

Demystifying Asset Management

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Andy Dalziel
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A couple of definitions

dichotomy

Main Entry: **di·chot·o·my**

Pronunciation: dī-'kă-t&-mē also d&-

Function: *noun*

Inflected Form(s): *plural -mies*

Etymology: Greek *dichotomia* from *dichotomos*

1 : a division or the process of dividing into **two especially mutually exclusive or contradictory groups or entities**

2 : the phase of the moon or an inferior planet in which half its disk appears illuminated

3 a : BIFURCATION; especially : repeated bifurcation (as of a plant's stem) b : a system of branching in which the main axis forks repeatedly into two branches c : branching of an ancestral line into two equal diverging branches

4 : **something with seemingly contradictory qualities**

Merriam-Webster Online

Why Asset Management?

- **Aging infrastructure**
 - Many assets reaching the end of design life
- **Increased public awareness**
 - Potholes, sewer failures, river pollution
- **Reduced funding**
 - Government cutbacks
- **Maintain inter-generation equity**
 - Need to ensure future value

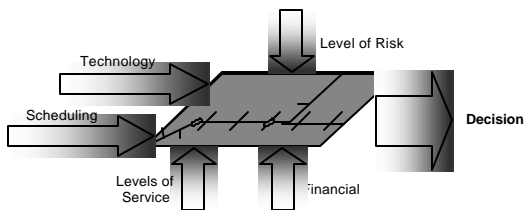
Why Asset Management?

- Aging infrastructure
 - Assets reaching the end of design life
- Increased public awareness
 - Both service providers and users
- Financial reform
 - Government cuts
- Limited government authority
 - Need to ensure value

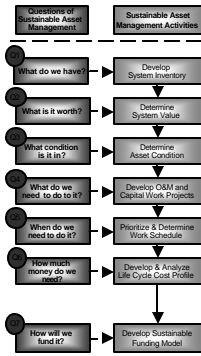
Forever !!

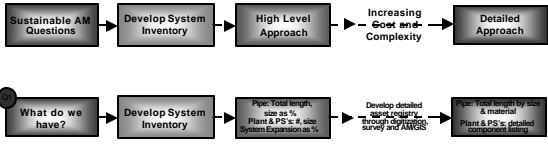
Data Driven Asset Management

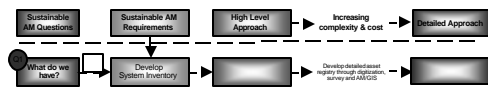
Sanitary Sewer Network



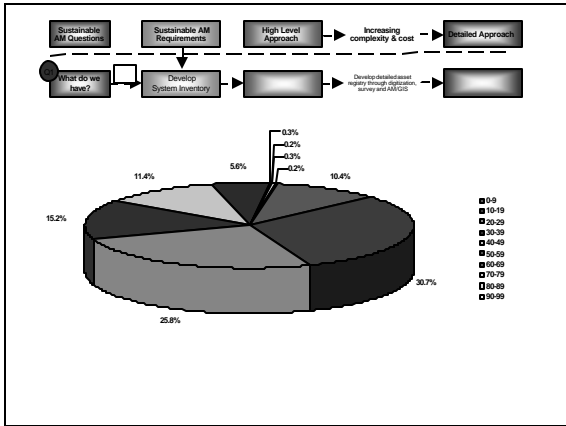
Sustainable Asset Management Framework

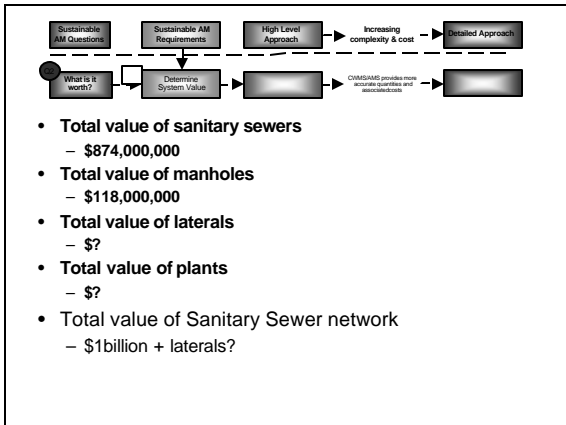


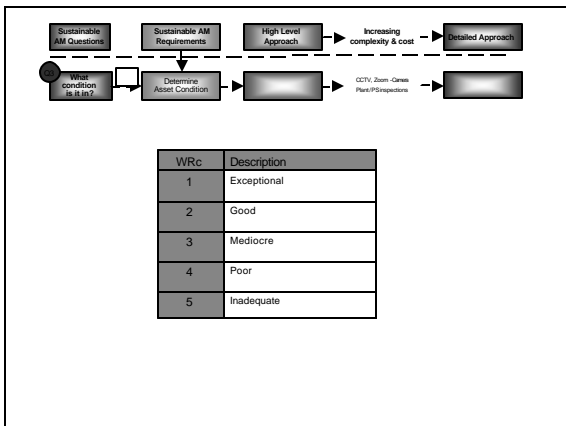


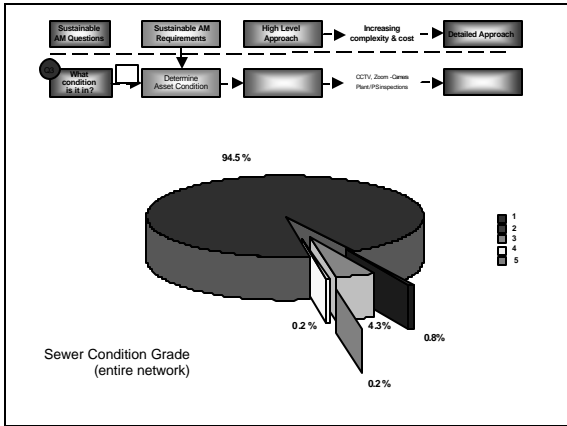


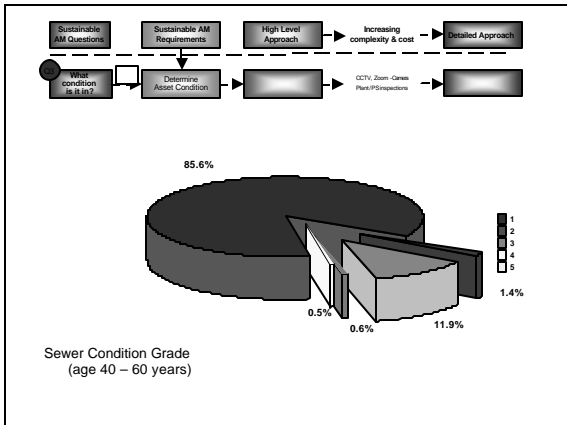
- 1,800km of sanitary sewers
- 26,000 manholes
- ?km laterals



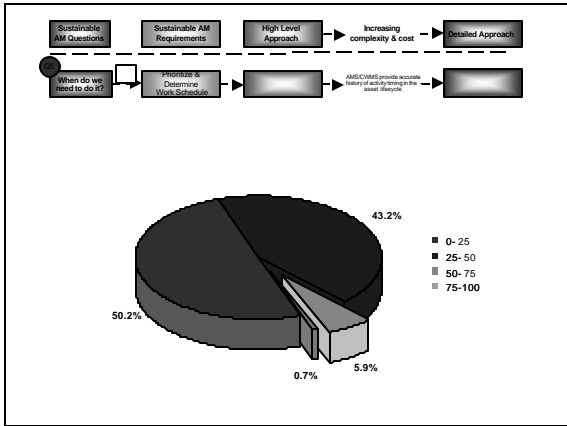


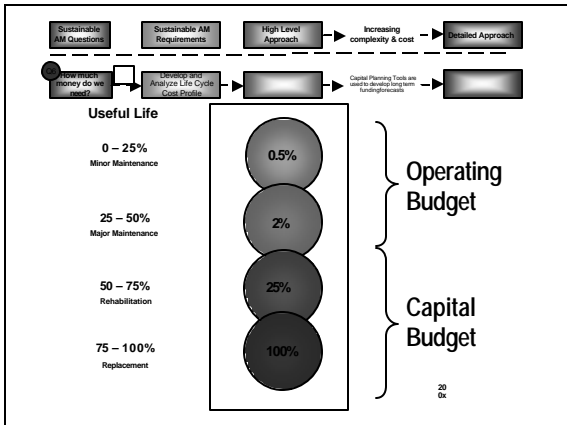






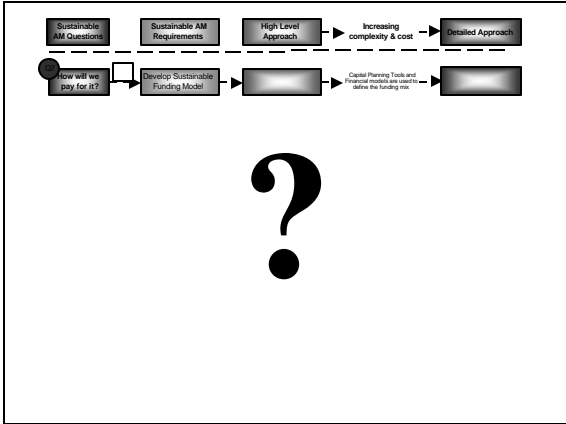
Minor Maintenance	0 - 25 years
Major Maintenance	25 - 50 years
Rehabilitation	50 - 75 years
Replacement	75 - 100 years





Flowchart: Sustainable AM Questions → Sustainable AM Requirements → High Level Approach → Increasing complexity & cost → Detailed Approach. A side path: How much money do we need? → Lifecycle and Analyze Life Cycle Cost Profile → Capital Planning Tools are used to develop program funding scenarios → Detailed Approach.

Condition Grade	Quantity	Unit rate Rehab/Replace	Rehab/Replace Value
A	1,680,000m		
B	15,400m		
C		\$250/m	
D		\$450/m	
F	98,700m	\$750/m	\$74,025,000
	1,794,100m		\$46,160,000



An Alternative Approach



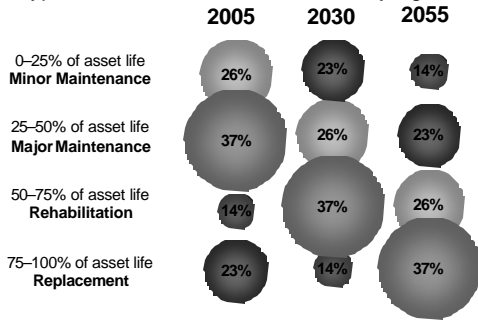






Dynamic Infrastructure Bubbles

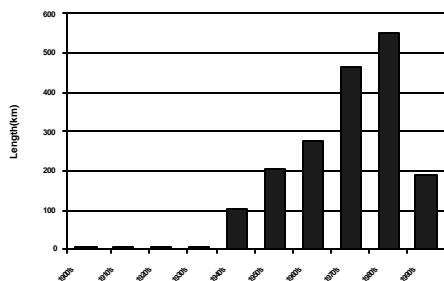
Typical Distribution of Infrastructure by Age



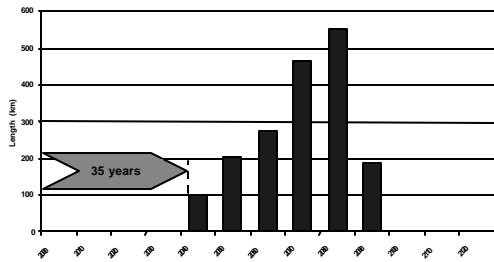
Essential Pieces of Data

- **Approximate Quantity of Inventory**
 - 1,800km of sanitary sewers
 - 26,000 manholes
- **Replacement Value**
 - \$1 billion
- **Age Profile**

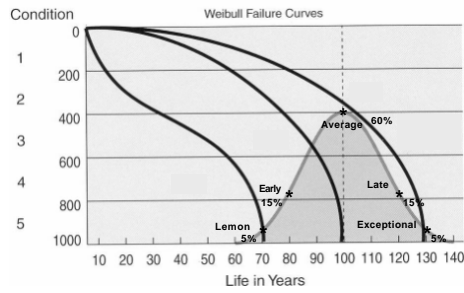
Age Profile



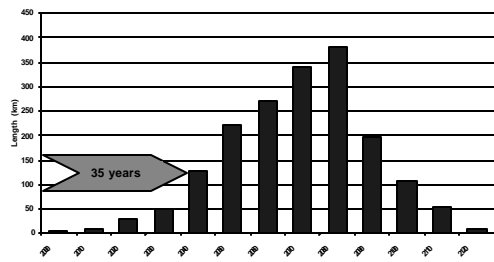
Replacement Quantities



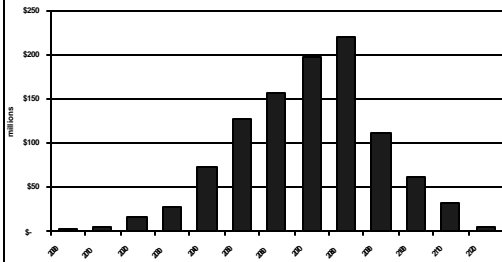
Failure Distribution



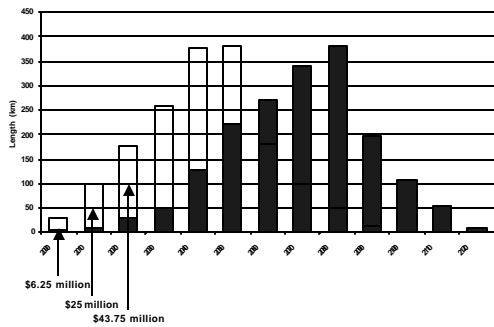
Replacement Quantities



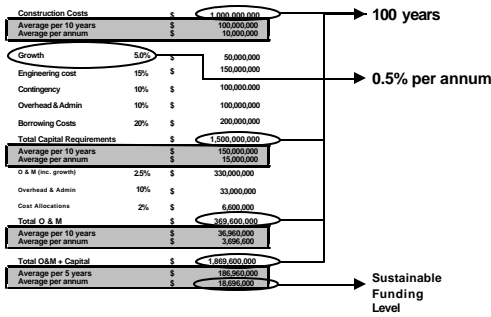
Capital Investment Replacement



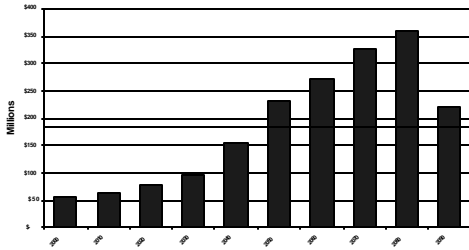
Rehabilitation Quantities



Financial Analysis



Revenue Plan



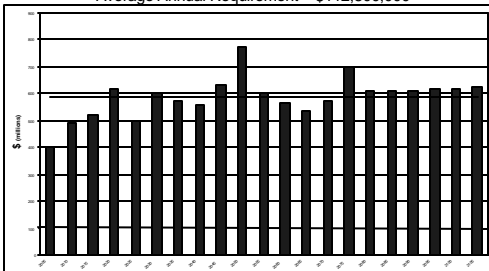
Application to Diverse Asset Portfolio

Where else can we apply these principles?

Revenue Plan

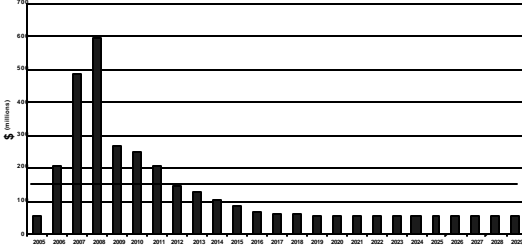
Water

Average Annual Requirement = \$112,800,000



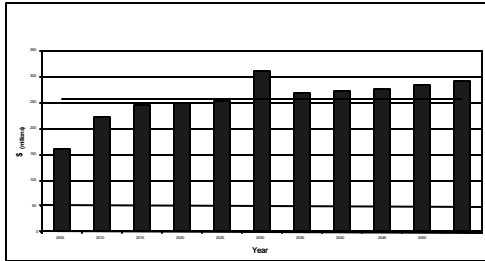
Revenue Requirements Roads

Average Annual Requirement = \$149,000,000



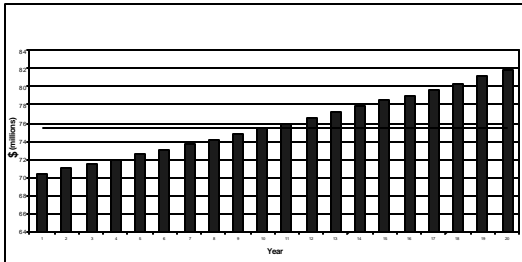
Revenue Requirements Facilities

Average Annual Requirement = \$51,400,000



Revenue Requirements Transit

Average Annual Requirement = \$75,500,000



Conclusions

- Embark early on the Asset Management journey
- Avoid paralysis by analysis
 - Don't wait for the perfect dataset
- Good data is important
- But it is not essential when you begin the process of educating the politicians and the community on the need for Asset Management

Questions

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Andy Dalziel
adalziel@stantec.com