

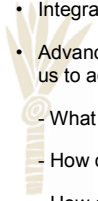



**Identifying and Prioritising
the Strategic Issues**



- Tony Miguel







Presentation Framework



- Integrated sustainable management
- Advanced asset management principles that will enable us to address key questions such as:
 - What is the affordable to our community/customers?
 - How can scarce resources be allocated?
 - How do we implement non-asset solutions?







Purpose

- The purpose of this presentation is to promote the new direction for asset management
- 1995 – 2006: basic, asset focus
- 2009: advanced, community preferences, sustainable

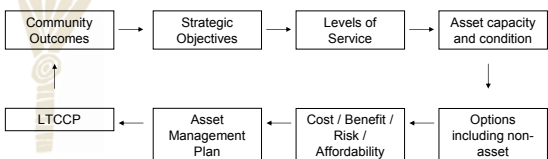


Overview



- Local Government Act, Land Transport Management Act; not business as usual
- Resource Management Act; Regional Councils now preparing Regional Plans
- OAG Report on LTCCP
- Asset deterioration and increased demand result in greater costs, may not be affordable or acceptable to the community
- International Infrastructure Management Manual now more relevant than ever
- Asset managers must change



Asset Management Planning Process





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graph LR; CO[Community Outcomes] --> SO[Strategic Objectives]; SO --> LOS[Levels of Service]; LOS --> ACC[Asset capacity and condition]; ACC --> OI[Options including non-asset]; OI --> CBR[Cost / Benefit / Risk / Affordability]; CBR --> AMP[Asset Management Plan]; AMP --> LTCCP[LTCCP]; LTCCP --> CO;
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Local Government Act 2002



- To provide for democratic and effective local government that recognises the diversity of New Zealand communities
- Provides a framework and powers for local authorities to decide which activities they undertake and the manner in which they will undertake them
- Promotes the accountability of local authorities to their communities
- Local authorities to play a broad role in promoting the social, economic, environmental, and cultural well being of their communities, taking a sustainable development approach.



Land Transport Management Act 2003



A land transport programme, take into account how each activity or activity class:

- Assists economic development
- Assists safety and personal security
- Improves access and mobility
- Protects and promotes public health
- Ensures environmental sustainability



Lifecycle Costs



- 90% of costs of infrastructure service delivery are due to the physical assets
- 10% administration and overheads
- 50% of assets created by development and subdivisions
- Challenge for asset managers: achieving sustainable asset management, addressing the life cycle costs, consequences, avoiding assets



Need for Change: Auckland

In an Auckland context, population growth is placing increased demand on infrastructure capacity, adverse effects on the environment (soil, air, water).



- Roading and public transport, \$10 to \$15 billion
- Stormwater management, \$5 to \$11 billion
- Water and wastewater, \$2.0 to 3.0 billion
- Cost of up to \$10,000 per annum to every household in the Auckland region



Sustainability Principles



"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Below are basic principles of sustainability planning:

- Comprehensive Analysis
- Integrated and Strategic Planning
- Focusing on Goals, Performance and Outcomes
- Consideration of Equity
- Market Principles
- Precautionary Principle
- Conservation Ethic
- Transparency, Accountability and Public Involvement





Community Outcomes

- Waitakere has identified 14 community outcomes, through consultation
- These are linked to the Strategic Platforms
- Given effect in the Activity Plans
- Example, involving iwi, community and arts in cycleways projects



Strategic

- Community contracts and arts delivery, included in Project Twin Streams
- Public Transport - increased bus shelters, Real Time Information, Travel Plans
- Reduce water use from 170 litres/pld to 145 litres /pld by 2016



Levels of Service

- Workshops, focus group, political reference group
- Newsletter to every household in October 2005
- 3,125 replies received
- Preferences for services





Risk Assessment Process

- Overview
- What factors make up risk
- Worked examples



Decision Making Process

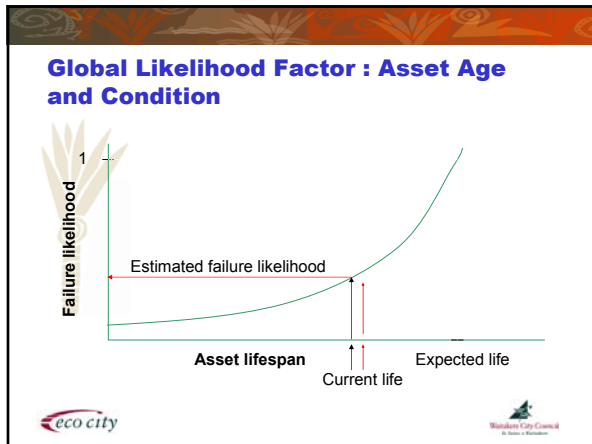
- Overview
- Phase 1 – Defining priorities
- Phase 2 – Defining options
- Phase 3 – Validating options

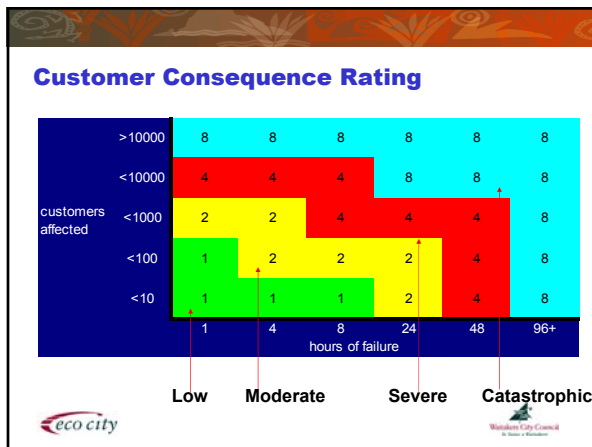


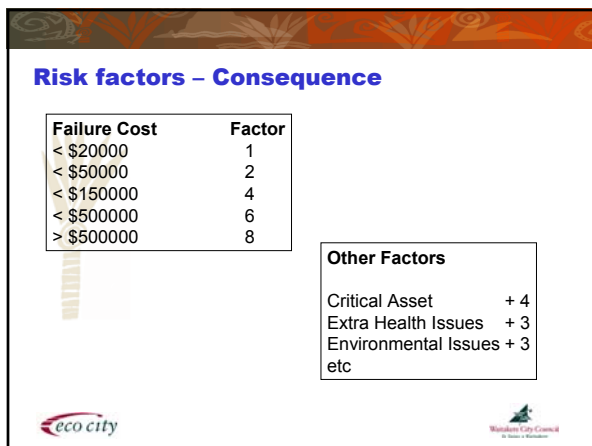
Risk is a Function of Likelihood and Consequence

Likelihood depends on: Location of asset (slip likelihood) Type of asset (pipe, manhole, etc) Fraction of mean life remaining = function (asset type)	Consequence depends on: Type of asset Type of impact Expected failure duration Number of customers affected
Number of historic failures Condition monitoring etc	Asset criticality Environmental Issues Strategic importance etc









Data Confidence

We must be able to identify areas of low data confidence

This will allow prioritisation of data collection, it will also provide confidence intervals to risk information

ConfID	Confidence	ConfFactor	ConfText
1	A	1	Highly Reliable
3	B	2	Reliable
4	C	3	Uncertain
5	D	4	Very uncertain
*	(AutoNumber)		

Decision Making Process – Phase 1

Defining priorities

Risk based list (Renewals) → Priority List ← Capacity, service level based list (Upgrades)

- Need to ensure that the same priority basis is used for both renewals and upgrades.
- Renewals list is prepared using risk process
- Use risk based approach for upgrades
- What is likelihood of loss (or degradation) of service?
- How many will experience loss, for how long?

Decision Making Process – Phase 1

Worked Example:

For normal service degradation: Likelihood = 1

From table on earlier page, pressure grading = 3
 900 customers affected
 Consequence = 4

Risk size = 1 x 4 = 4

Decision Making Process – Phase 2



Options to be considered

Definitive rules can be defined for each asset type. These should form part of renewal / upgrade policy

e.g. All new pipes will be made of HDPE

All repairs on AC pipe will be carried out with

Earthenware pipes will not be repaired



Decision Making Process – Phase 3

Validating the decision - Financial Value

If there is only one option as a result of Phase 2, Phase 3 is used to compare vfm (value for money) across projects; i.e what risk do you remove for what cost?

	Cost	Life (years)	Raw vfm per year	Install \$	Interruption \$	vfm (per 60 years)
Repair Option	\$100,000	10	\$10,000	\$25,000	\$100,000	\$1,350,000
Replacement Option	\$1,000,000	60	\$16,667	\$100,000	\$100,000	\$1,200,000



assume all figures in today's \$ (discount rate = inflation rate)

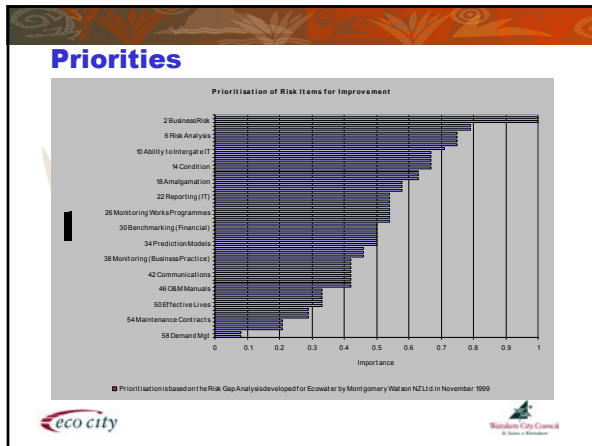



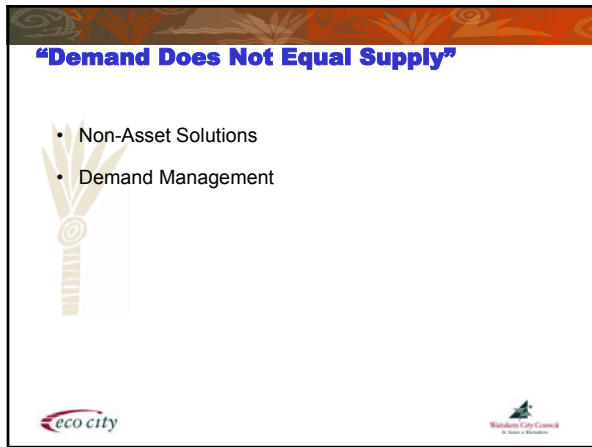
Decision Making Process – Phase 3

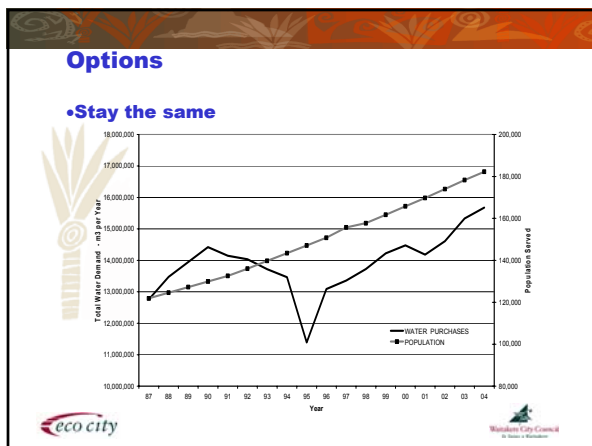
Asset ID	Asset	Flow	Cost	Conseq	Customer Conseq	Other	Consequence	Likelihood	Risk Size
100123	100m 150mm pipe	clean	125010		8	2	15,933	0.6	9.56
100123	100m 150mm pipe	storm	136000		4	4	14,267	0.6	8.56
100251	250m 150mm pipe	waste	154000		2	0	21,933	0.3	6.58
100251	100m 150mm pipe	waste	63000		2	3	5,033	0.9	4.53
100365	200m 300mm pipe	waste	25140		8	3	32,100	0.1	3.21
100251	100m 150mm pipe	clean	96321		1	0	5,300	0.5	2.65
100985	100m 150mm pipe	clean	89222		2	2	5,875	0.4	2.35
100695	100m 150mm pipe	storm	14222		2	3	3,583	0.6	2.15
101542	100m 150mm pipe	waste	36221		8	4	10,700	0.2	2.14

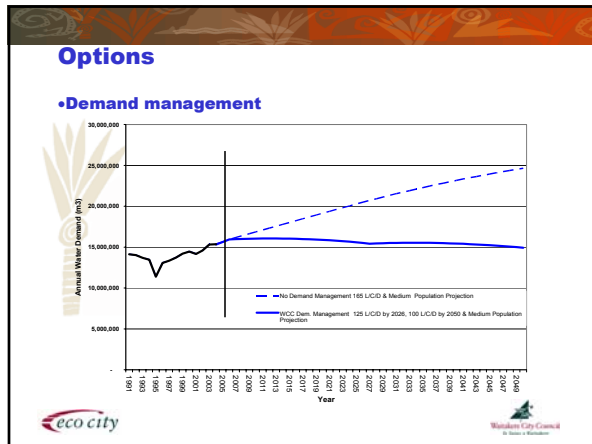
Asset ID	Asset	Flow	Type	Risk Size	Cost of work
100123	100m 150mm pipe	clean	renewal	9.56	\$ 48,000
100123	100m 150mm pipe	storm	renewal	8.56	\$ 36,000
100251	250m 150mm pipe	waste	upgrade	6.58	\$ 32,105
100251	100m 150mm pipe	waste	renewal	4.53	\$ 27,000
100365	200m 300mm pipe	waste	upgrade	3.21	\$ 86,000
100251	100m 150mm pipe	clean	renewal	2.65	\$ 12,560
100985	100m 150mm pipe	clean	upgrade	2.35	\$ 69,000
100695	100m 150mm pipe	storm	renewal	2.15	\$ 36,100
101542	100m 150mm pipe	waste	renewal	2.14	\$ 25,000











- ### Water Demand Management
- Public information
 - Community Education
 - More frequent billing
 - Pressure standardisation
 - House to house surveys
 - Financial incentives (rebates or Development Contributions)
 - Pricing, if include wastewater, 20% demand reduction
 - Leak detection and control, telemetry
 - Good maintenance
 - Asset renewals and upgrades
- eco city
- Waitakere City Council
60 Tees & Kaitiaki

- ### Transportation Demand Management
- "Let's spare a thought for Aucklanders caught in a traffic jam with a bicycle on the back of the car on the way to the gym".
- Public information, education
 - Improved transport options
 - Incentives to use alternatives
 - Parking and land use management
 - Policy and institutional reforms
- eco city
- Waitakere City Council
60 Tees & Kaitiaki

QBL Framework – Project Evaluation

- Use multi-criteria evaluation
- Ranks all projects, e.g. library, wastewater upgrade, new Civic Centre
- Uses 19 criteria
- Effectiveness (+ to -)
- Accessibility / transport
- Air
- Community facilities





QBL Framework – Project Evaluation

- Cultural diversity / identity
- Democracy / community participation
- Ecology
- Economic activity
- Education
- Energy
- Health
- Heritage



QBL Framework – Project Evaluation



- Housing
- Land
- Physical infrastructure
- Safety
- Treaty of Waitangi
- Urban form / amenity
- Waste
- Water



Asset Management Definition

“a combination of management, financial, economic, engineering and other practices applied to assets...providing required levels of service at most effective cost (IIMM)

“a process for the establishment and delivery of community outcomes to provide services efficiently and effectively to meet a combination of social, cultural, environmental and economic factors; by applying management, financial, engineering and other practices to assets” (new definition?)



Conclusions

- Require integrated and sustainable planning and management of assets (e.g. it is more effective to invest in public transport or build more roads). Need more non-asset solutions/demand management.
- Require multi-discipline approach; iwi, social, economic, environmental and cultural
- Enter into effective dialogue with the community.
- Asset managers provide guidance and implement solutions; they are not the decision makers.

