Road Asset Management (RAM)

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RAM Maturity Assessment

Dr Ian Greenwood

BE(Civil), PhD(Eng), FEngNZ(Civil), CPEng(NZ)

ian@gaic.nz

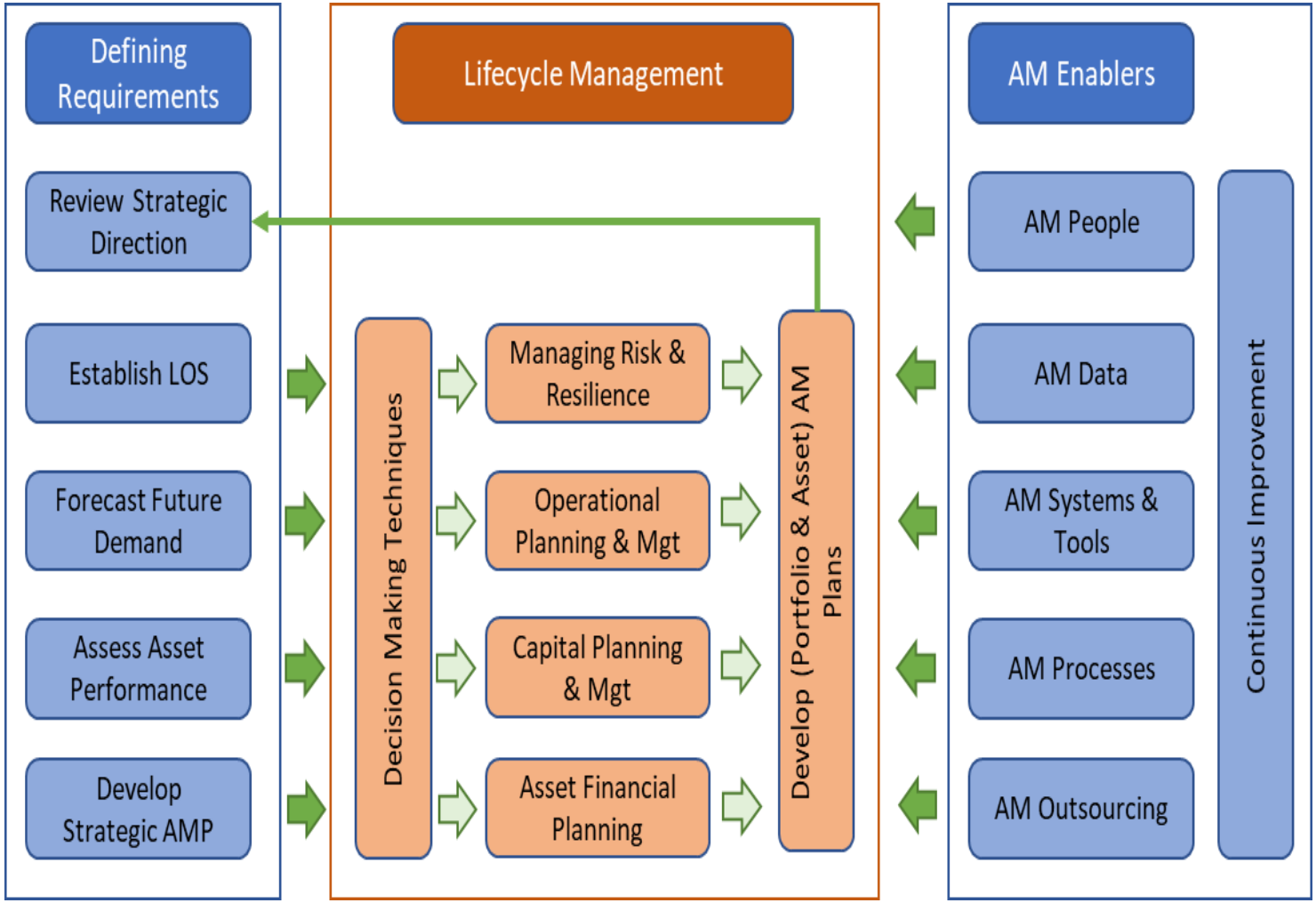
Aim of the Maturity Assessment

- To systematically examine how advanced the processes and practices are.
- To yield a detailed improvement plan
  - Country specific, or CAREC wide
- To identify countries that are the leaders within CAREC for each component of RAM.

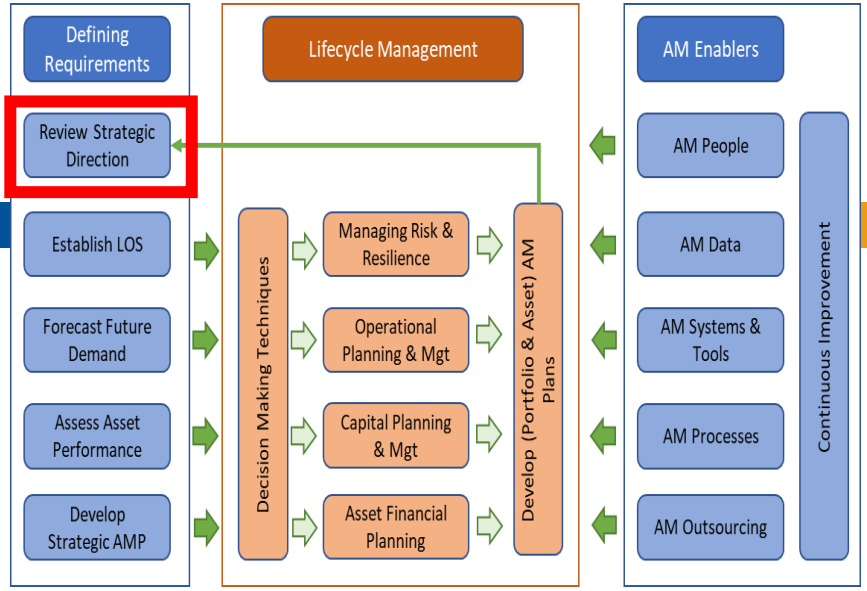
- Will be worked on throughout the next 4 days, and presented at the end of the workshop.

- It is not an examination of the assets themselves.

International Infrastructure Management Manual (IIMM) AM Process



AM Policy



- The AM Policy provides the governing authority to implement all aspects of the RAM program

- Example from Australia
  - https://www.transport.tas.gov.au/__data/assets/pdf_file/0004/114439/Road_Management_Infrastructure_Asset_Management_Policy.pdf

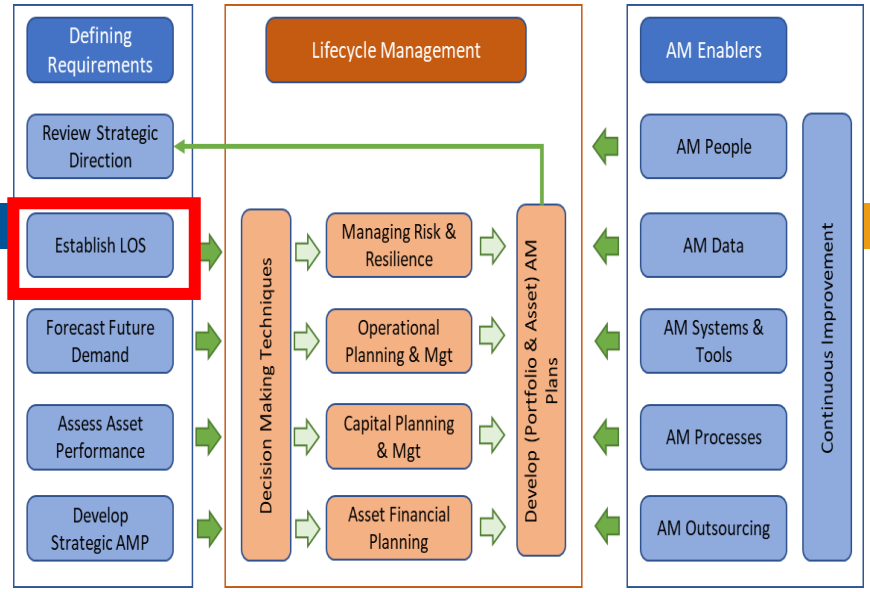
- Easy to write, easy to approve, challenge is in delivering on the policy

Typical Policy

- Short document – a few pages, or even a single page
- Scope of assets covered
- Commitment to implementing RAM
  - Maybe commitment to achieving ISO55000
- Commitment to life cycle costing principles
- Level of service based
- Management of risks
- Customer focused

- Authorised by highest level of authority – e.g. government minister

Service Levels



- Define what it is that you are trying to deliver, in words that the customer understands
- We don't build roads, rehabilitate roads, or maintain roads for the fun of it, we do that to deliver a service level (whether explicitly stated or not)
- Service levels are about more than just the condition of the road
  - Most authorities mention Efficient, Safe, Informed, Cost-effective in their service level statements

Defining the Level of Service is Critical

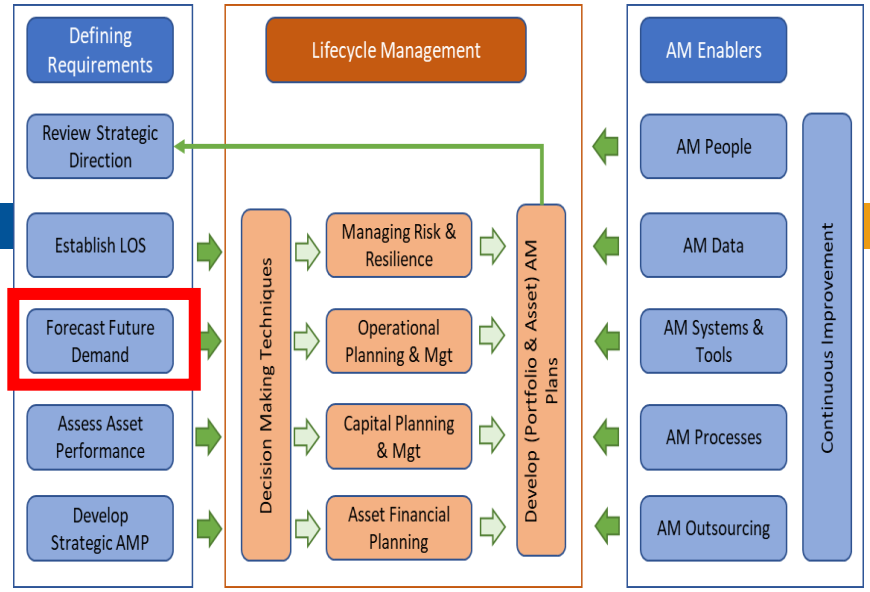
One size doesn't fit all – its all about affordability & risk

Some key definitions

- Levels of Service
  - What the organisation intends to deliver. Levels of service describe one or more attributes of the service from a customer point of view
  - Example: Provide a network that connects communities.

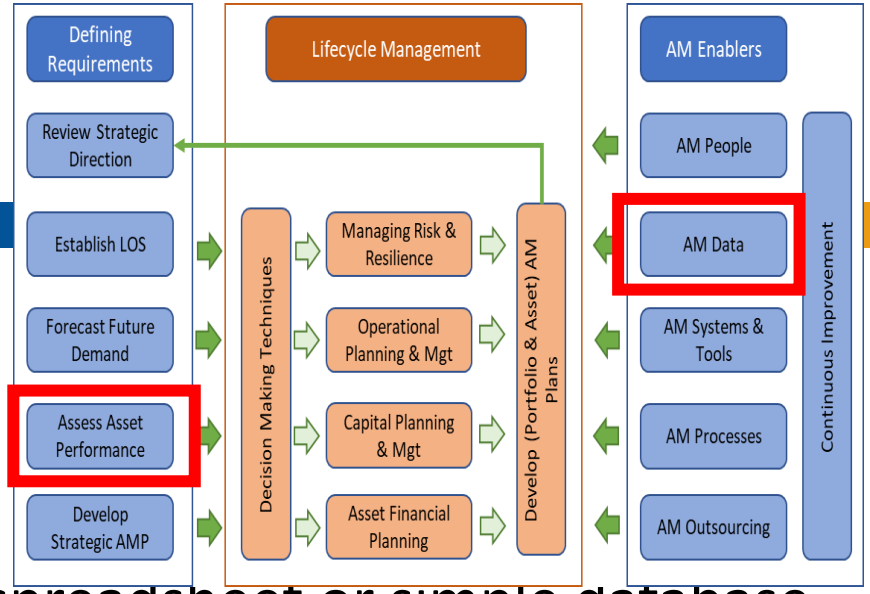
- Performance Measure (also termed Performance Indicator)
  - A qualitative or quantitative measure of a service or activity used to indicate how the organisation is doing in relation to delivering levels of service
  - Example: % of communities > 500 habitats serviced by an all weather road.

Future Demand



- Helps identify when expansion works will be required, along with future loading on the existing infrastructure.
- For simple networks can be a regression of past growth patterns.
- For complex and congested networks will involve full traffic models, linking land use development to traffic demand.
- Minimum forecast period of:
  - At least 20years for pavement and surfacing decisions
  - 20+ years for expansion projects

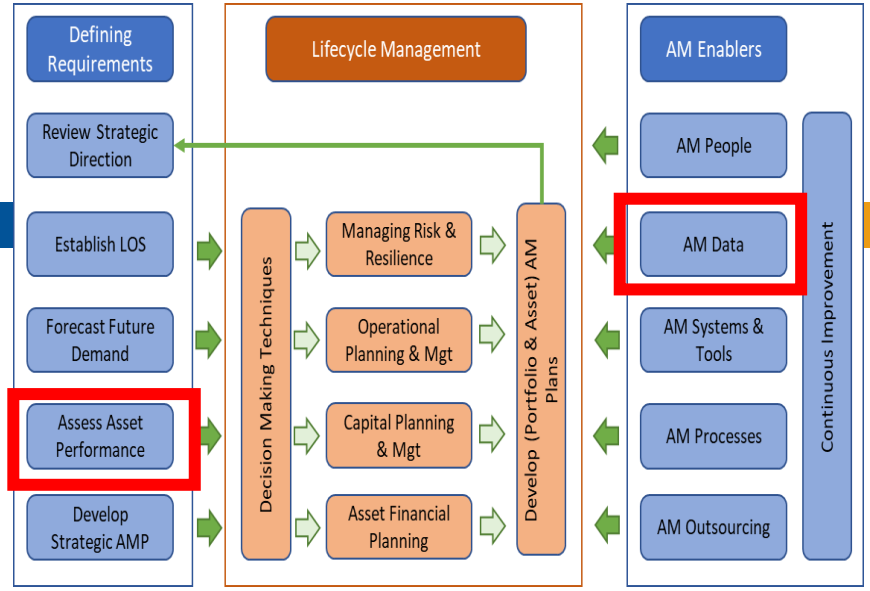
Asset Register

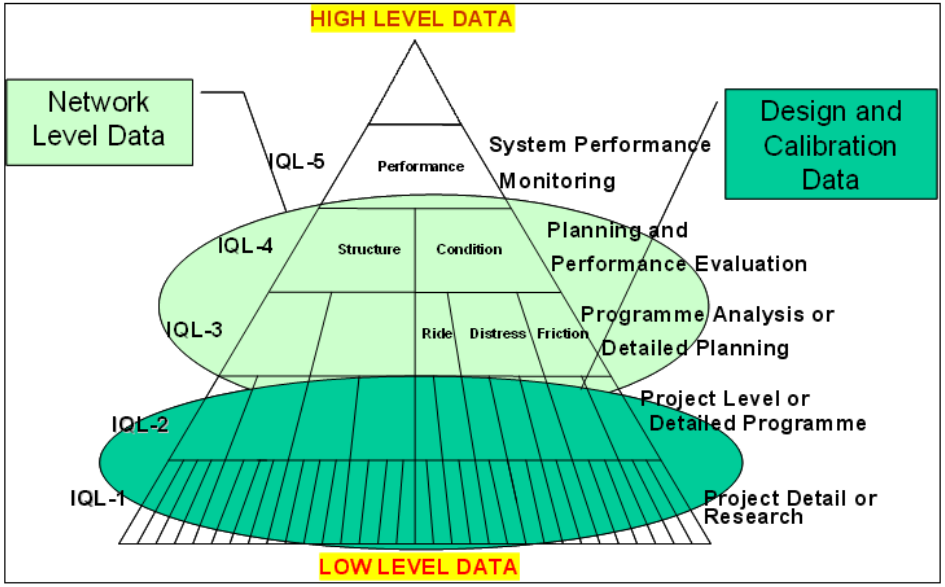


- List of the physical assets you have
- At an appropriate level of detail / componentisation
- May start out being stored in a spreadsheet or simple database, then transition to full Asset Management Information System in the future
- Need a process to keep it up to date

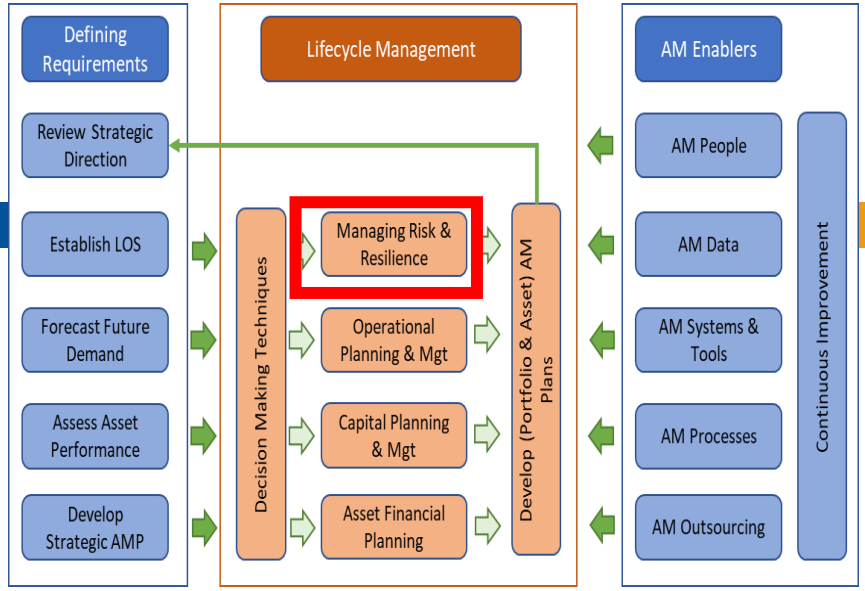
Asset Condition

- Physical measure of the asset condition
- What to measure, how often, and to what level of accuracy?
- Not everything needs to be inspected every year
  - Risk based inspection regimes
- Consider the Information Quality Level (IQL) when designing your data collection program



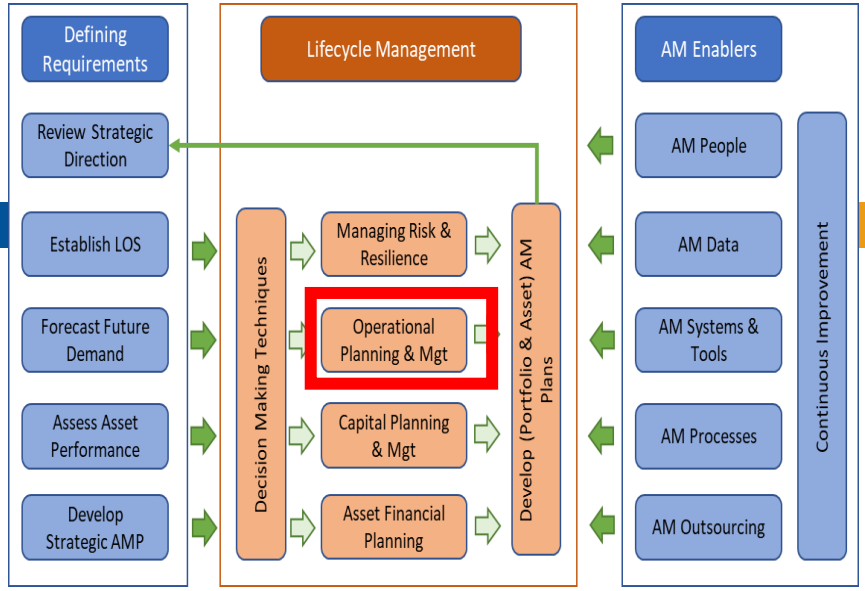


Risk



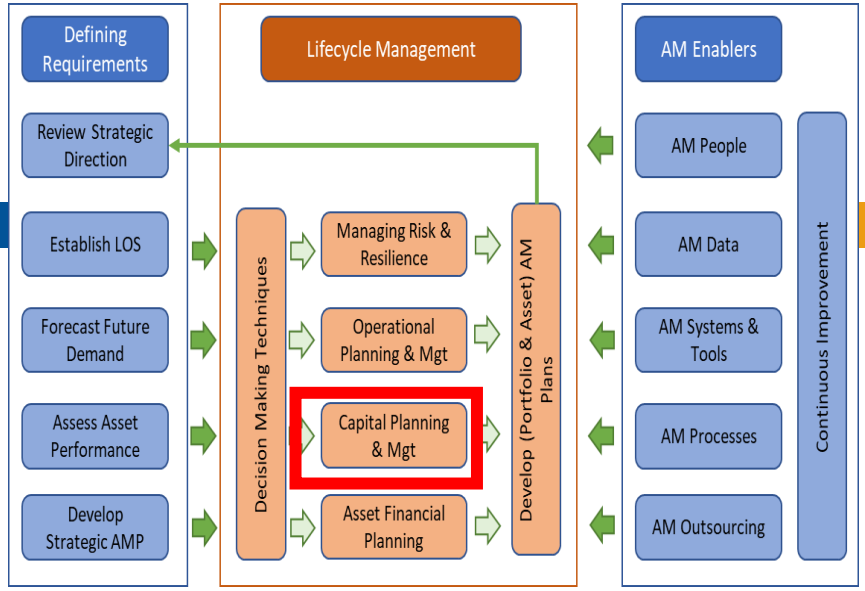
- Depends heavily on the nature of your road network
- Most authorities have an understanding of the risk, although it may not be in a formal process
- A good guidance document for physical risks is:
  - Road Geohazard Risk Management Handbook
  - https://www.gfdrr.org/en/road-geohazard-handbook

O&M



- Operations and Maintenance (O&M) covers the day-to-day activities
  - Operations: e.g. Ramp signalling, peak hour pricing
  - Maintenance: Filling potholes, cleaning drains, sealing cracks
- O&M is closest to what the road user experiences when travelling around the network
- Maintenance can be reactive or proactive (scheduled)
- Maintenance strategy should link to the overall plan for the road section
  - e.g. Don't do expensive repairs on a road that is due for reconstruction soon

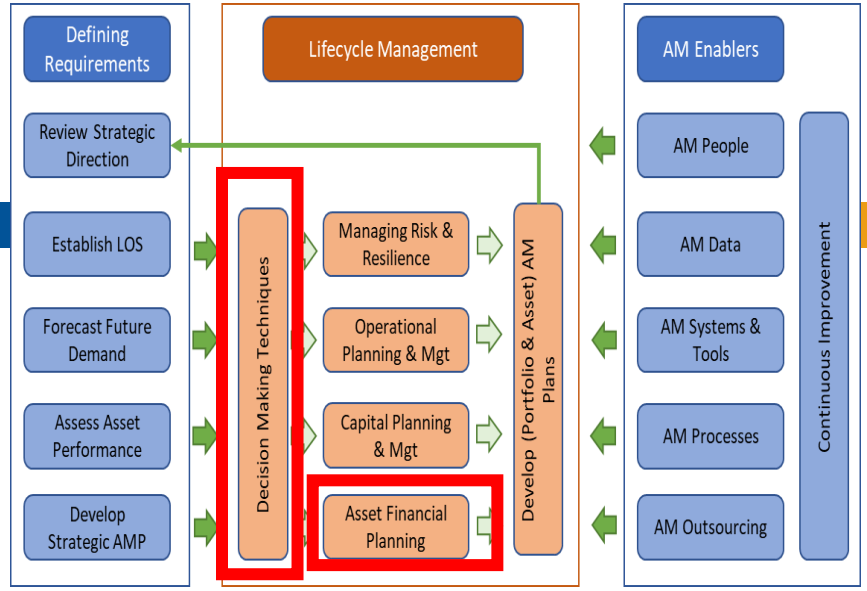
Capital Works



- Typically two aspects:
  - Renewals
  - Expansion works

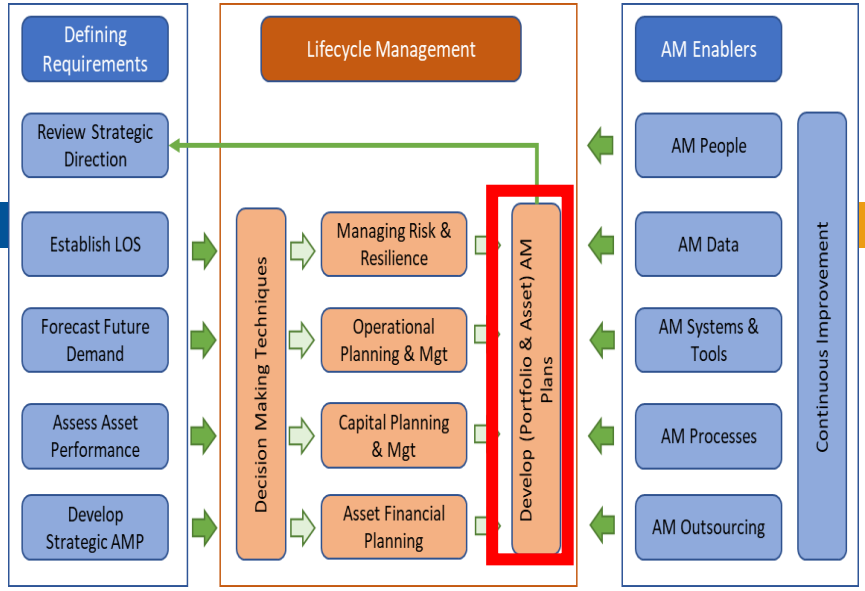
  - Renewals
    - Quantity estimated through a combination of predictive modelling (HDM-4), historic records, and asset valuation parameters
    - While impacting on the long term durability of the network, many renewals (especially resurfacings) do not impact significantly on the road users experience
  - Expansion works
    - From traffic modelling, road safety investigations or similar

Lifecyle Decision Making & Funding



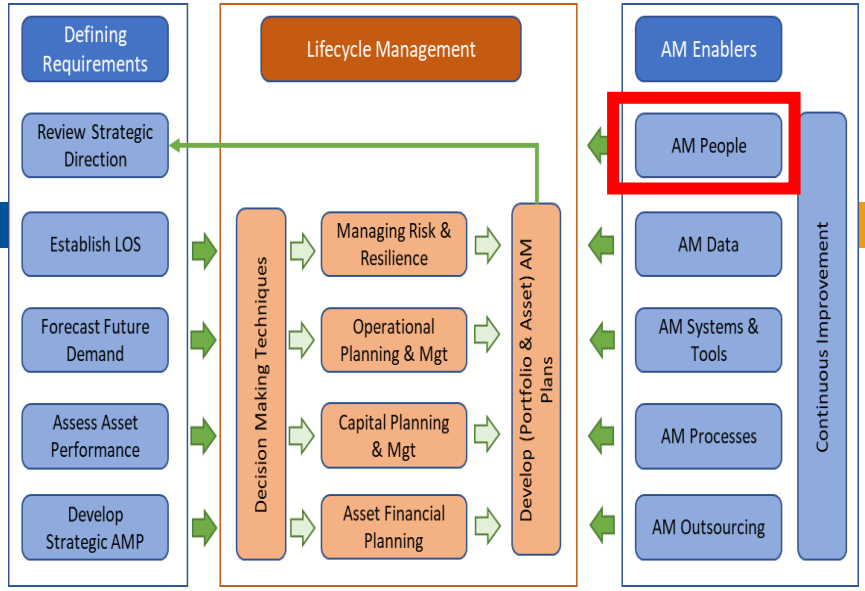
- Need an agreed decision making framework
  - Net Present Value (NPV)
  - Benefit Cost Ration (BCR)
  - Multi-Criteria Analysis (MCA)
- What is the optimal balance of investment between operations, maintenance and capital works to deliver the agreed levels of service?
- How should that cost be funded?
- If not affordable, then where will the budget constraints do the least harm?
- HDM-4 and similar decision support tools often used at this stage.

AM Plan



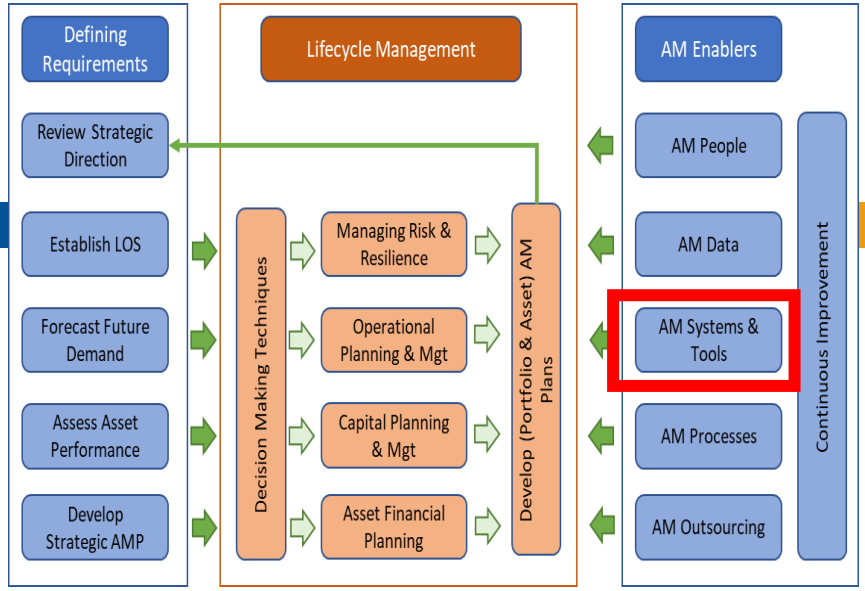
- The AMP is a document that records past achievements and identifies future activities both in relation to investment in the assets, but also in the way they are managed
- Should provide summary information on each step of the process
- Ideally written in non-technical language
  - The AMP should be the easy read justification for the level of investment you are asking for
- Covers at least a 10 year forward projection of condition, funding needs, service level achievements etc.

RAM Team



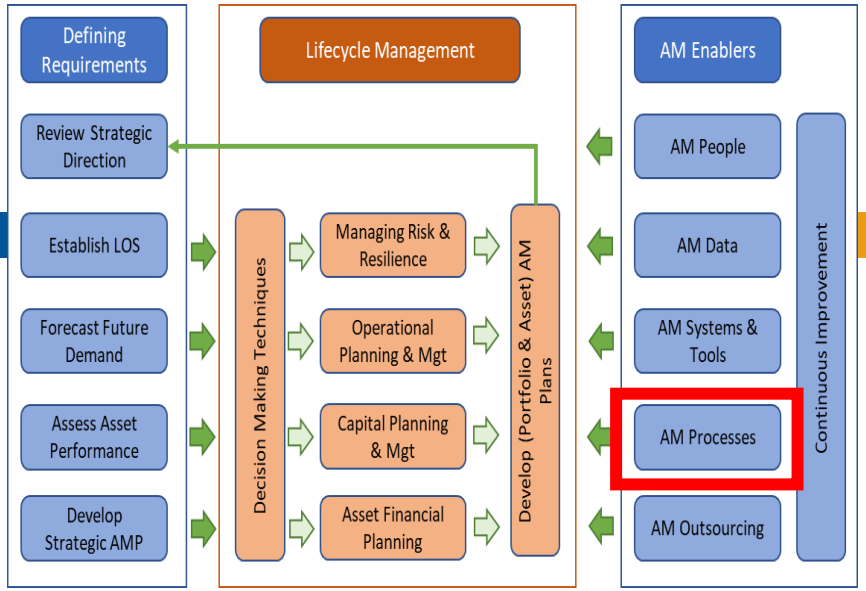
- Who is in charge of making sure compliance with the RAM Policy is occurring?
- While RAM requires an organisational wide approach, it takes a small team to oversee it
- To be effective the RAM Team needs to be able to influence the budget allocation process
  - Otherwise necessary change will not occur
- Various models for the RAM Team exist
  - Important to have a direct to the senior decision makers in the road authority

AMIS & Tools



- RAM involves a lot of data, so need an appropriate Asset Management Information System (AMIS)
- Most modern AMIS
  - GIS interface
  - Web based
  - Multi-asset (pavement, bridges, signs etc)
  - Modular
- Also need some form of Decision Support Tool (DST)
  - Can be simple decision tree that does prioritisation
  - Or complex optimisation tool such as HDM-4

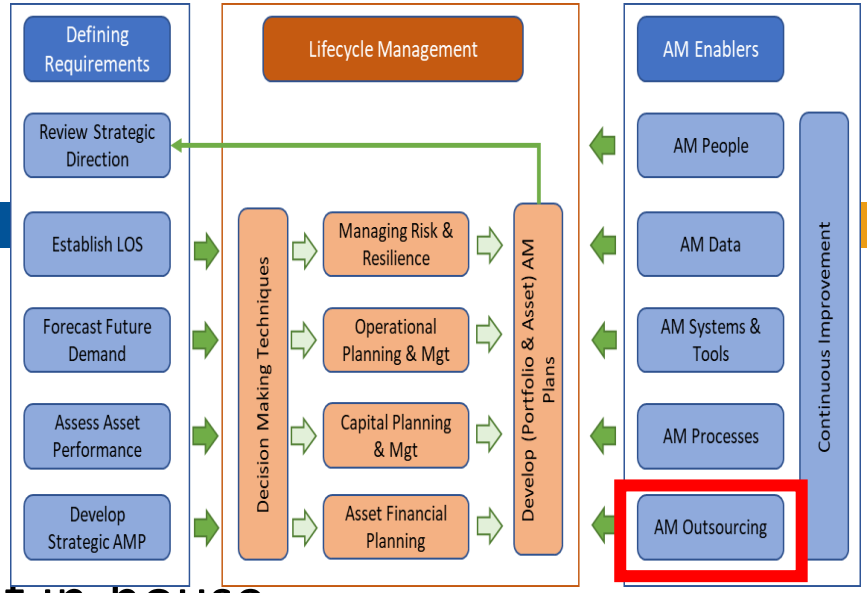
AM Processes & Quality Mgt



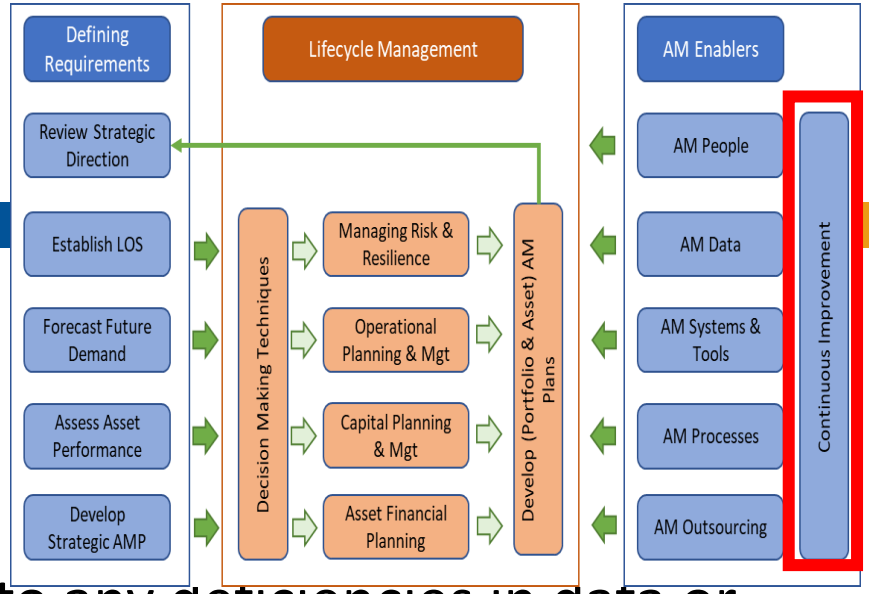
- As with any other aspects of activity, a quality management oversight is required to ensure compliance with the RAM processes
- One of the biggest causes for failure of RAM is where sound processes are bypassed for budget allocation and works program generation
  - Results in an undermining of all aspects of RAM

Service Delivery

- How will you deliver the asset management and physical works?
  - In-house, or external?
- Strategic activities should be kept in-house, while lower level activities can benefit from full or partial outsourcing.
- Some contractual models (e.g. performance based maintenance contracts) have been shown to drive RAM initiatives.



Improvement Plans



- Start simple, with the data you have, then improve
  - 5-10 years to become competent at RAM
- Don't delay starting RAM owing to any deficiencies in data or systems
  - Start and bring those improvements into the RAM processes
  - Use Maturity Assessments to help identify gaps
- Improvement actions should be prioritised and funded, and managed as a program in its own right
  - Assigned to the AM Team to deliver, but often using resources from across the road authority

The Excel Template

Questions

Dr Ian Greenwood

Greenwood Associates Infrastructure Consultants

ian@gaic.nz