area Aesthetics (visual contaminants and odour)		5					5	20
	Economic/Financial and Ownership/Management Policy Decision views	Life Cycle Costs (LCC) for <b>public sector</b> - CAPEX, OPEX and Maint.			5	10				15
		Life Cycle Costs (LCC) for <b>private sector</b> - CAPEX, OPEX and Maint.		5		10				15
		Ownership/Management issues - <b>public sector</b>			5			5		10
		Ownership/Management issues - <b>private sector</b>		5				5		10
	Energy Use	Ongoing energy use				10		5		15
Embodied energy use						5	5		10	25

# Flexible to handle other categories

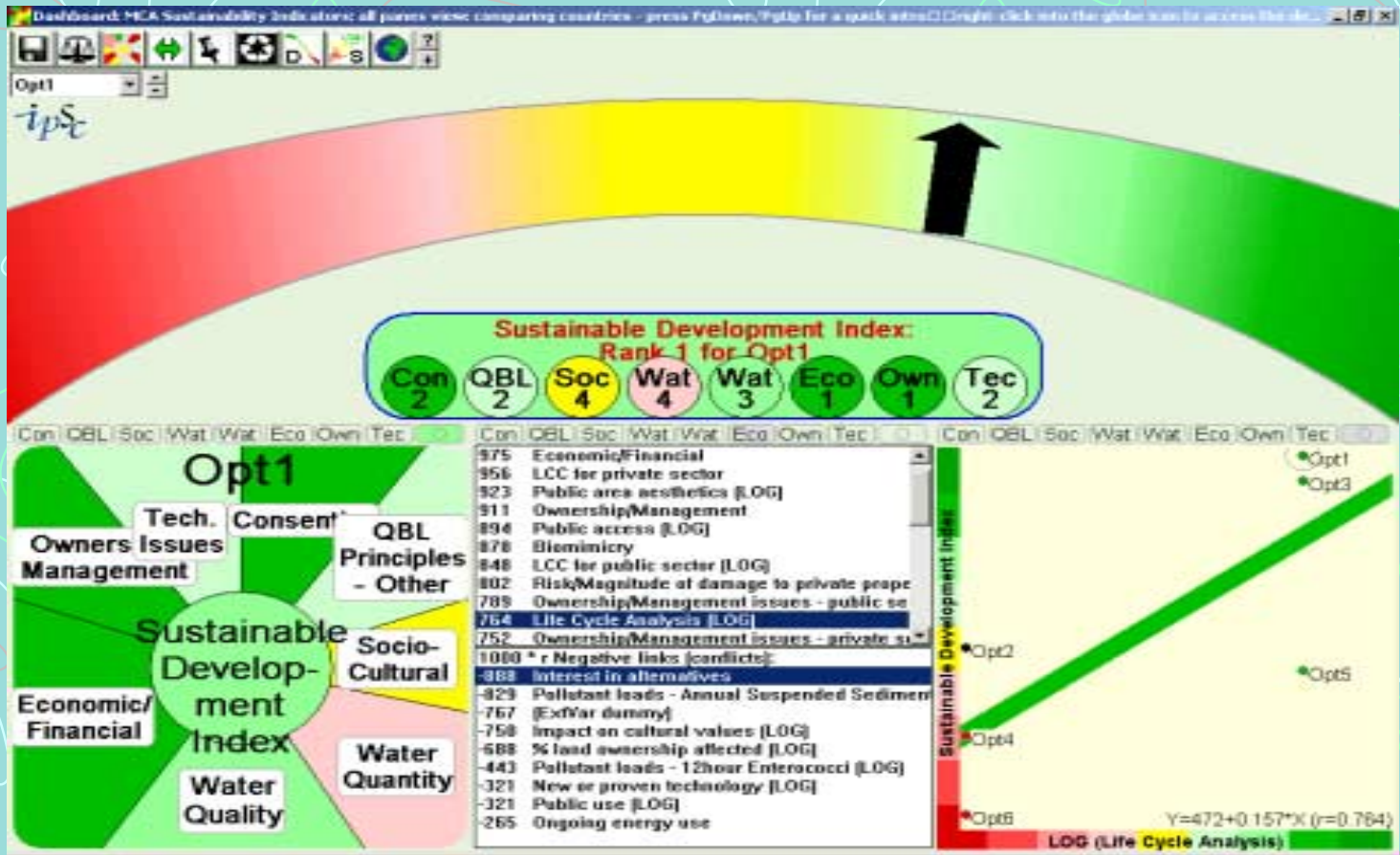
<b>Hamilton's Strategic Plan 2002 – 2012 (Hamilton City Council 2001)</b>	<b>Waitakere's Nine Strategic Platforms (Eco City, The next 10 years, June 2003)</b>	<b>Rotorua District Council's State of the Environment Report 2002 (Rotorua District Council 2002)</b>
<b>1. Sustaining the Environment</b>	<b>1. Strong Innovative Economy</b>	<b>1. Tangata whenua</b>
<b>2. Growing</b>	<b>2. Integrated Transport and Communication</b>	<b>2. Water</b>
<b>3. Promoting</b>	<b>3. Three Waters</b>	<b>3. Land</b>
<b>4. Experiencing Arts, Culture and Heritage</b>	<b>4. Sustainable Energy and Clean Air</b>	<b>4. Transport</b>
<b>5. Living</b>	<b>5. Green Network</b>	<b>5. Urban</b>
<b>6. Enjoying</b>	<b>6. Strong Communities</b>	
	<b>7. Active Democracy</b>	
	<b>8. Zero Waste</b>	
	<b>9. Urban and Rural Villages</b>	

# IISD (International Institute of Sustainable Development) 'dashboard' presentation graphical software [www.iisd.org](http://www.iisd.org)





# IISD (International Institute of Sustainable Development) 'dashboard' presentation graphical software



*Sustainability is a journey*

# Conclusions, *multi-criteria analysis is good but.....*

- The one-number output

**+ all 6 elements of sustainability**

PEOPLE		PROCESSES		PLACES	
Cultural	Social	Inst.	Economic	Nat. Env.	Built Env.

- ~~The black box~~

**A transparent box**

		EXAMPLE ONLY						
		PEOPLE		PROCESSES		PLACES		
		Cultural	Social	Inst.	Eco.	Nat. Env.	Blt Env.	
		0	40	15	35	35	40	
Water quantity	Risk/Magnitude of Damage to Private Property		5				5	10
	Risk/Magnitude of Damage to Drainage Infrastructure (Public)			5			5	10
	Minimising hazards during flooding (Safety Risk from Flooding)		5				5	10
	Mains water used - indicator of total demand on water supply system				5		5	10
Water Cycle Balance						10		50
Water Quality	Suspended and pollutant load concentrations					10		10
	Total Combined Sewer Overflow Volume per length pipe in typical year					10		20
Amenity/Public Impact	Public Access (change in length accessible)		10					10
	Public Use (Potential for greater multipurpose use)		5					5
	Public Area Aesthetics (visual contaminants and odour)		5					5
Economic/Financial and Ownership/Management Policy	Life Cycle Costs (LCC) for <b>public sector</b> - CAPEX, OPEX and Maint.			5	10			15
	Life Cycle Costs (LCC) for <b>private sector</b> - CAPEX, OPEX and Maint.		5		10			15
Decision views	Ownership/Management issues - <b>public sector</b>			5			5	10
	Ownership/Management issues - <b>private sector</b>		5				5	10
Energy Use	Ongoing energy use				10		5	15
	Embodied energy use						5	10

- Presentation & Communication

