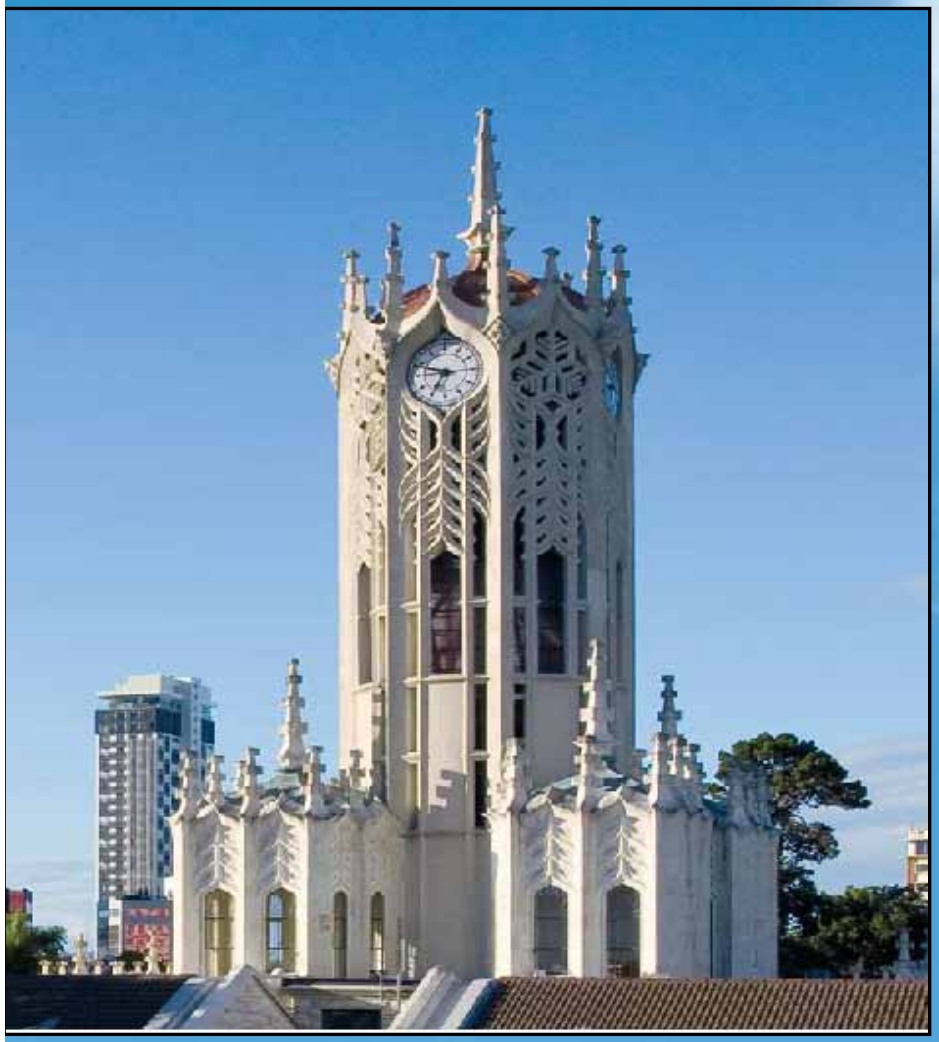

Strategic Asset Management in a Tertiary Education Environment

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Te Whare Wānanga o Tāmaki Makaurau

University of Auckland Fast Facts

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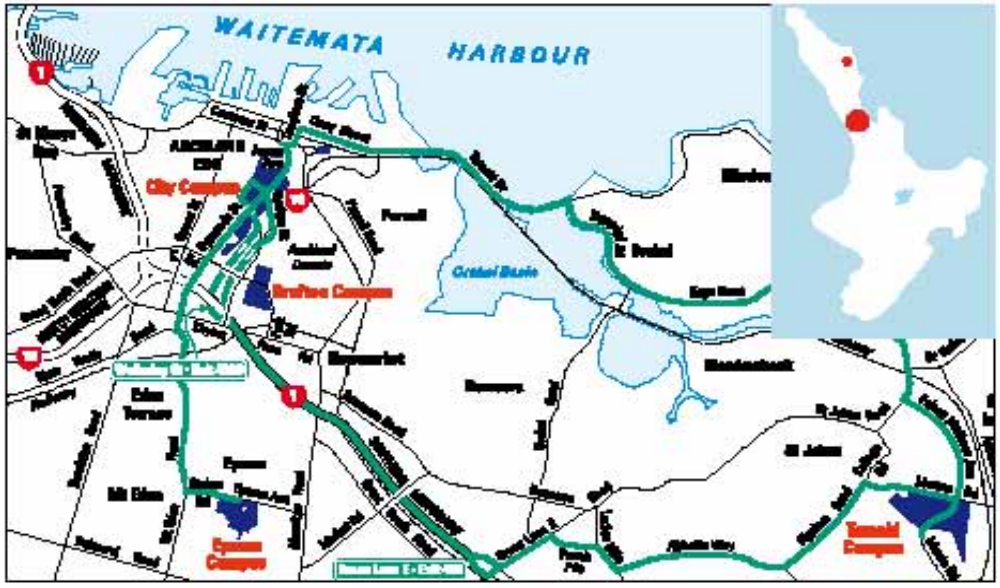
Te Whare Wānanga o Tāmaki Makaurau

INGENIO·ET·LABORE

University fast facts 2008

Students	
Undergraduate	28,026
Postgraduate	10,525
Total	**38,551**
Domestic	34,268
International	4,283
Degrees Awarded	
Undergraduate	5,849
Postgraduate	4,082
Total	**9,931**
Staff	
Academic	3,474
General	3,311
Total	**6,785**

Total research revenue $190 million



University Rankings

THE UNIVERSITY OF AUCKLAND
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Te Whare Wānanga o Tāmaki Makaurau

The World ranking of New Zealand Universities according to the Times Higher Education - QS rankings 2009

University	THE-QS ranking 2009
• The University of Auckland	61
• University of Otago	125
• University of Canterbury	188
• Victoria University of Wellington	229
• Massey University	299
• University of Waikato	314

City Campus Sectors

THE UNIVERSITY OF AUCKLAND
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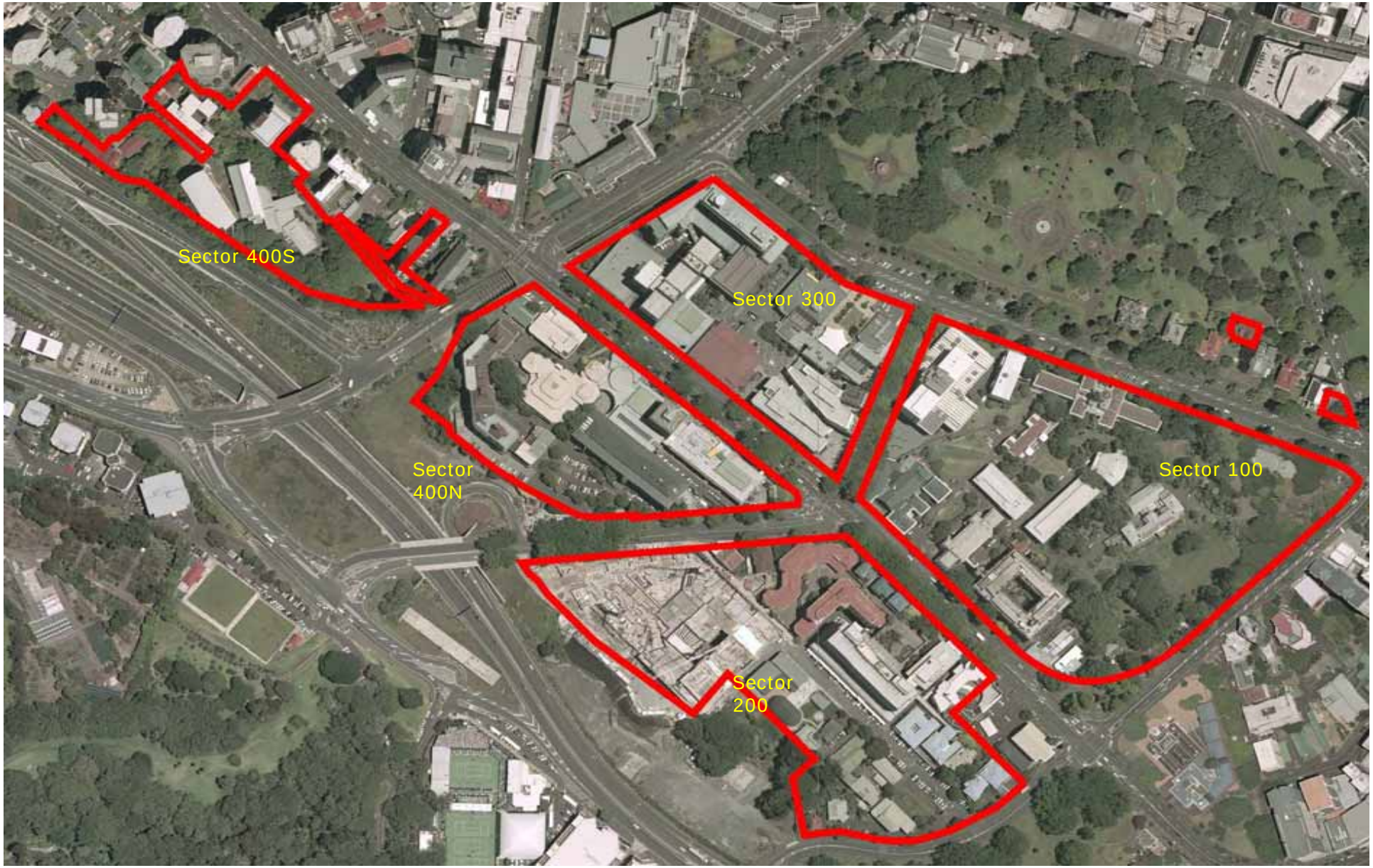
Te Whare Wānanga o Tāmaki Makaurau



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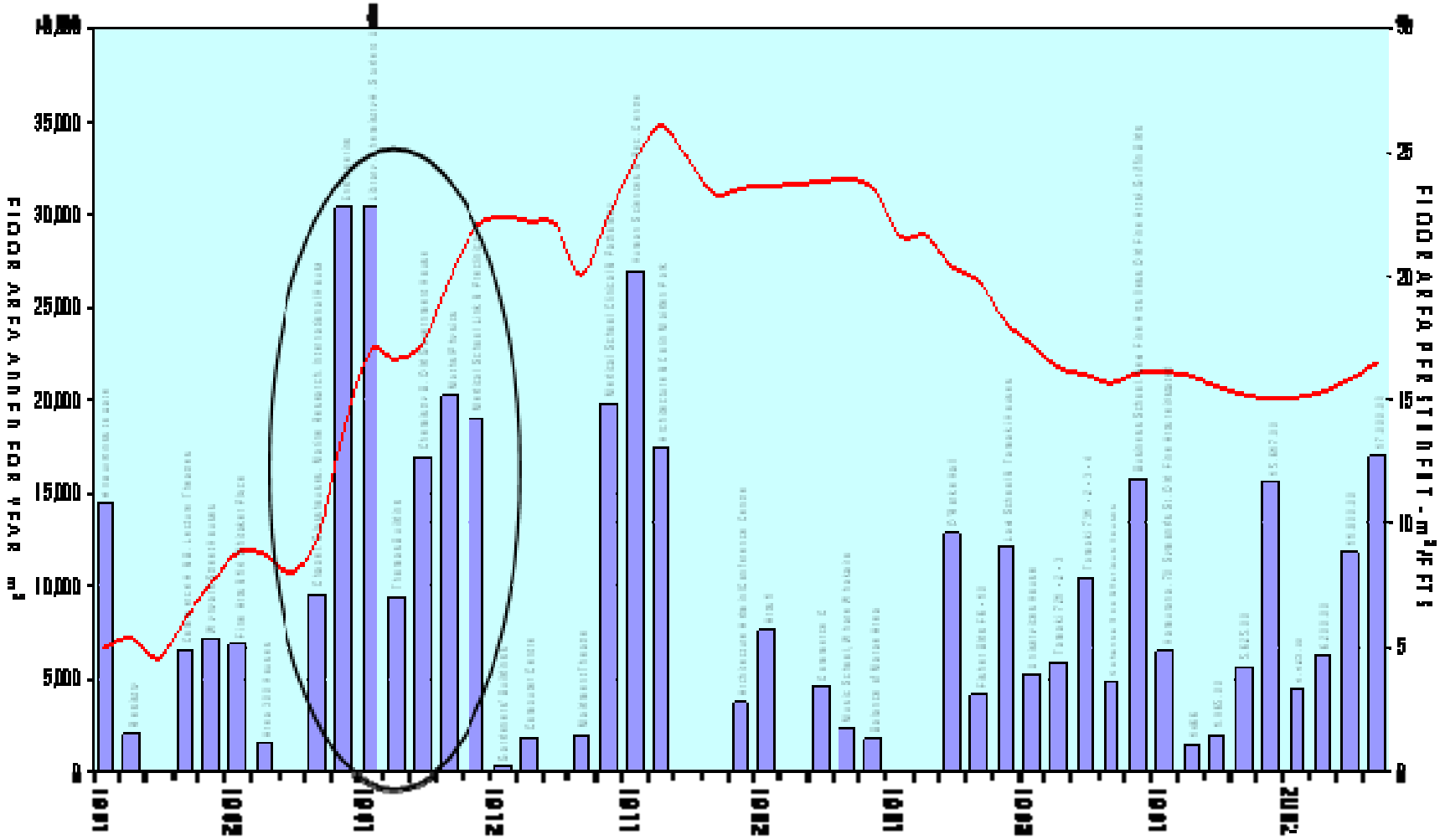
GROSS FLOOR AREA & AREA PER STUDENT



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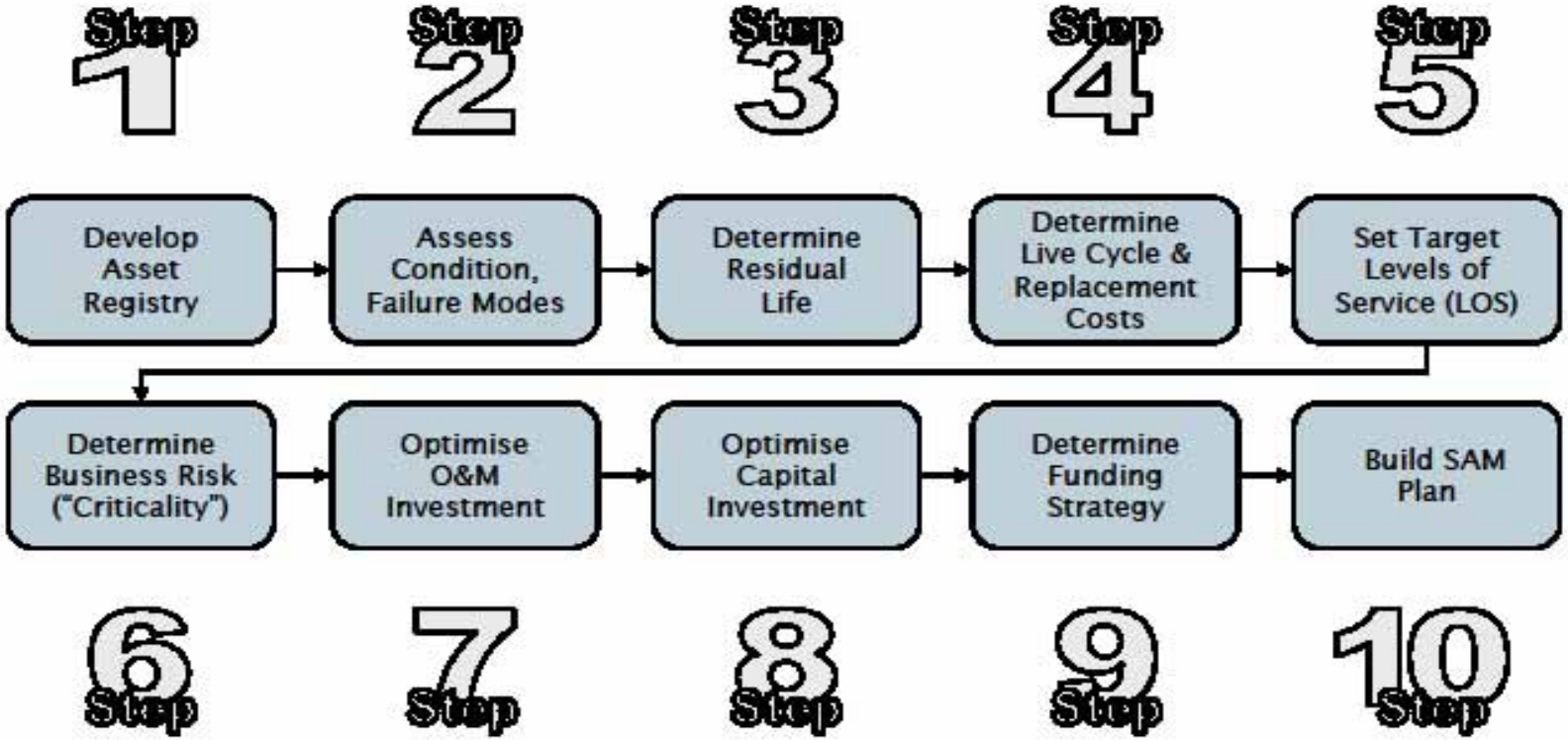
SAM plan 10-step process



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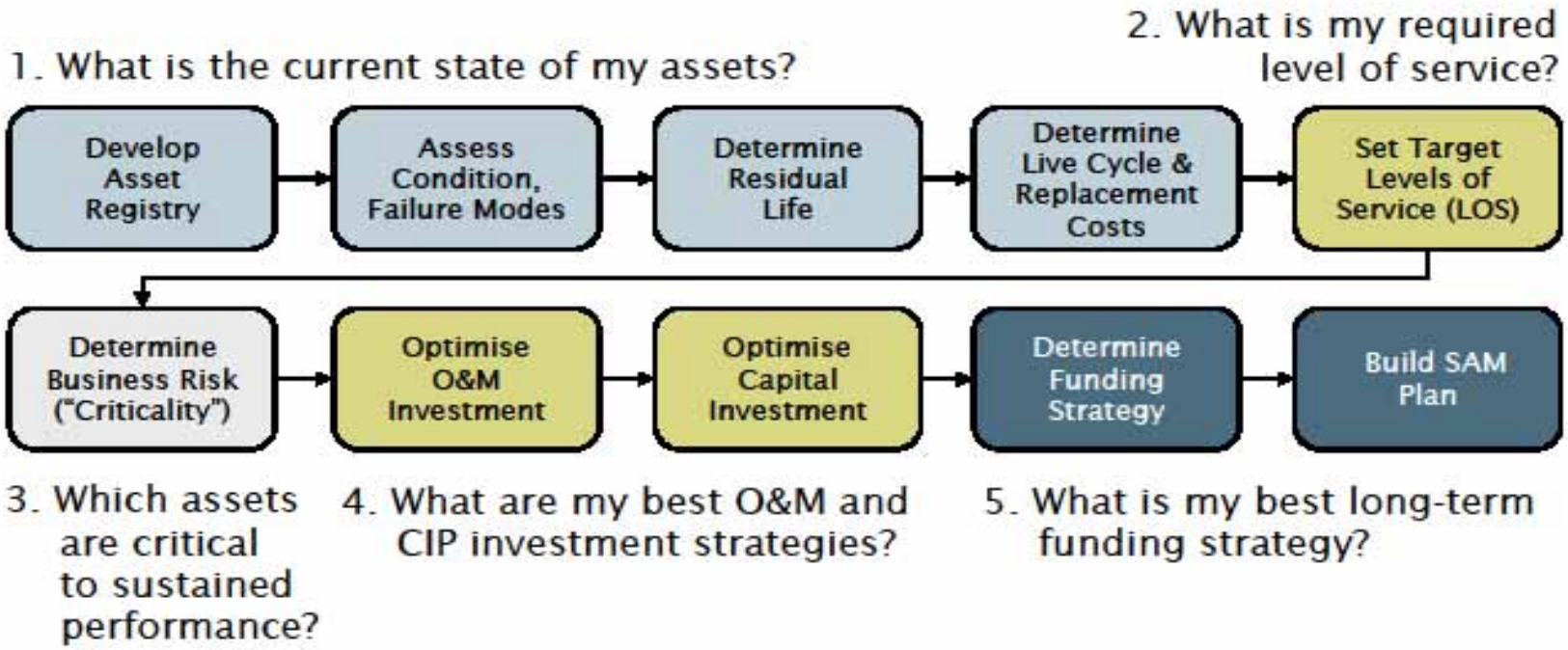
Integration of 5 core questions with 10-step process



Five Core Questions Expanded

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- 1.What is the current state of my assets?
  - What do I own?
  - Where is it?
  - What condition is it in?
  - What is its remaining useful life?
  - What is its remaining economic value?
- 2.What is my required level of service (LOS)?
  - What is the demand for my services by my stakeholders?
  - What do regulators require?
  - What is my actual performance?
- 3.Which assets are critical to sustained performance?
  - How does it fail? How can it fail?
  - What is the likelihood of failure?
  - What does it cost to repair?
  - What are the consequences of failure?
- 4.What are my best O&M and Capital investment strategies?
  - What alternative management options exist?
  - Which are the most feasible for my organization?
- 5.What is my best long-term funding strategy?

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- What is the Current State of my Assets
  - What do I own?
  - Where is it?
  - What condition is it in?
  - What is its remaining useful life?
  - What is its remaining economic value?

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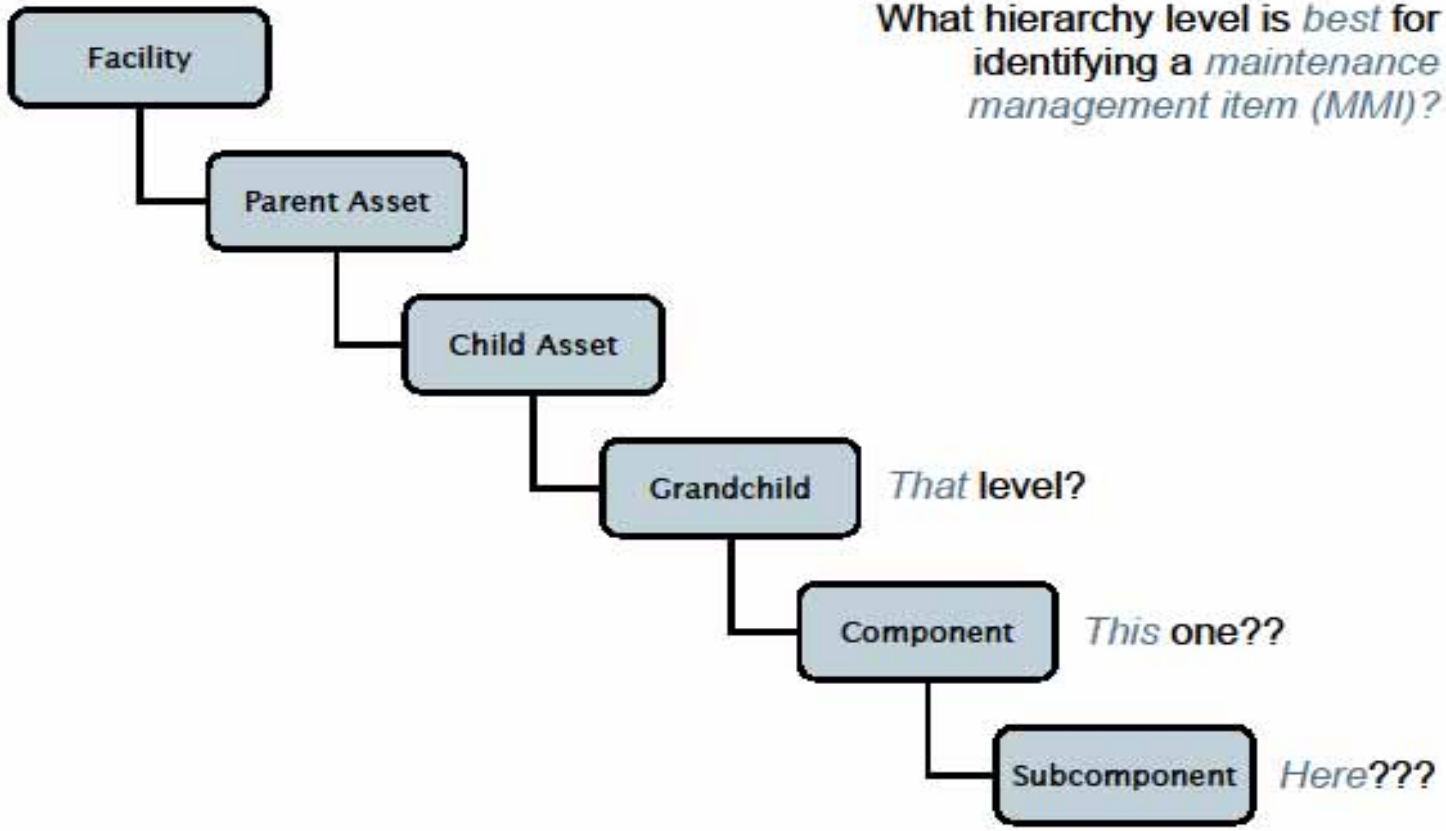
Asset Hierarchy



What hierarchy level is *best* for identifying a *maintenance management item (MMI)*?

That level?

This one??

Here???

How Far to Go with Assets?

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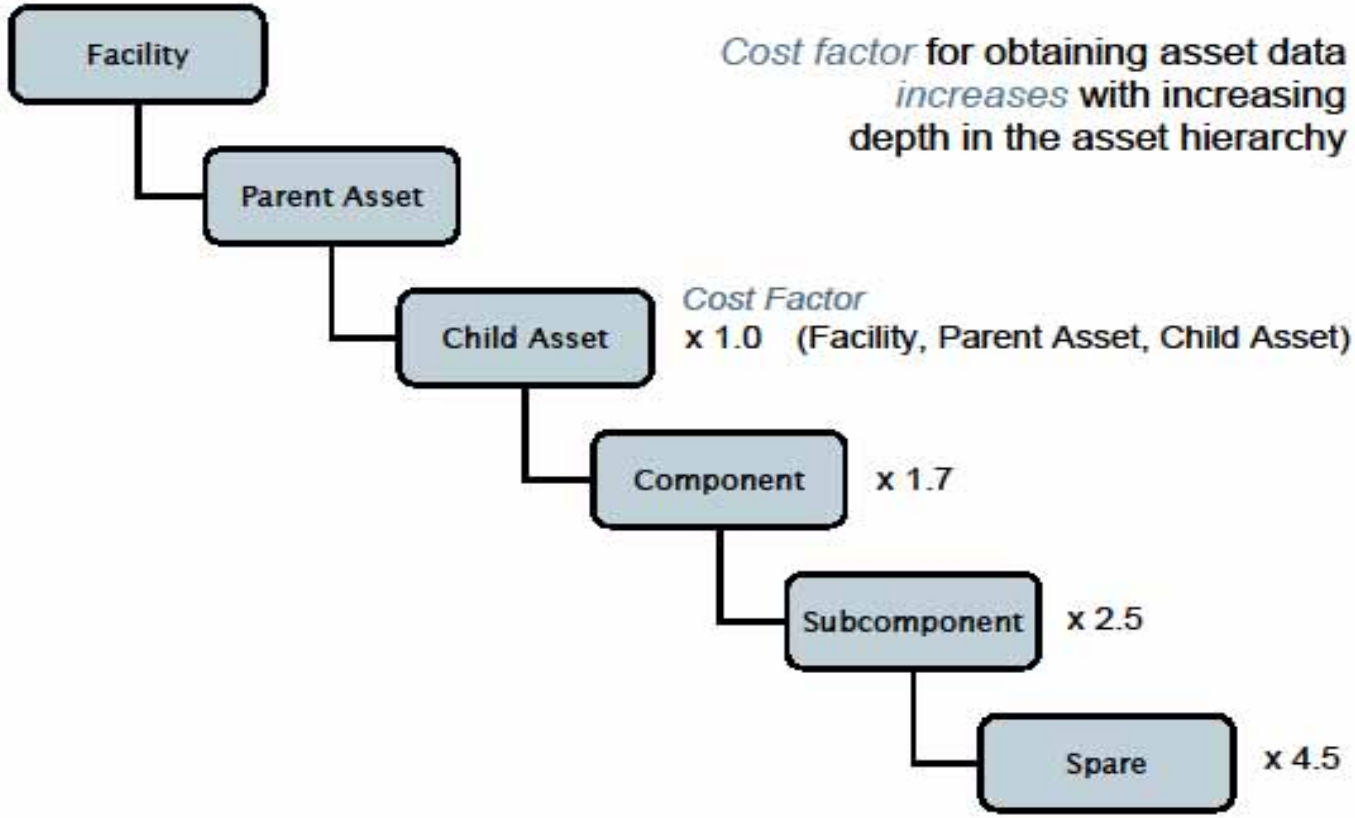
Data Costs Within Asset Hierarchy



Cost factor for obtaining asset data *increases* with increasing depth in the asset hierarchy

Cost Factor
x 1.0 (Facility, Parent Asset, Child Asset)

x 1.7

x 2.5

x 4.5

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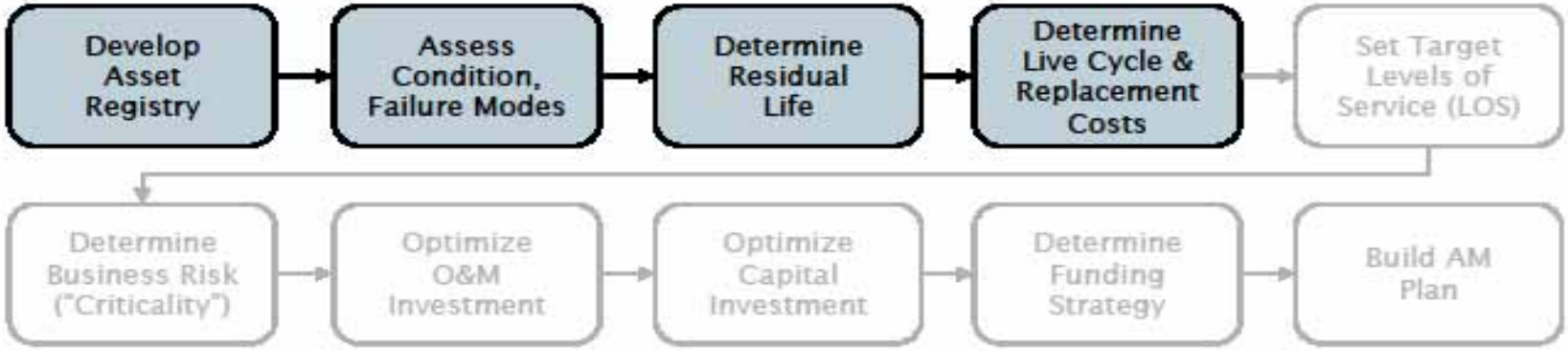
SAM plan 10-step process

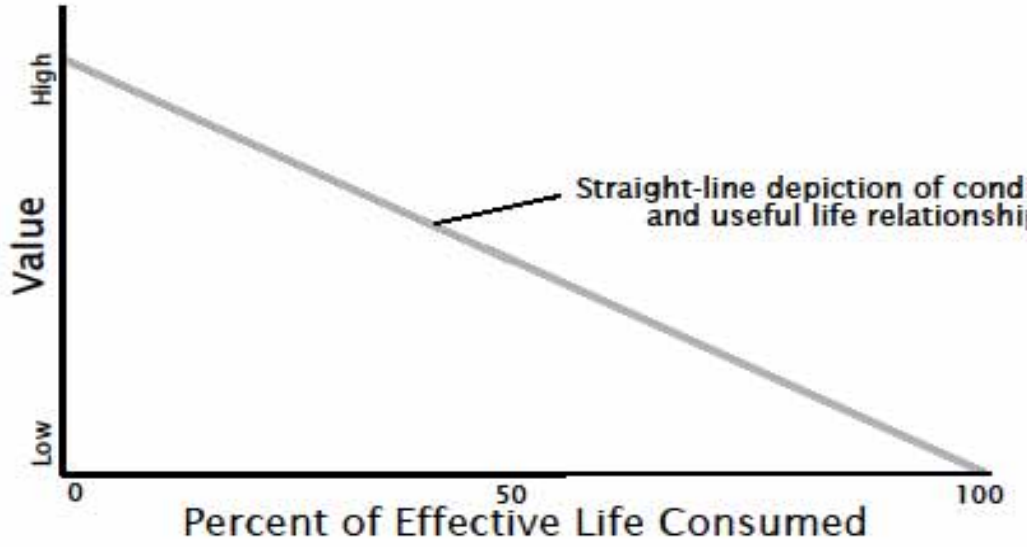
1. What is the current state of my assets?



Basic Depreciation Method

Straight-line depreciation

- Easy to apply, but rarely a true reflection of asset decay and useful life
- Book value = Original cost/Useful life



How Long Will it Last

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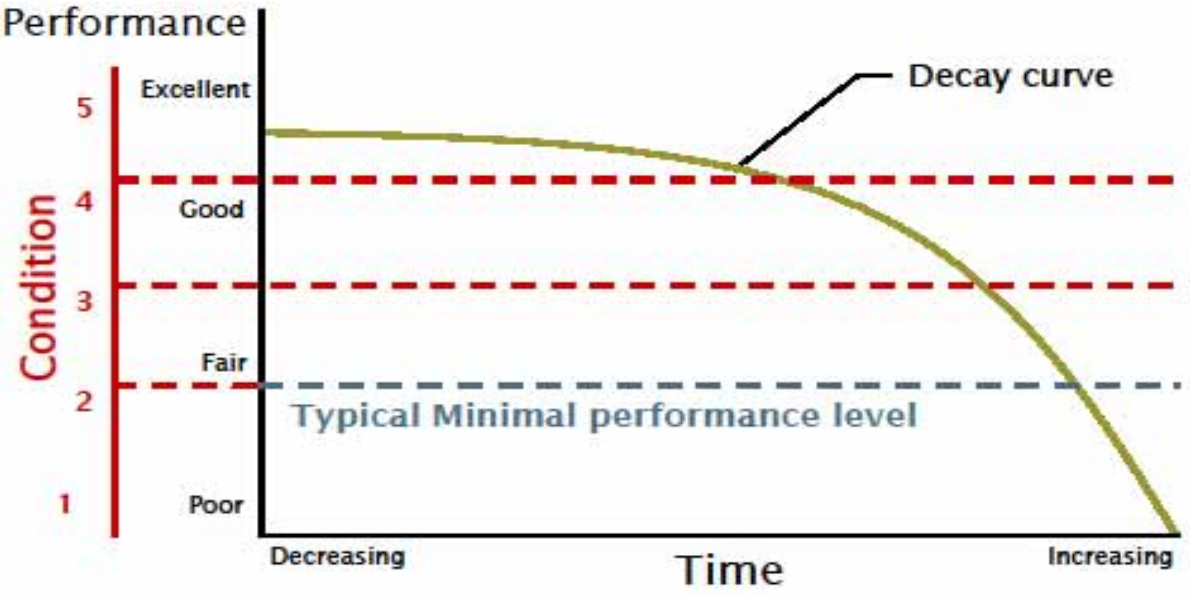
Tying Condition Score to Asset Failure



Maximo Asset Data example

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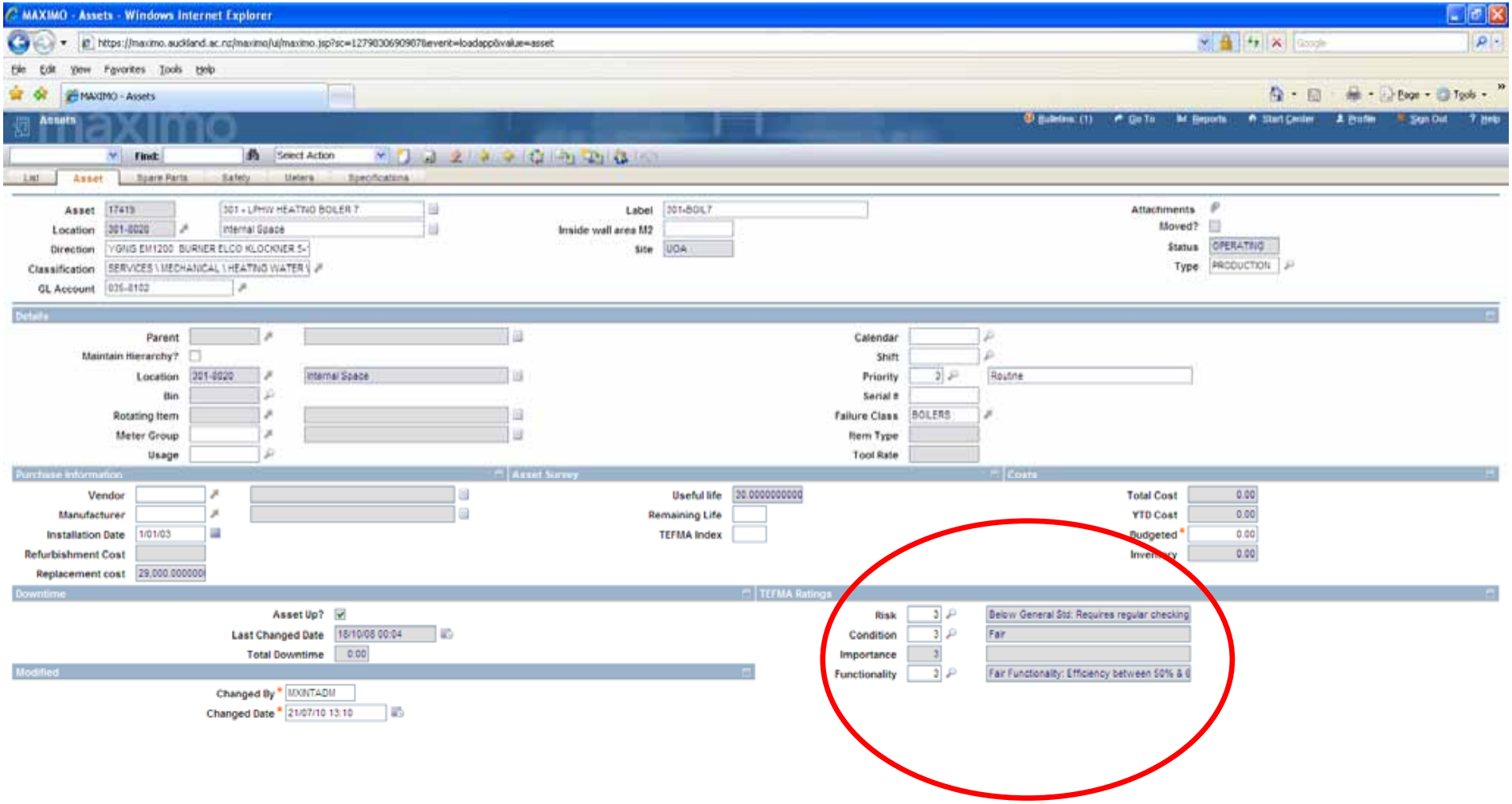

Asset Useful Life

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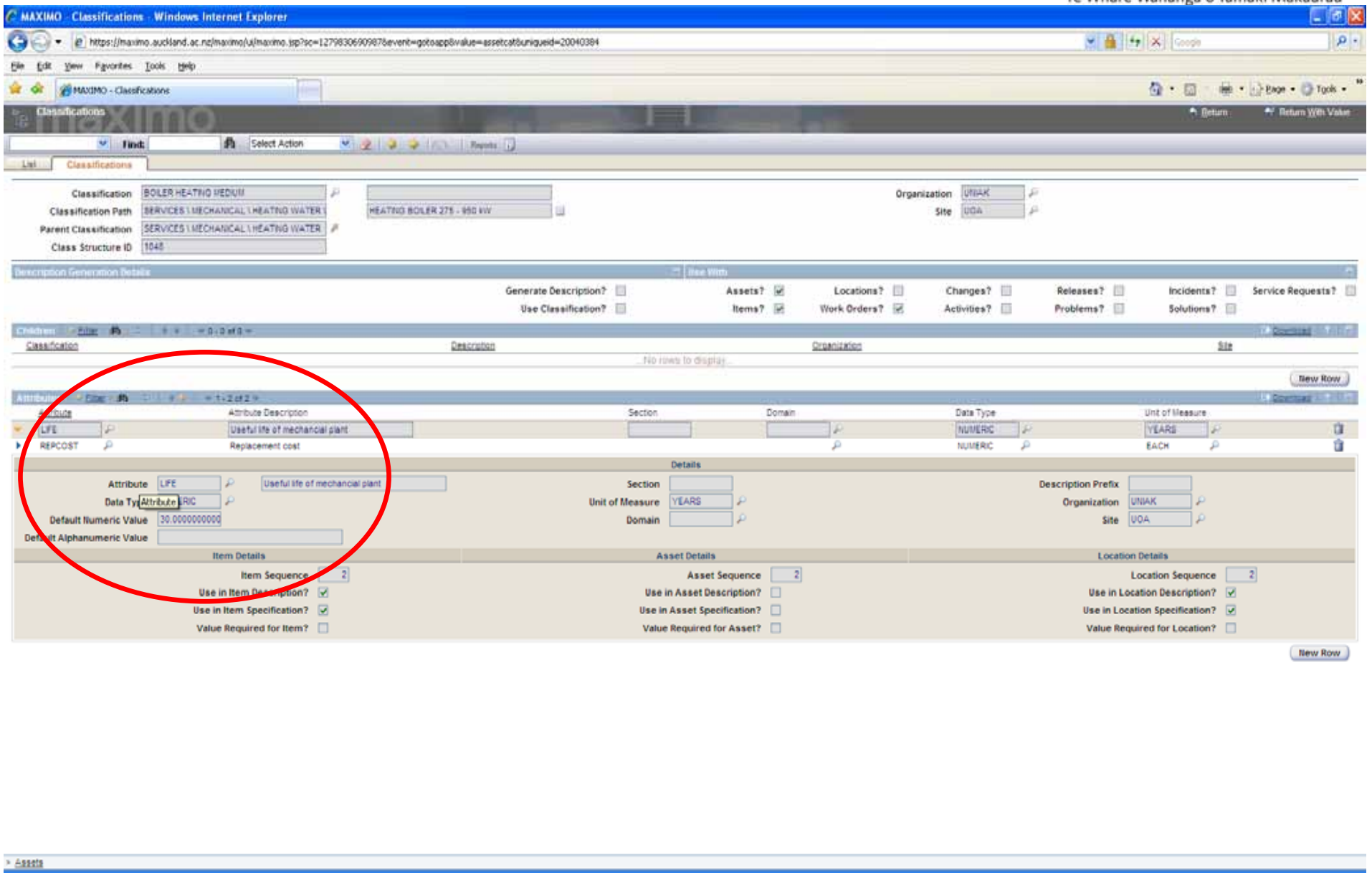

Asset Replacement Value

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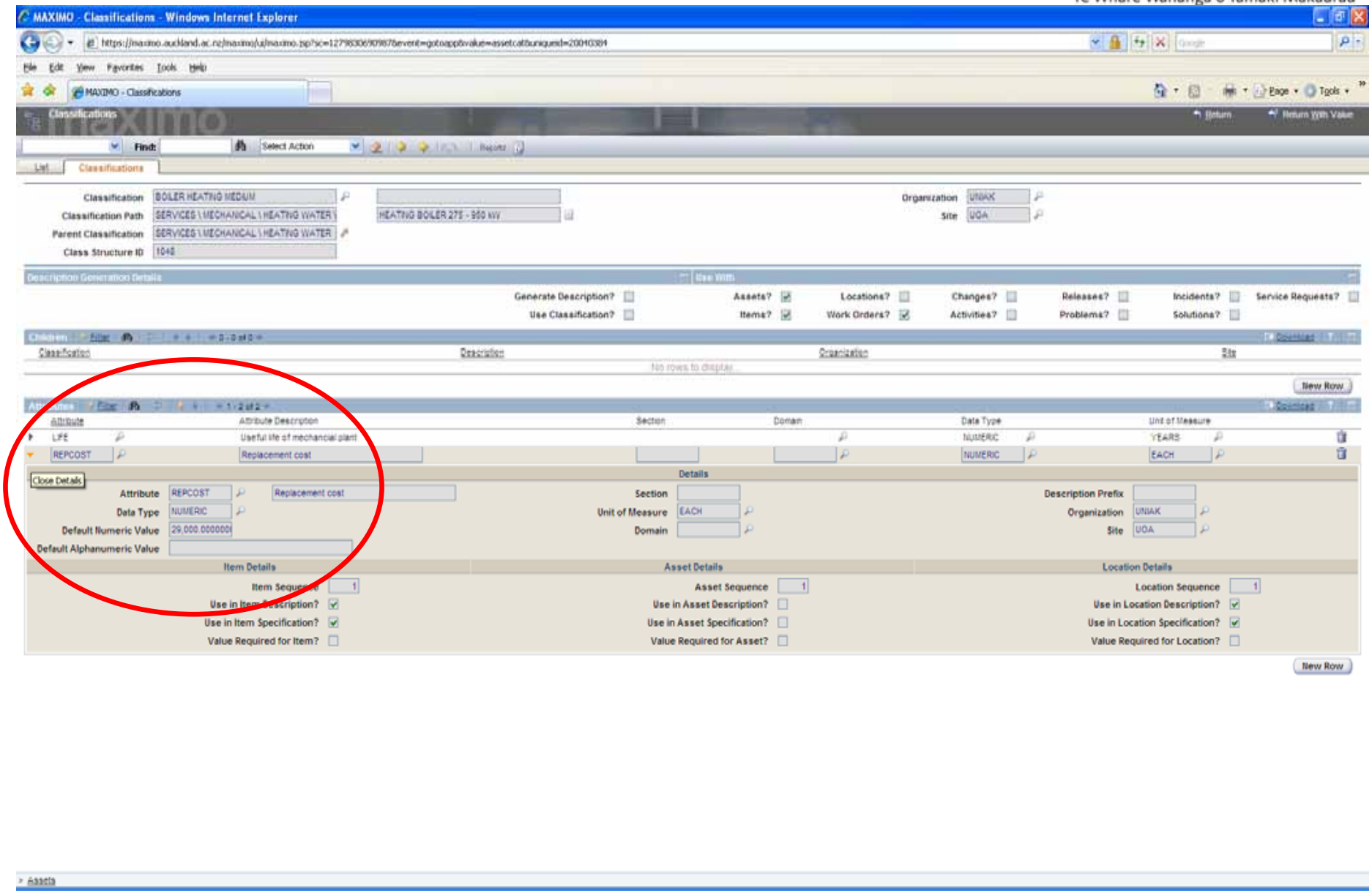
Te Whare Wānanga o Tāmaki Makaurau



How Low do you Go?

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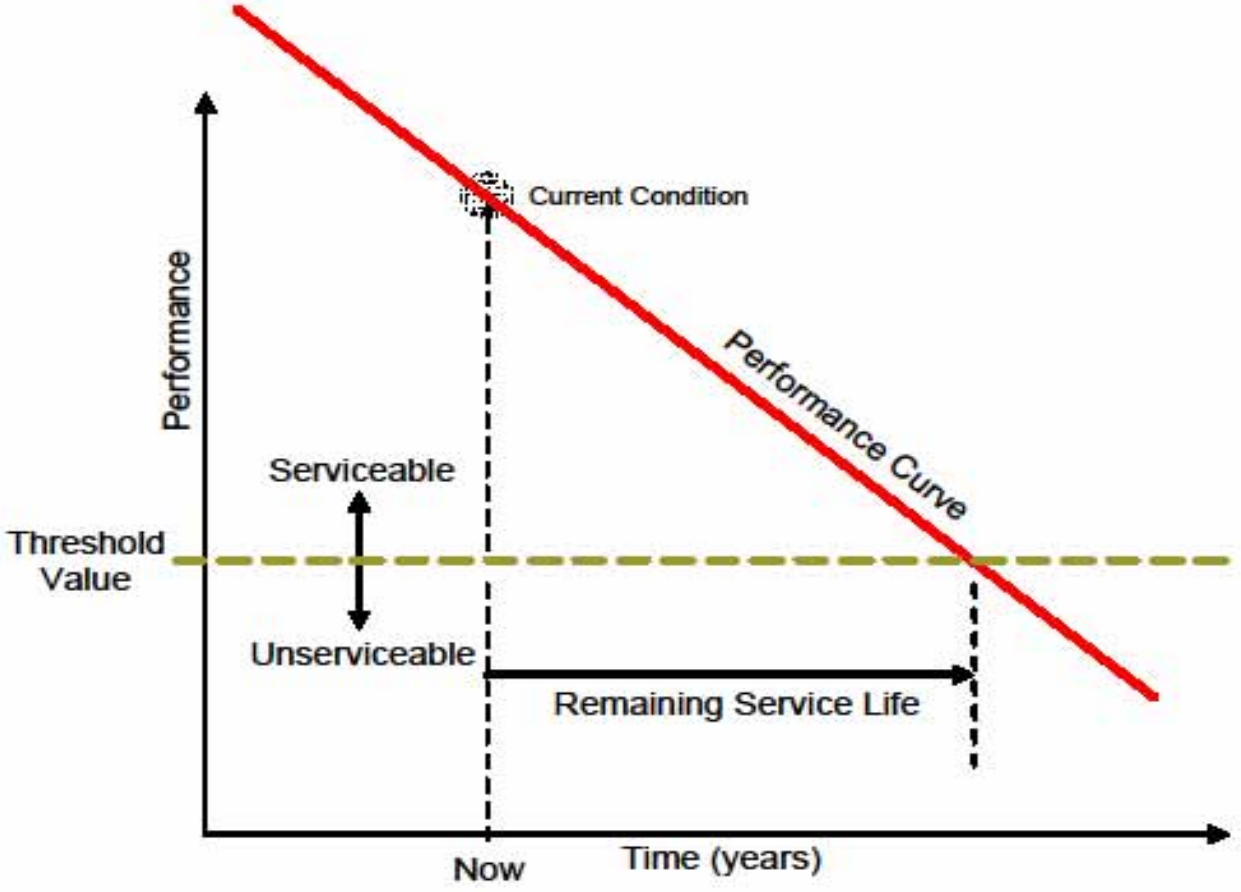
Determining Remaining Life



How Do We Make It Last!

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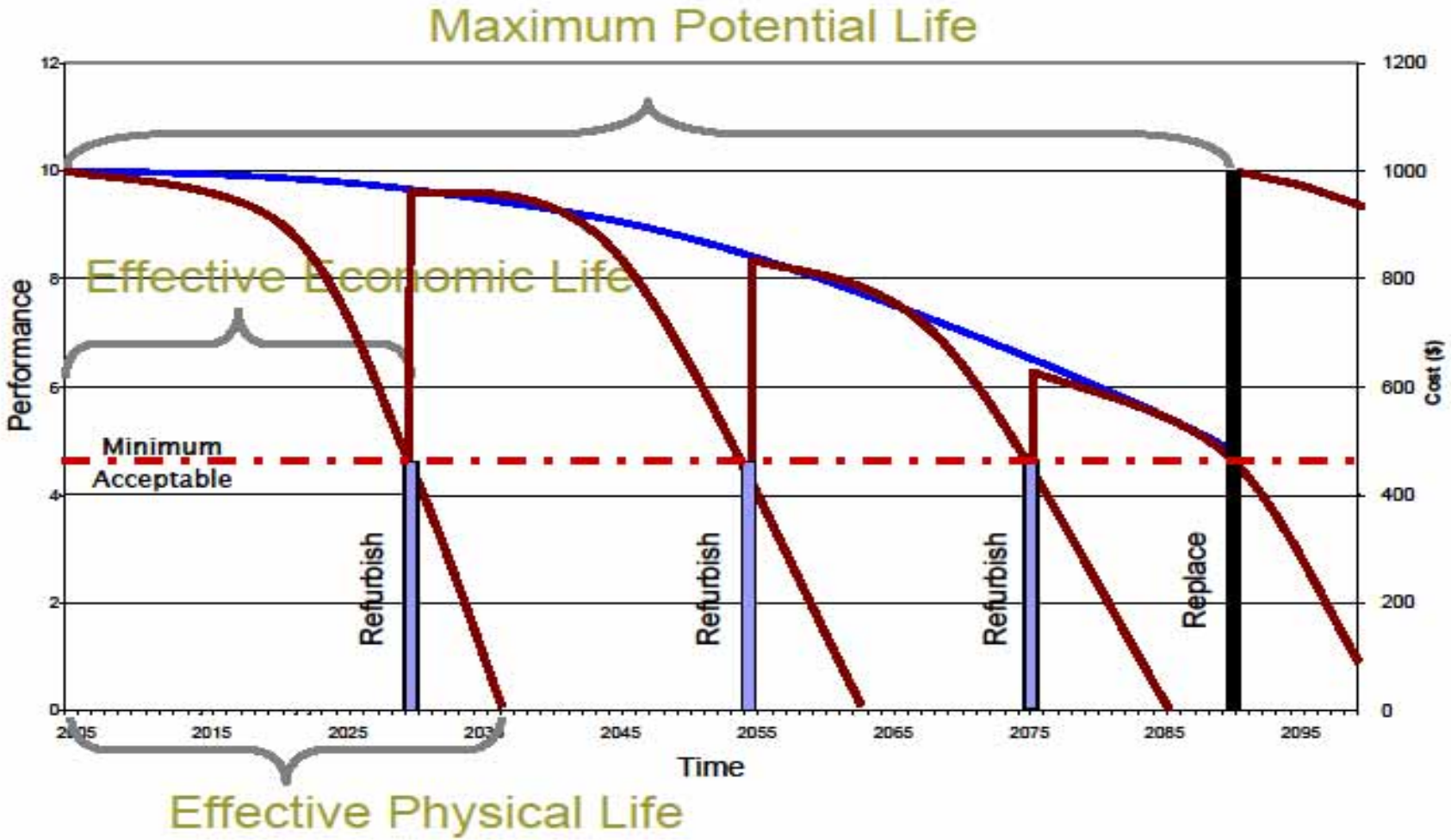

Who Collects the Data?

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Asset Data Responsibilities

Data Task	*Organization Group*
Asset details	Operations and Maintenance
Condition assessment	Operations and Maintenance
Asset values	Technical Engineering Services
Residual physical lives	Technical Engineering Services
Probability of failure	Operations and Maintenance
Consequence of failure	Technical Engineering Services
Business risk exposure	Technical Engineering Services
Optimal renewal strategy	Maintenance and/or Engineering

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- Level of Service
  - What is the demand for my services by my stakeholders?
  - What do regulators require?
  - What is my actual performance?

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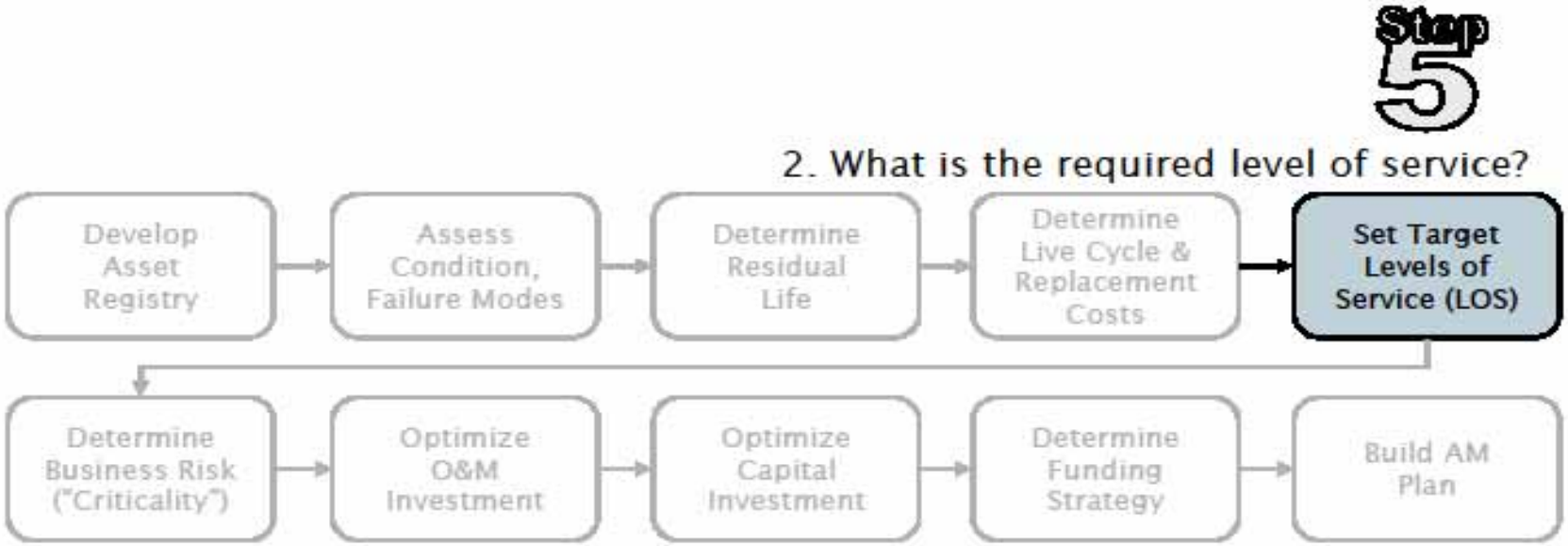
SAM plan 10-step process



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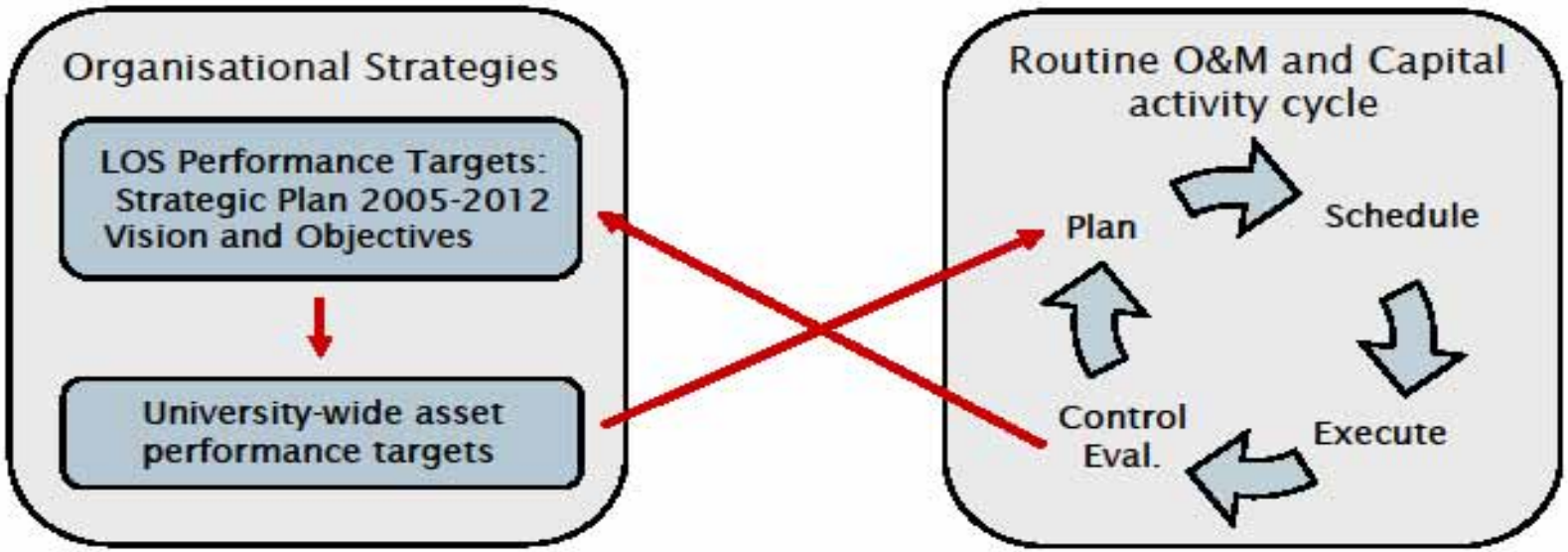
Te Whare Wānanga o Tāmaki Makaurau

Alignment of routine O&M and capital activities with organisational strategies



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Te Whare Wānanga o Tāmaki Makaurau

Why Level Of Service?

It helps us…

- *Concentrate* (focus) efforts and resources
  - On agreed on service levels
  - Less *service-level-defined by notion*
- *Communicate* service expectations and choices
  - Increased services equal increased costs
  - Discussion of trade-offs and risks
- *Negotiate* (regulators and council/commission/board)
  - Service levels
  - Costs and budgets
  - Fee impacts
  - Reinvestments for renewal
  - Level of risk

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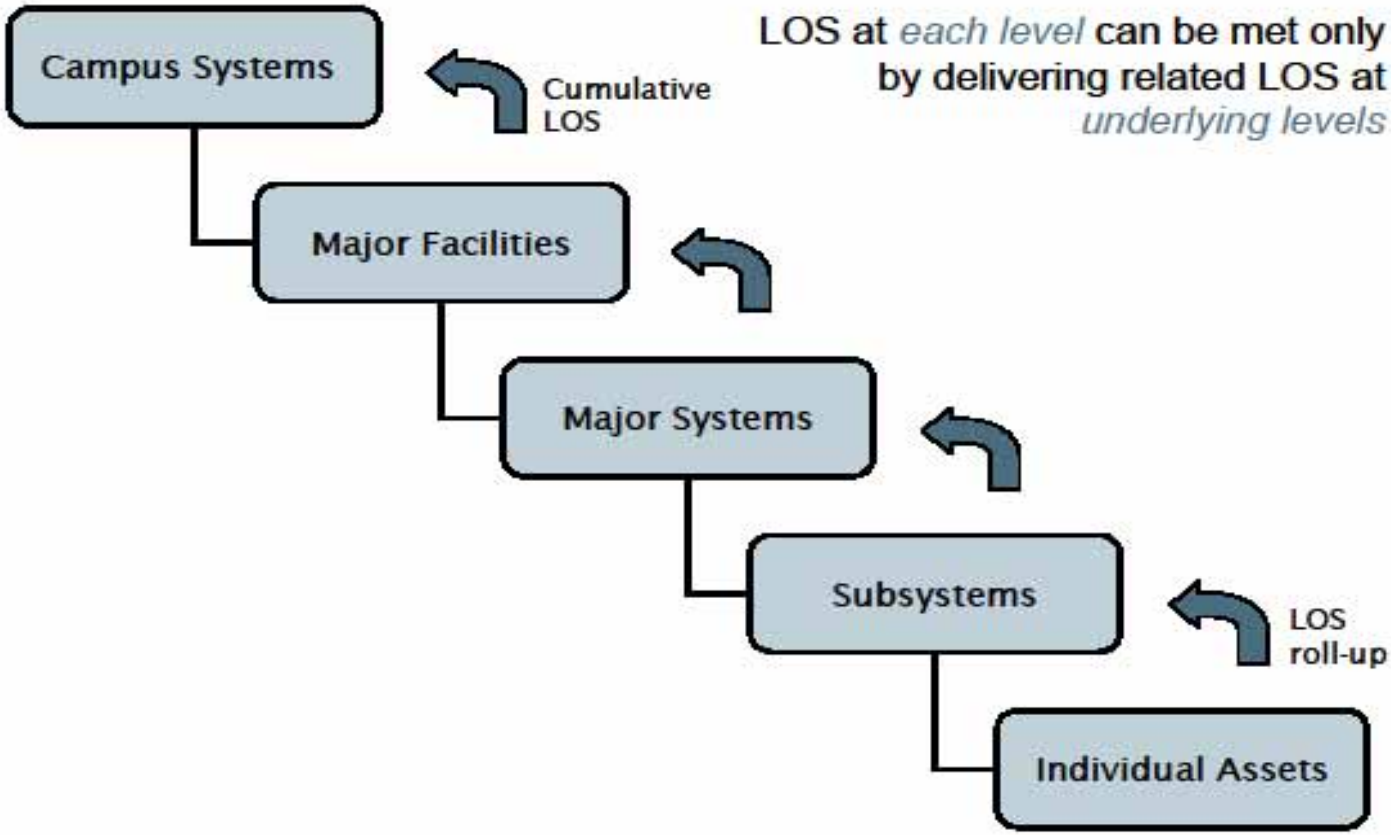
Te Whare Wānanga o Tāmaki Makaurau

Roll up of Level Of Service



Forces Driving Level Of Service (LOS)

LOS is constantly subjected to forces of change:

- Growth/retrenchment
- Regulatory requirements
- Demands of customers
- Physical deterioration
- Operational costs/efficiencies

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- Which Assets Are Critical to Performance
  - How does it fail? How can it fail?
  - What is the likelihood of failure?
  - What does it cost to repair?
  - What are the consequences of failure?

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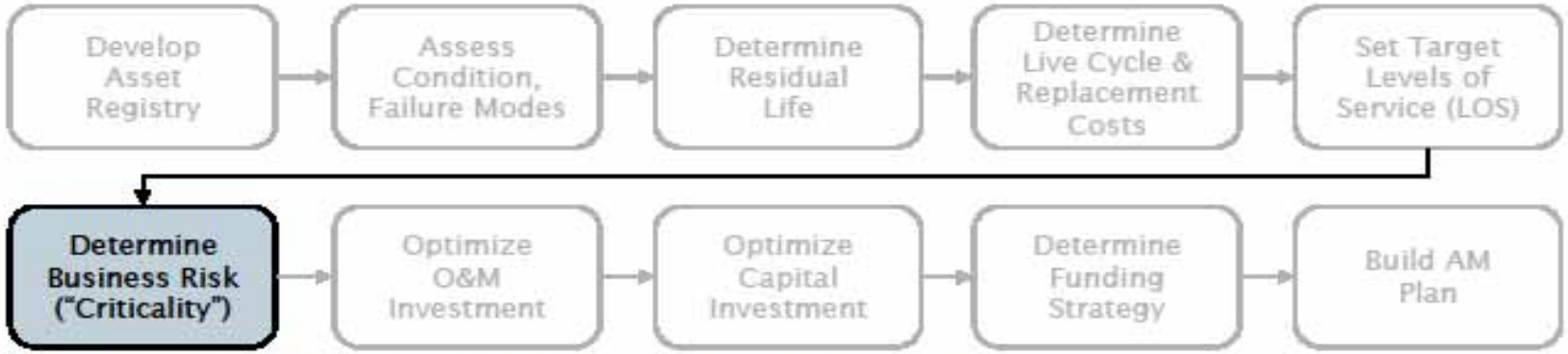
SAM plan 10-step process



3. Which assets are critical to sustain performance?

How do Assets Fail?

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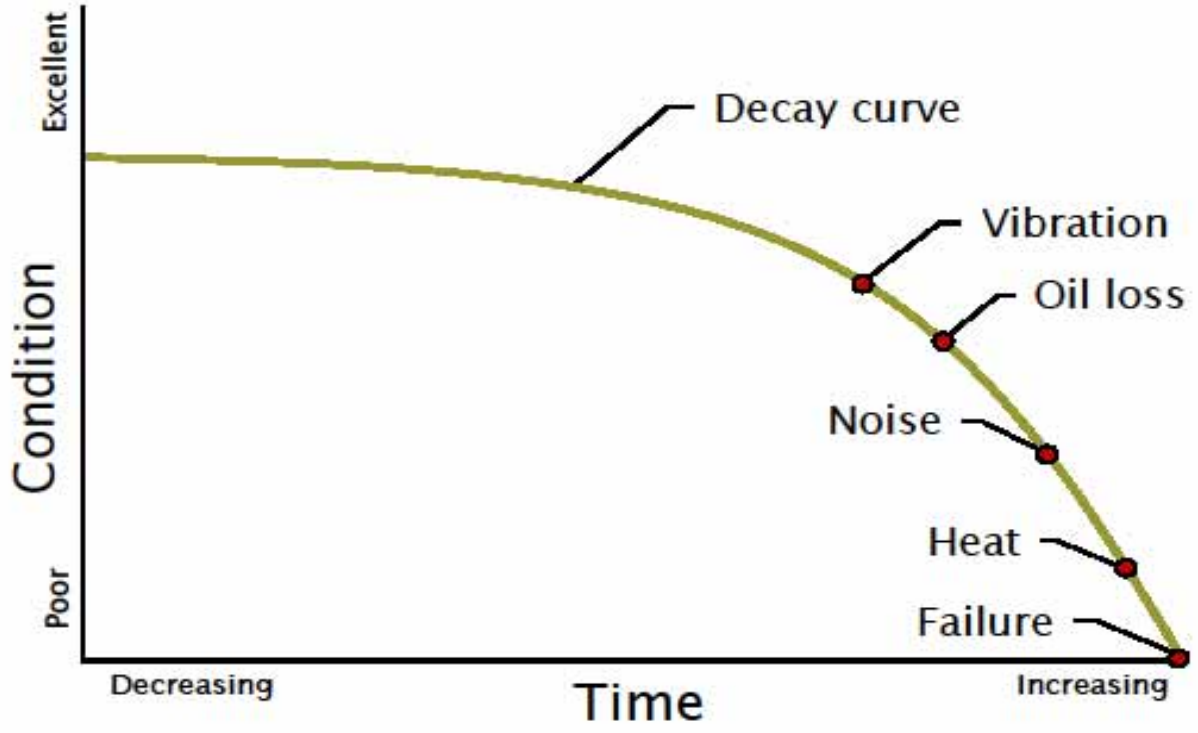
Monitoring condition is a key to knowing risk



Is Failure Significant?

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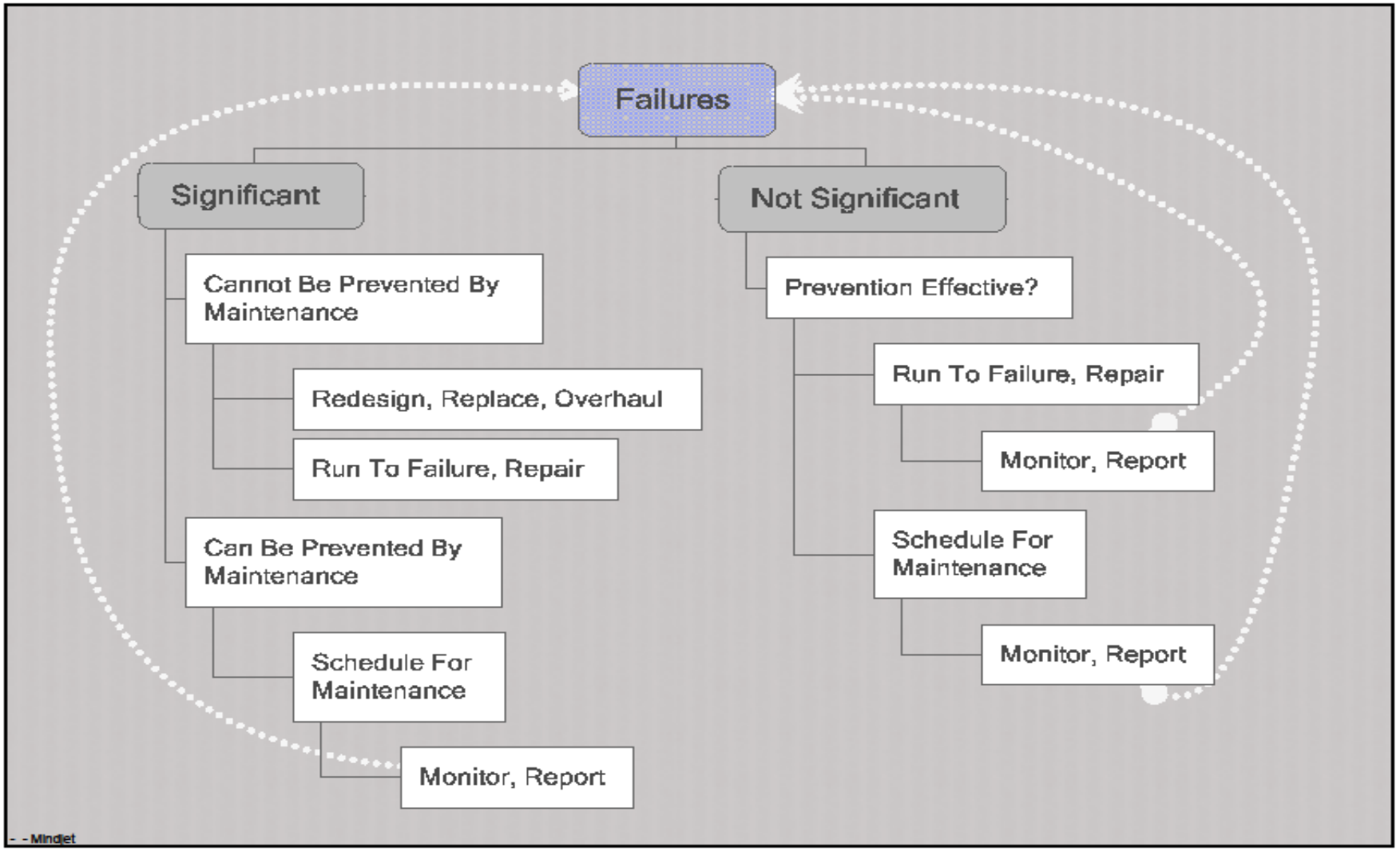

Asset Condition can Predict Failure
How Low do you Go?

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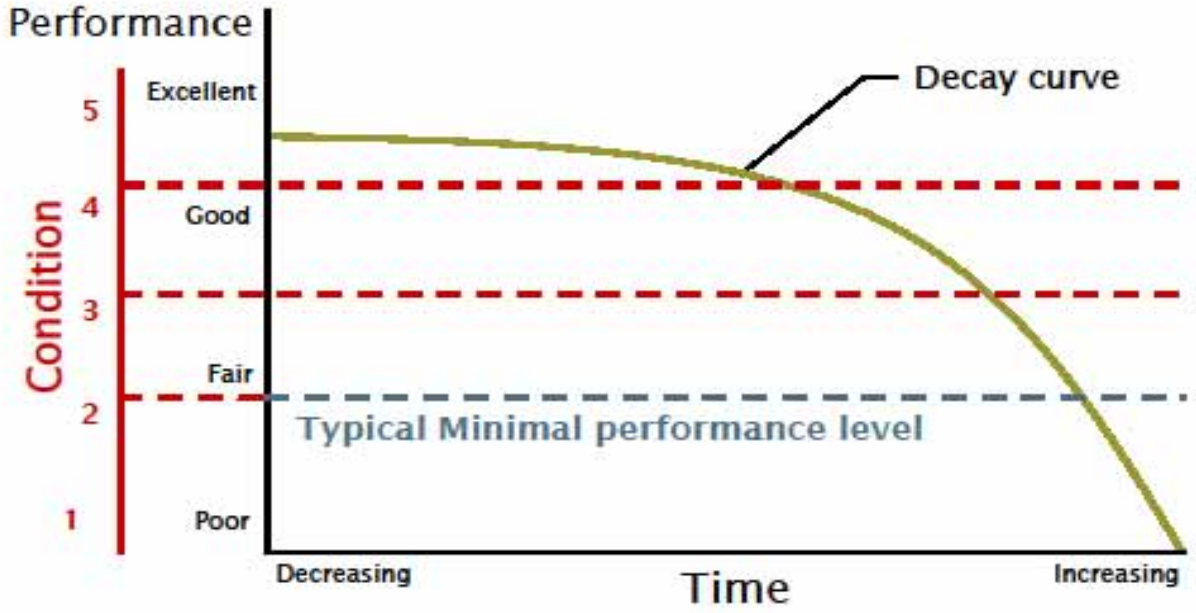
Tying Condition Score to Asset Failure



Risk Probability and Consequence

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Risk Probability

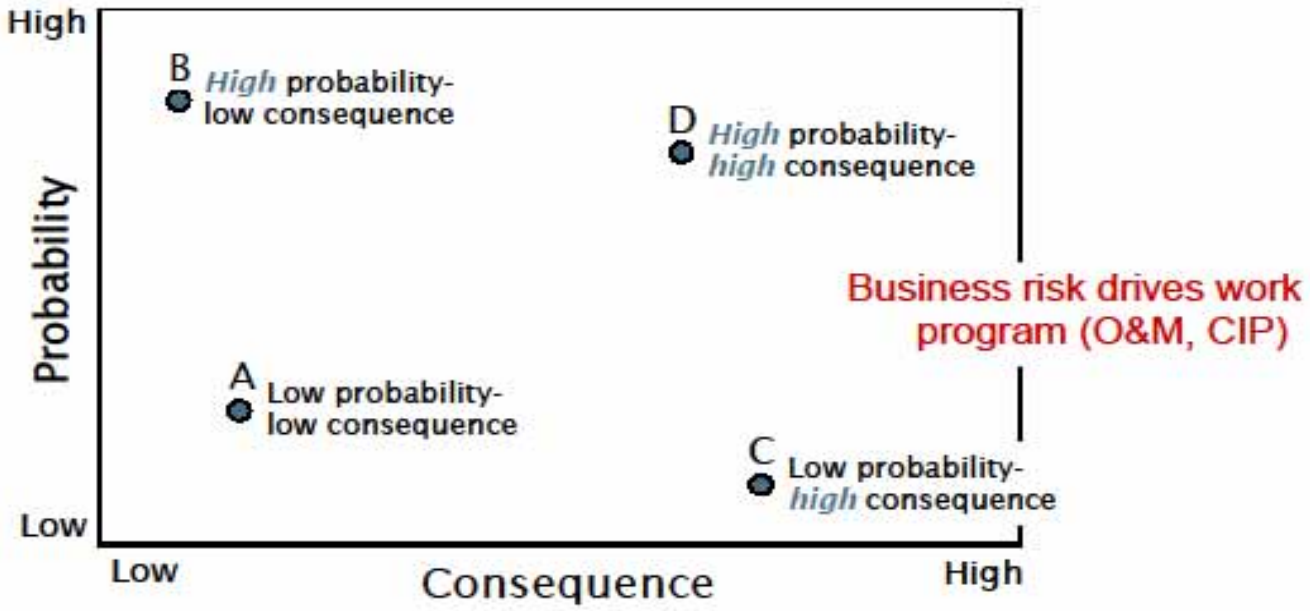
Probability	General Description	Rating
Rare	May occur only in exceptional circumstances	1
Unlikely	Could occur at some time	2
Moderate	Might occur at some time	3
Likely	Will probably occur in most circumstances	4
Almost Certain	Is expected to occur in most circumstances	5

Risk Consequence

Consequence	General Description	Rating
Catastrophic	Asset is unusable. Immediate high risk to security, health and safety, property damage; very significant cost of delay/financial loss implication.	5
Major	Major disruption to service capability. High probability of risk to health and safety or property; high cost of delay/financial loss implication.	4
Moderate	Constant inconvenience to operations. Some risk to health and safety or property; medium cost of delay/financial loss implication	3
Minor	Intermittent, minor inconvenience to operations. Probability of risk to health and safety or property is slight; low cost/financial loss implication.	2
Insignificant	No effect on service capability. Negligible consequence	1

Determine Asset Failure Risk

What is probability of failure? What is consequence of failure?



Which Projects First?

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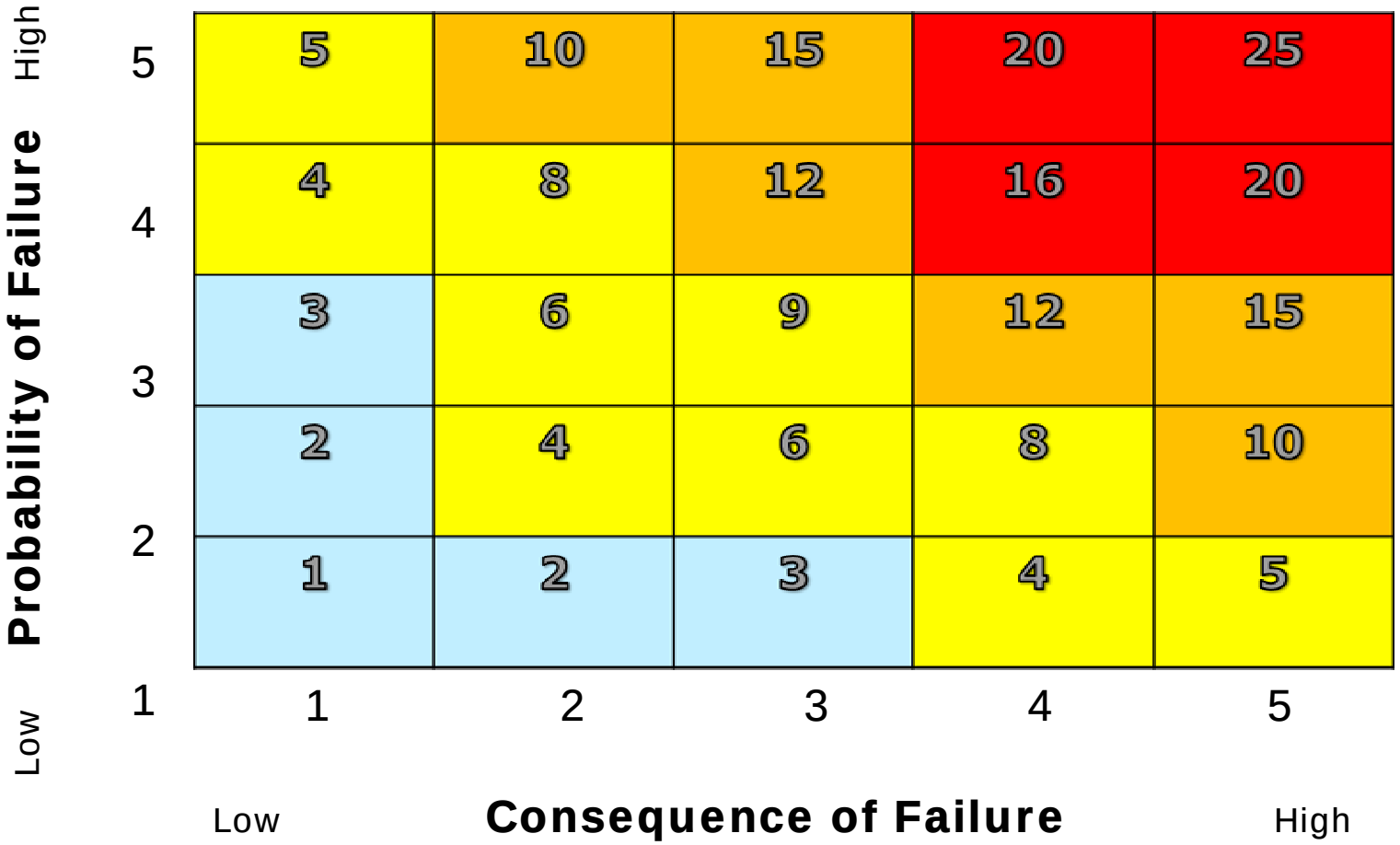
Business Risk Exposure (BRE) increases as Consequence of Failure (CoF) and Probability of Failure (PoF) increase



The University of Auckland Assets

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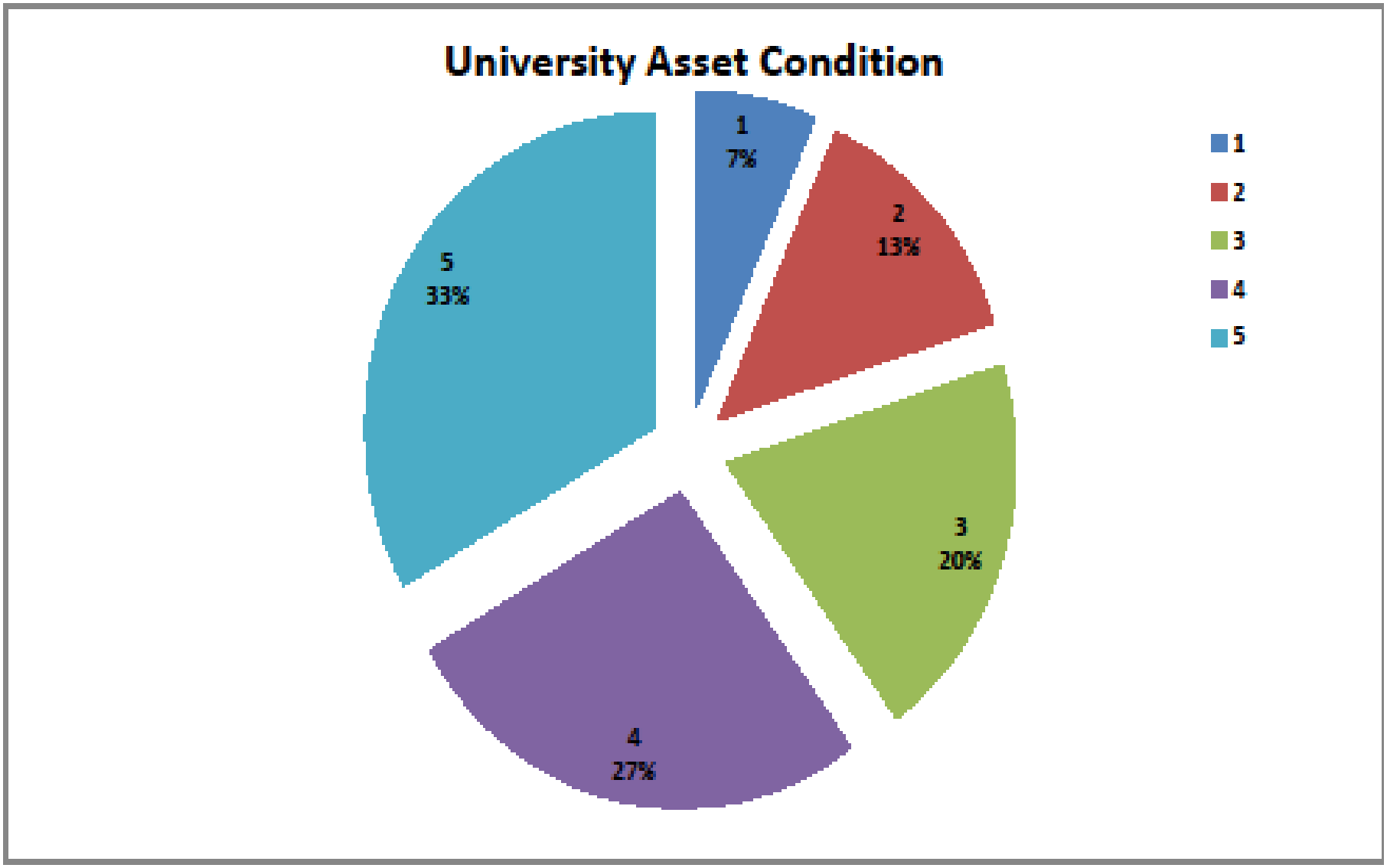

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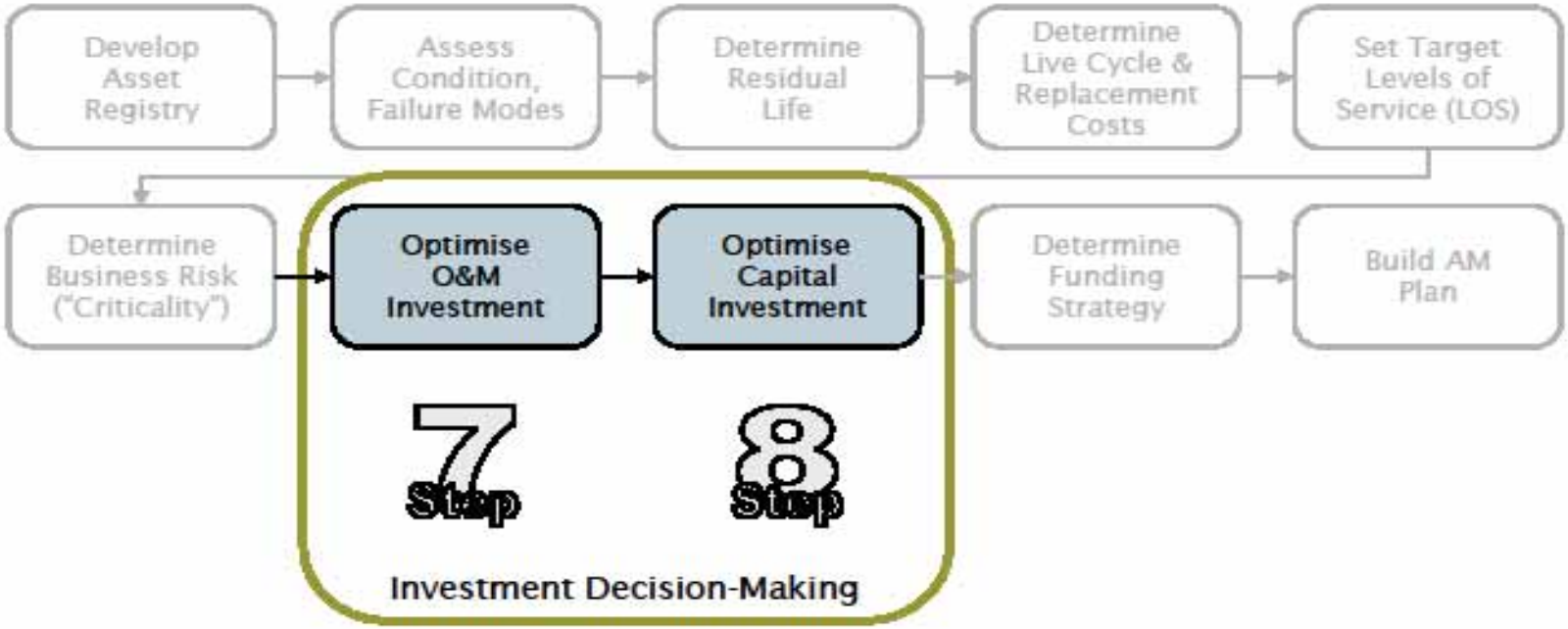
- What are my best Investment Strategies
  - What alternative management options exist?
  - Which are the most feasible for my organisation?

SAM Plan 10-Step Process



What Management Strategies?

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So, what is meant by…

Life Cycle Cost Strategies

- Fundamental asset management options available to the management team are
  - Do nothing (zero-based strategy)
  - Status quo
  - Operate differently
  - Maintain differently—run to failure, preventive-based, predictive-based (condition, usage)
  - Repair
  - Refurbish/rehabilitate
  - Replace
  - Decommission
- Which strategy for each asset?
- Combinations over life cycle

It's *all* investment!

What Management Strategies?

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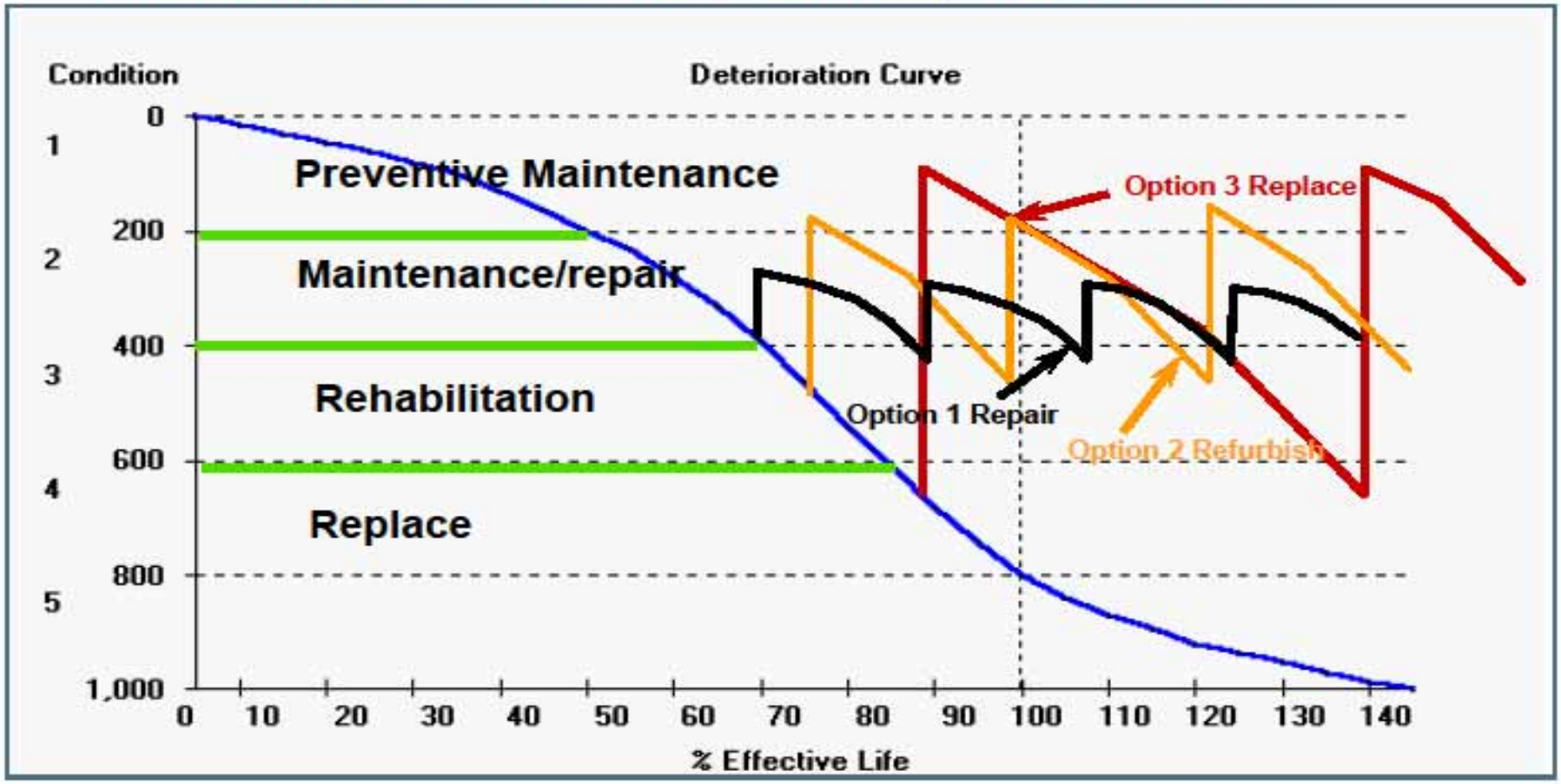
Managing the "Asset Consumption"Process



Who Decides?

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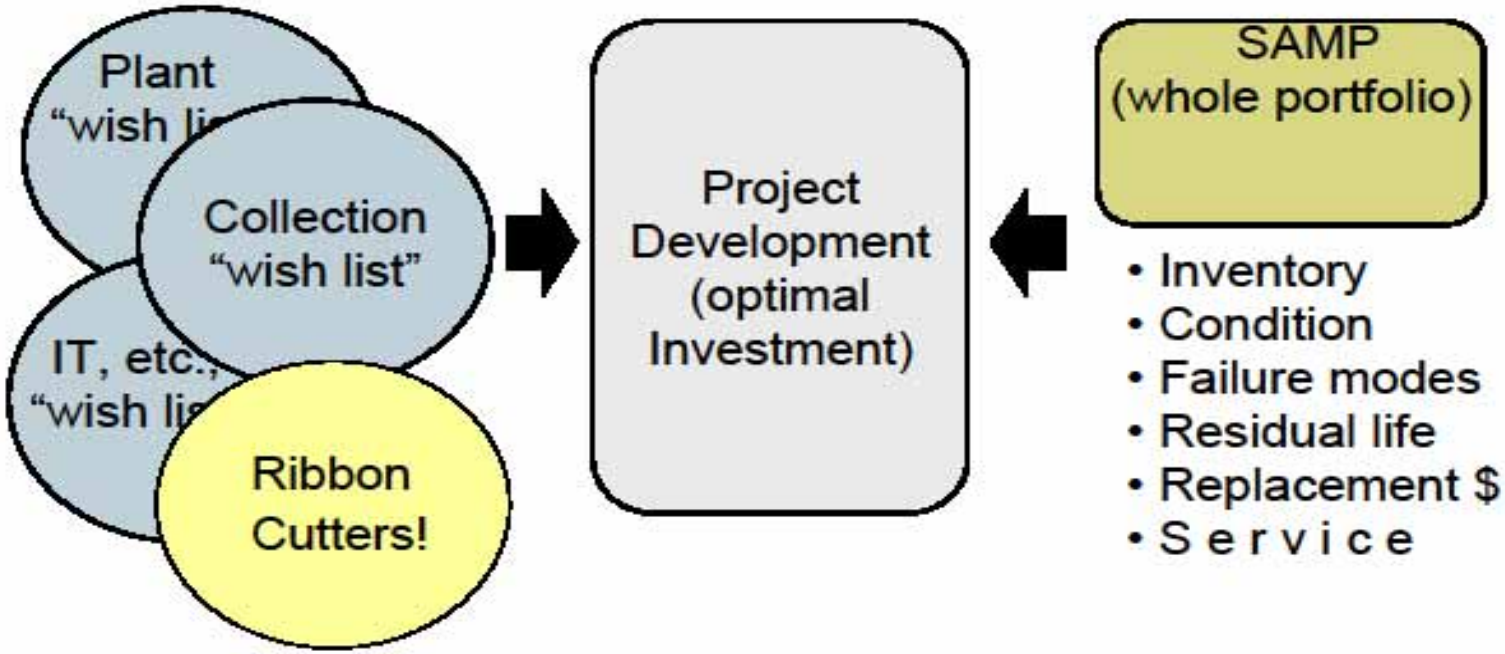
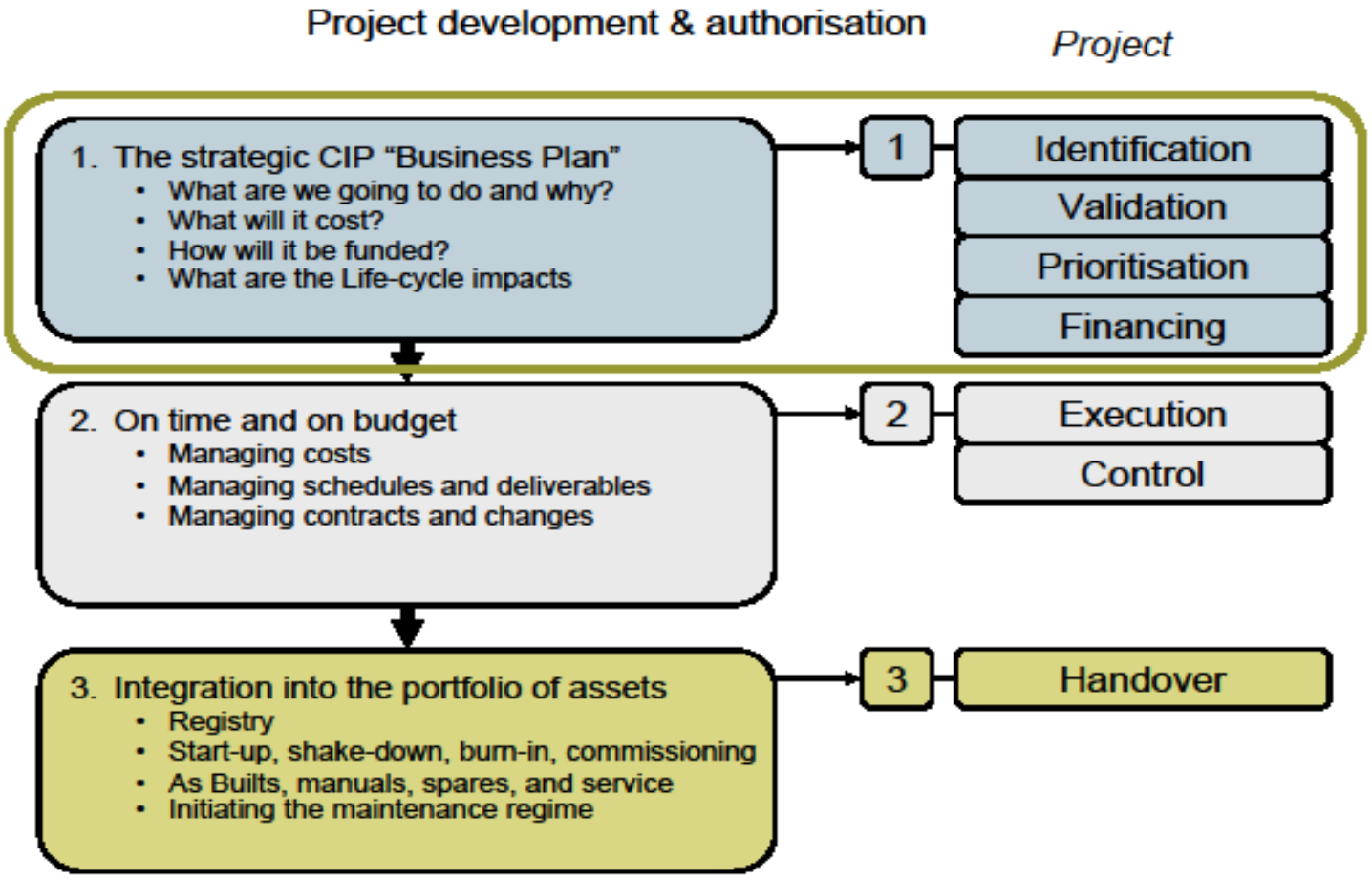
Project identification: Moving to "best practice"

"Champion" model

"Structured" model



Capital Investment Program - best practice model



Who Inputs to Design and When?

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The CIP process *locks* in life cycle costs!

65-85% of all life-cycle costs are "locked-in" here!

Life-cycle O&M costs often are 5-10 (even 20) times initial construction costs

Life-cycle cost reduction opportunities diminish →

Planning

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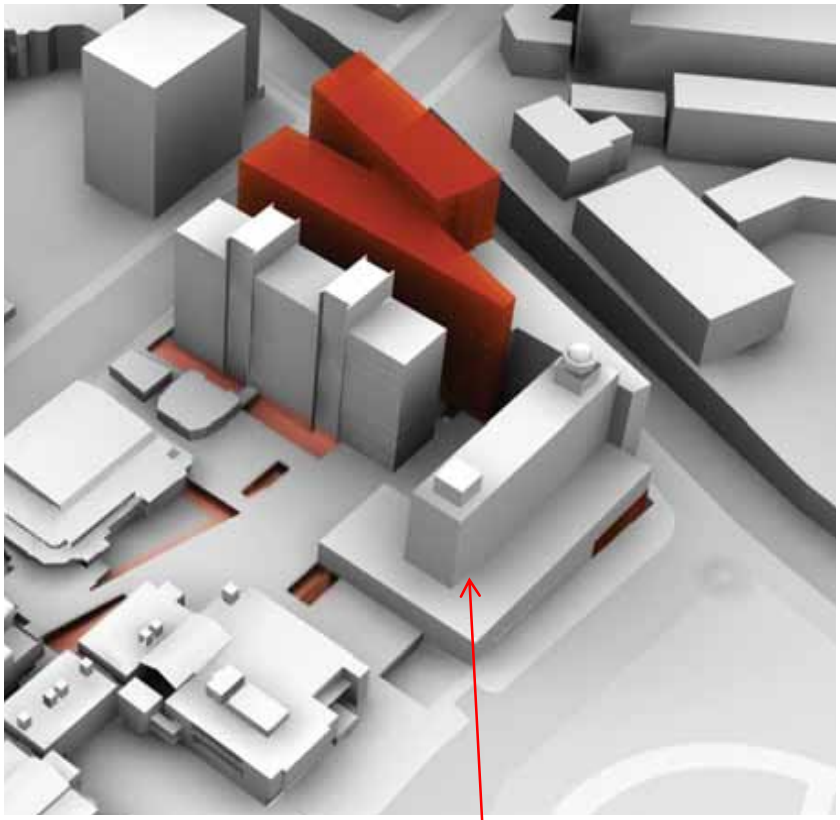
Te Whare Wānanga o Tāmaki Makaurau

ARTS 1 Refurbishment



Maths/Physics
Refurbishment

Planning

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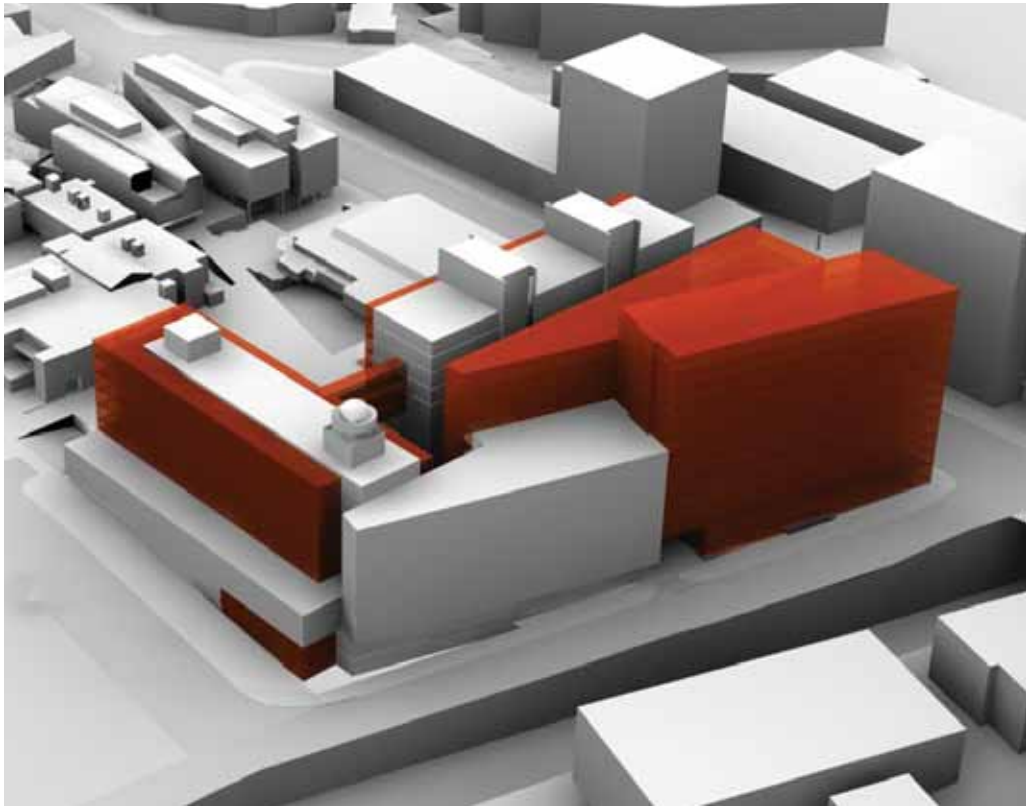
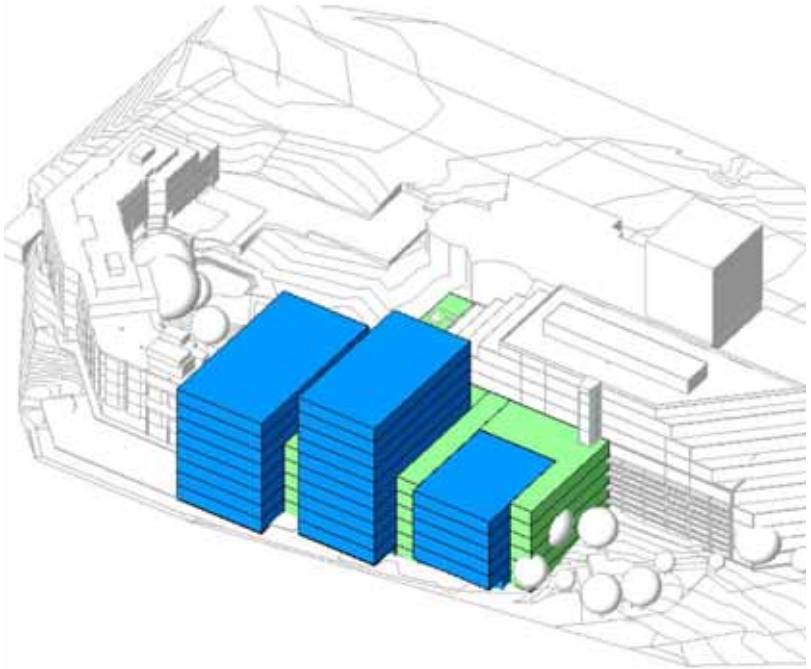


Science Towers



New Eastern Edge Buildings

Grafton

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Boyle Building – Medical Campus (Completion 2011)

Thomas Extension IIB

Leading Research

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- What is the best Funding Strategy

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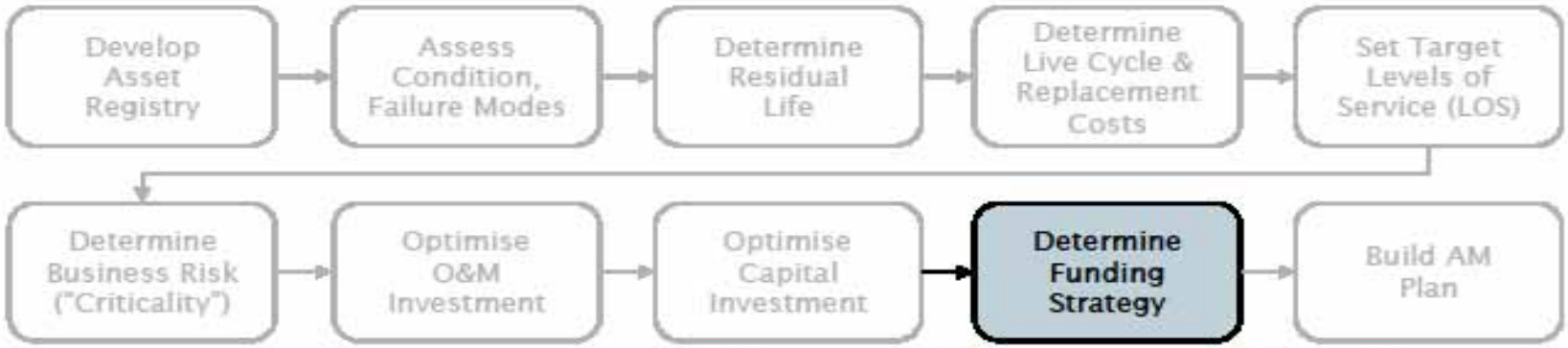
SAM plan 10-step process



5. What is my best long-term funding strategy?

What Gives the Best Return?

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Asset Management Investment Planning

- Capital investment
  - Renewal (repair, refurbish, replace)
  - Augmentation (capacity, functionality)
- Maintenance investment
  - Planned
    - Preventive
    - Predictive
    - Corrective
  - Unplanned

What will be Future
Life-cycle projected costs?

Where is the Gap?

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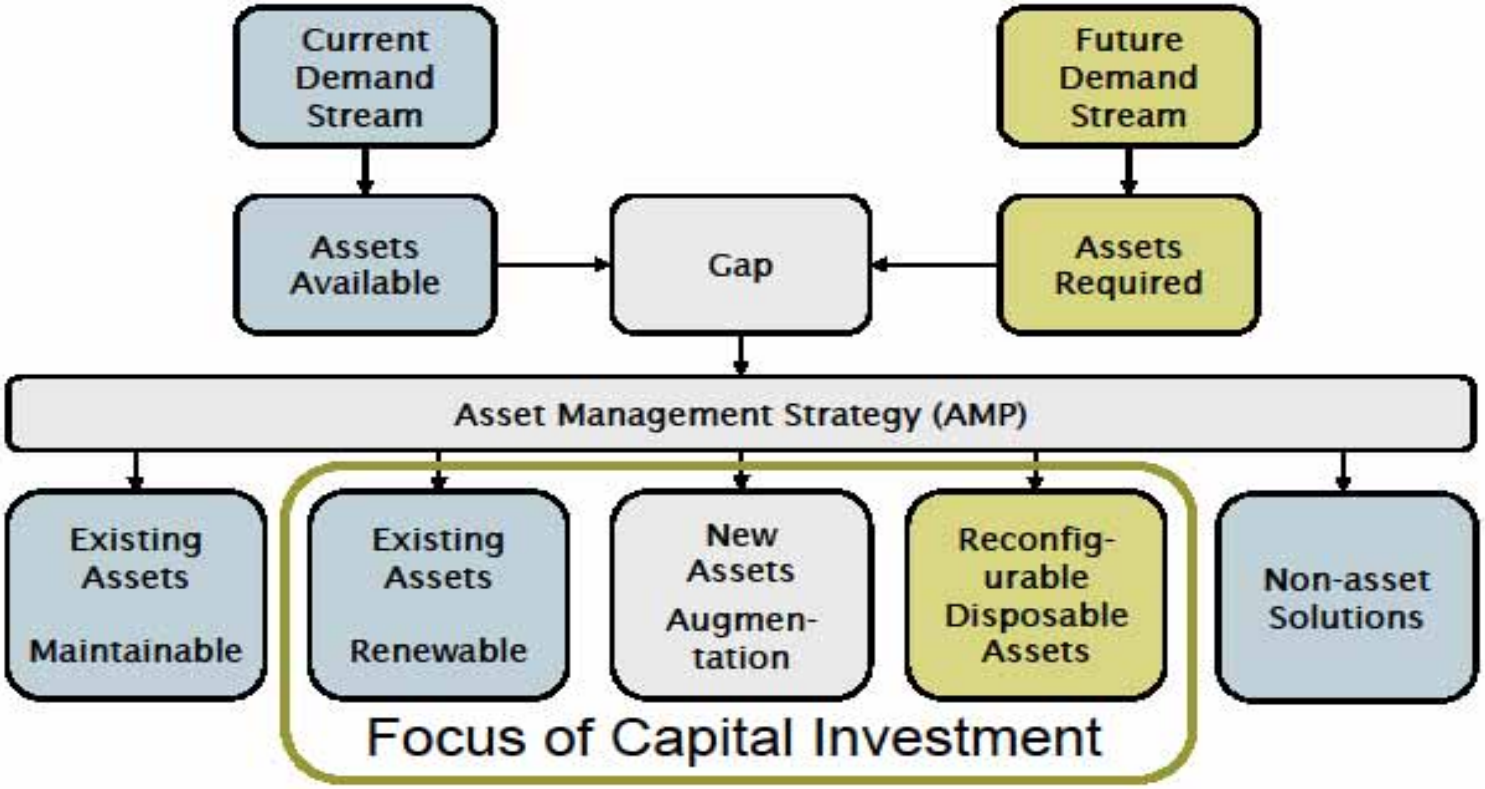
Capital Investment Plan

Balancing future demand with current capabilities



How Do We Pay?

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Financing Strategies

- "Pay as you go" – current revenues
  - Dedicated reserve account ("hands off")
  - Replacement/renewal recovery embedded in fee structure
- "Pay as you use" – debt service
  - "slice of debt service"
  - "intergenerational equity"
  - Interest as an expense that reduces available capital

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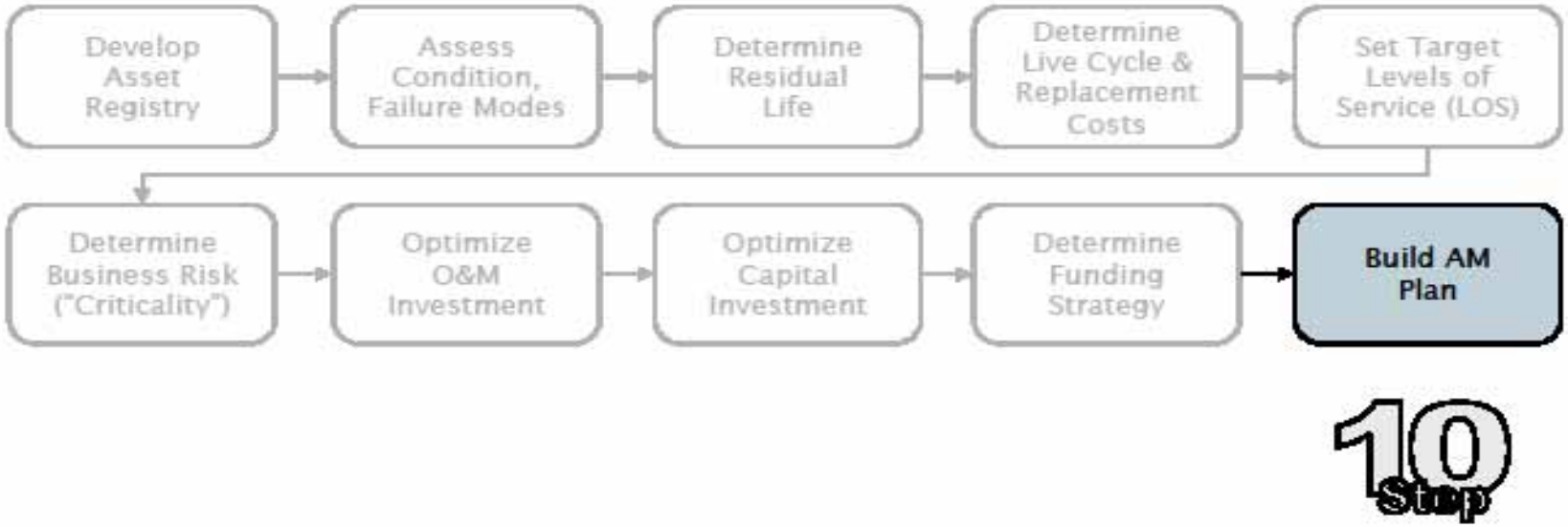
SAM plan 10-step process



Putting It Together

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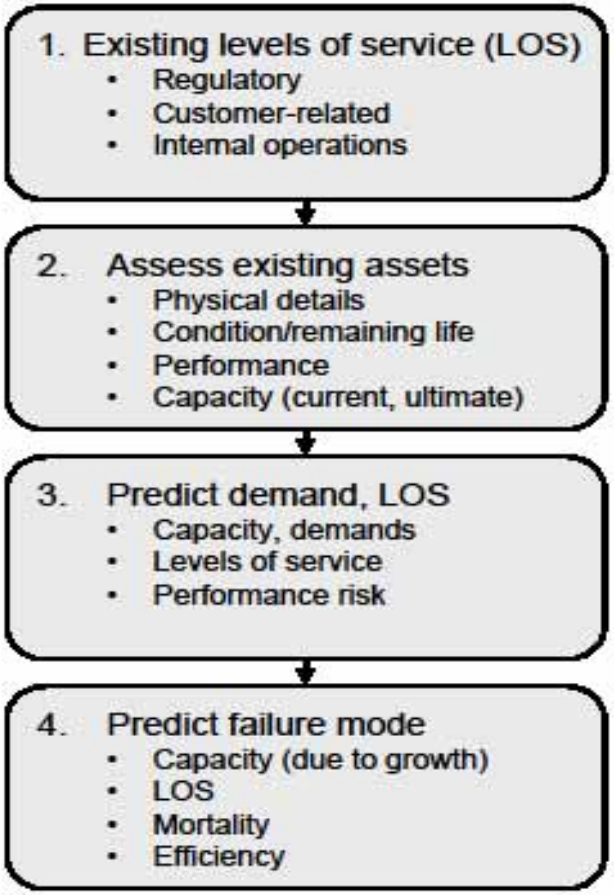
Steps in developing your SAMP



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Steps in Developing your SAMP, cont.

5. Predict capital program
   - Growth, augmentation
   - Renewal, reliability
   - New LOS
   - Business efficiency

6. Predict O&M
   - Growth (additional flows)
   - New assets LOS
   - Age of overall portfolio

7. Predict future expend. model
   - Capital, debt service
   - Operations
   - Maintenance
   - Administration

8. Predict future income model
   - Fees
   - Research
   - Other sources
   - Total

What Can You Afford?

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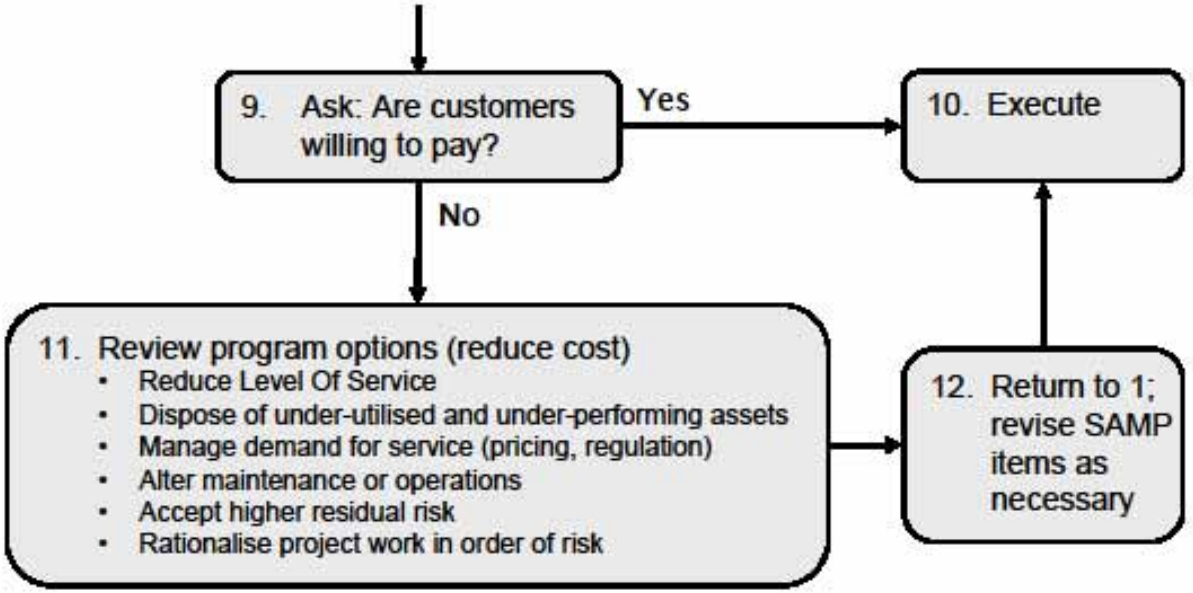
Steps in developing your SAMP, cont.



Publish The Plan

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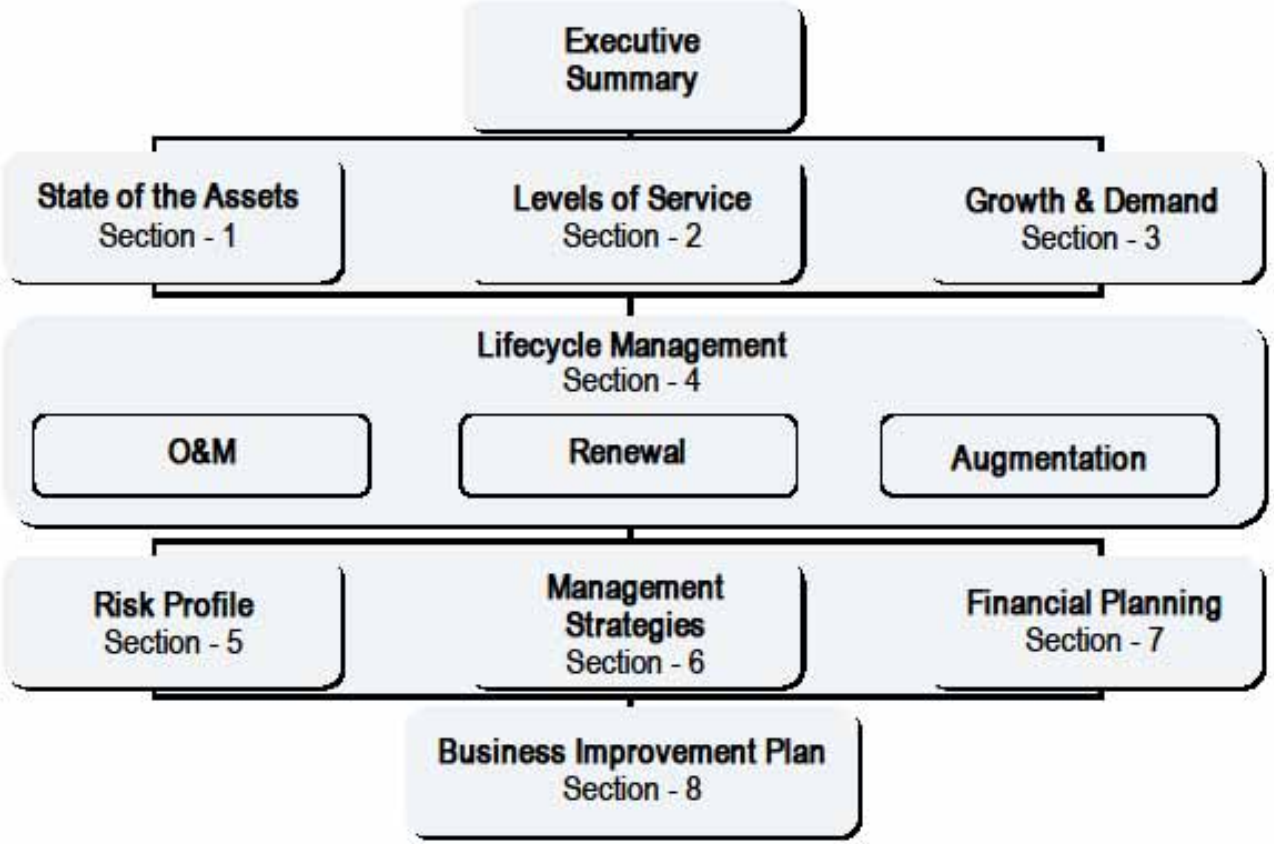
The Strategic Asset Management Plan



How Long Does it Take?

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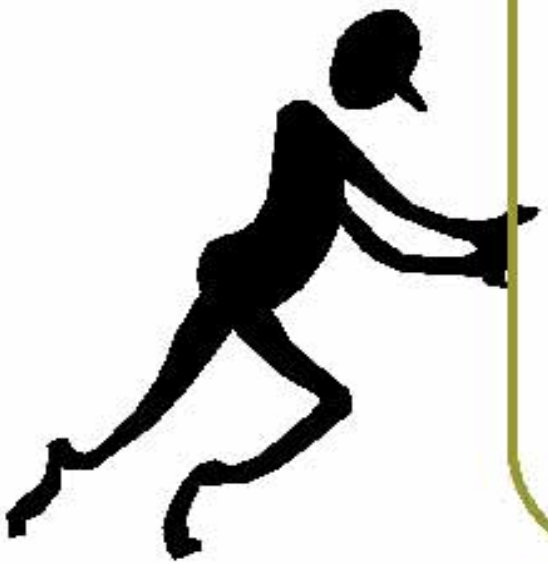
Realistic Expectations for SAM



- Takes several years of detailed, *nitty-gritty work* to fully deploy
- Requires eventual *buy-in* commitment of the whole organisation
- Needs *upfront* investment to get started, with *hidden* returns for initial years

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Questions?