



# LESAM 2007

2<sup>nd</sup> Leading Edge Conference on  
Strategic Asset Management

## **Developing Sustainable Management Plans for Water Supply within Sarawak Malaysia**

by Kerry Jones & David Cox



## Developing Sustainable Management Plans for Water Supply within Sarawak Malaysia



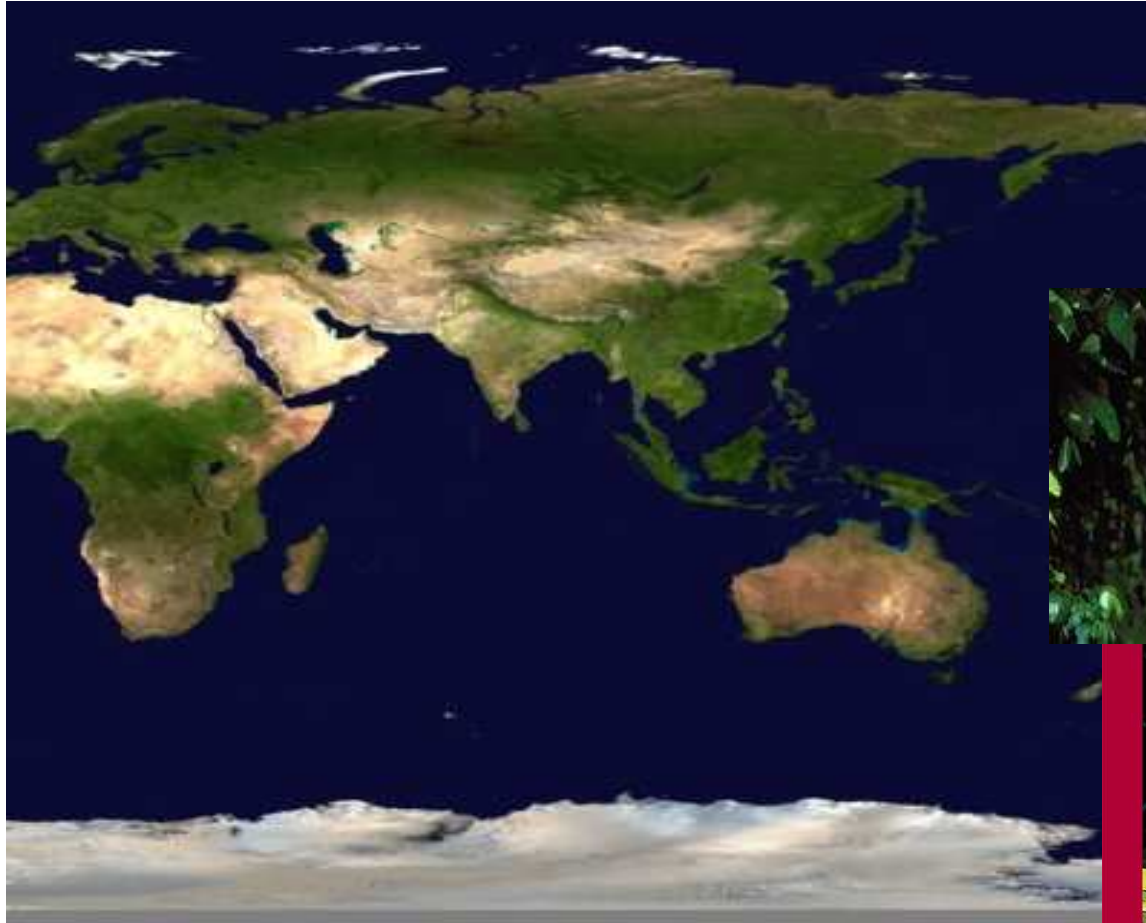
This presentation covers the outcome from **using strategic asset management approaches** to develop sustainable long term strategies for management of water supply services in Sarawak Malaysia including **the tools and techniques used to:**

- Evaluate the current situation
- Identify the status of asset knowledge
- Identify future asset management requirements
- Develop business improvement plans
- Justify future asset management strategies





# Sarawak???







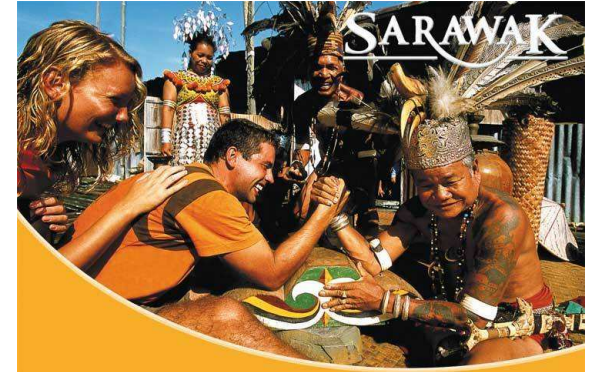
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# Sarawak Facts

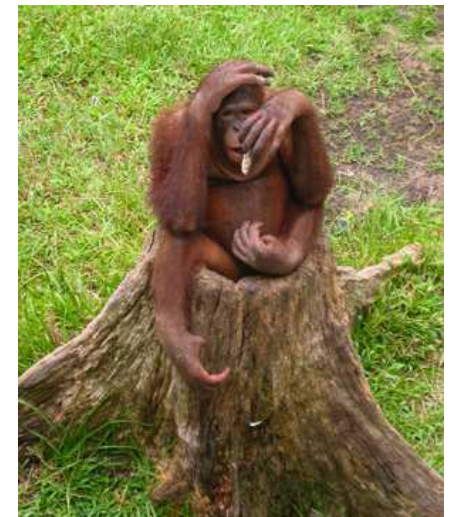
- Capital is Kuching.
- Largest state of Malaysia (geographically).
- Joined Federation of Malaysia in 1963, after a century of British Colonial rule.
- Population of Malaysia is 26.4mil and approx 2.4mil in Sarawak.
- Indigenous tribal pop 44%, chinese 28%, other 28%.
- Official language is Bahasa Melayu also known as Malay, however other languages are common, English, Chinese & native indigenous languages.
- Major religion is Islam.





# Sarawak Facts Cont...

- 'the land of the hornbill'
- 'the land of many rivers'
- Abundance of natural resources, petroleum, natural gas.
- Thick lush rainforests (timber), undulating landscape.
- Large timber logging industry and;
- Palm oil & sago plantations.
- Tropical climate





# Water Supply History

- 1887, Kuching obtained water direct from a nearby stream drawing off about 100,000 gallons per day (0.45ML/d)
- 1902, an alternative source of supply was developed near Kuching. A 3.5mil gal dam was constructed (15.75 ML).
- Demand from Kuching town increased to 500,000 gallons per day (2.25ML/d).
- Raw water of a suitable quality supply could no longer meet growing demand.
- 1957 first water treatment plant constructed 4ML/d, now 240ML/d
- Trend continued, Sibul, Mukah, Miri, Bintulu and Sri Aman





# Water Authorities

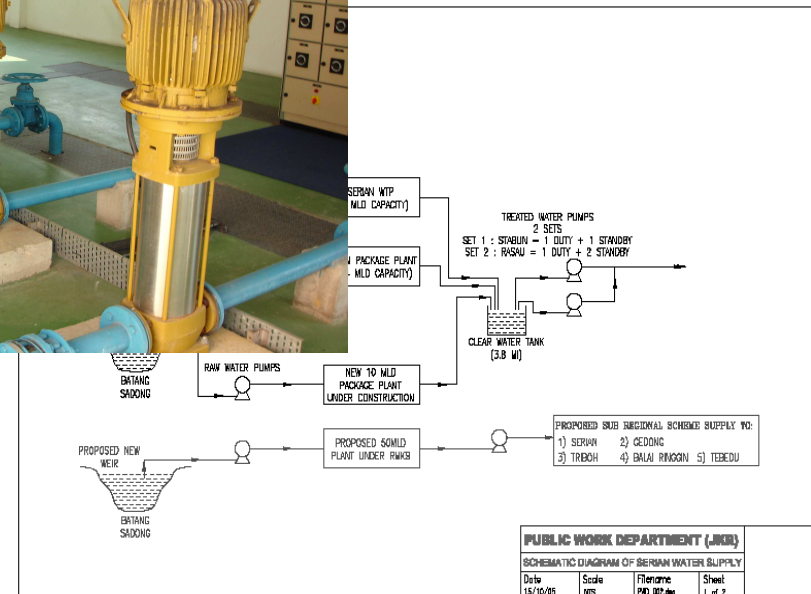
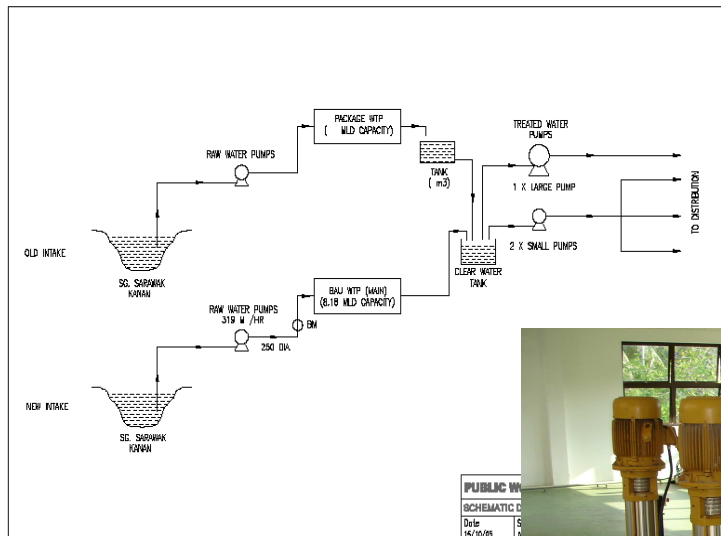
- First established government body to co-ordinate and facilitate water supply Jabatan Kerja Raya (JKR), Public Works Department.
- 1959 *Lembaga Air Kuching* (Kuching Water Board) and *Lembaga Air Sibu* (Sibu Water Board) took over JKR's responsibilities in Kuching and Sibu city.
- 1995 a State Water Authority was established.
- 1996 *Lambaga Air Kawasan Utara* (LAKU) took over other growing cities water supply authorities, Miri, Bintulu & Limbang.
- Currently JKR's responsibilities includes 88 water supply authorities for small towns, communities and villages (kampangs)





# Treatment Plants Ranging from 300MLD







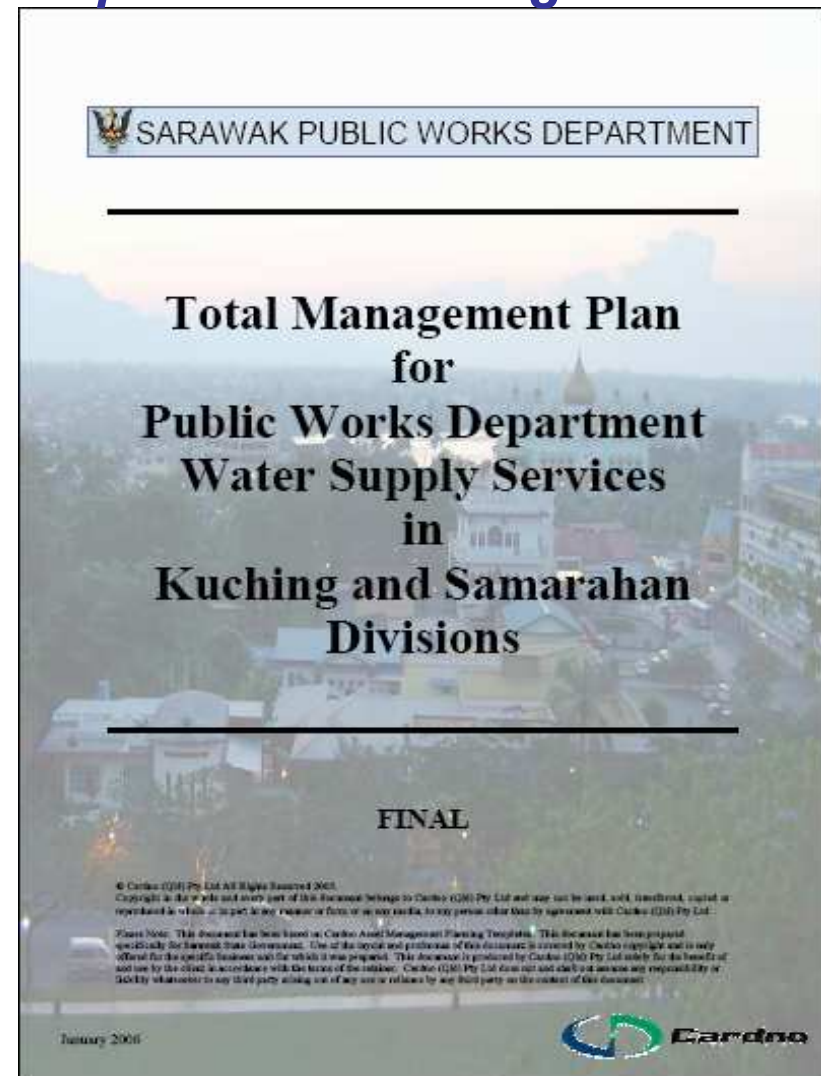
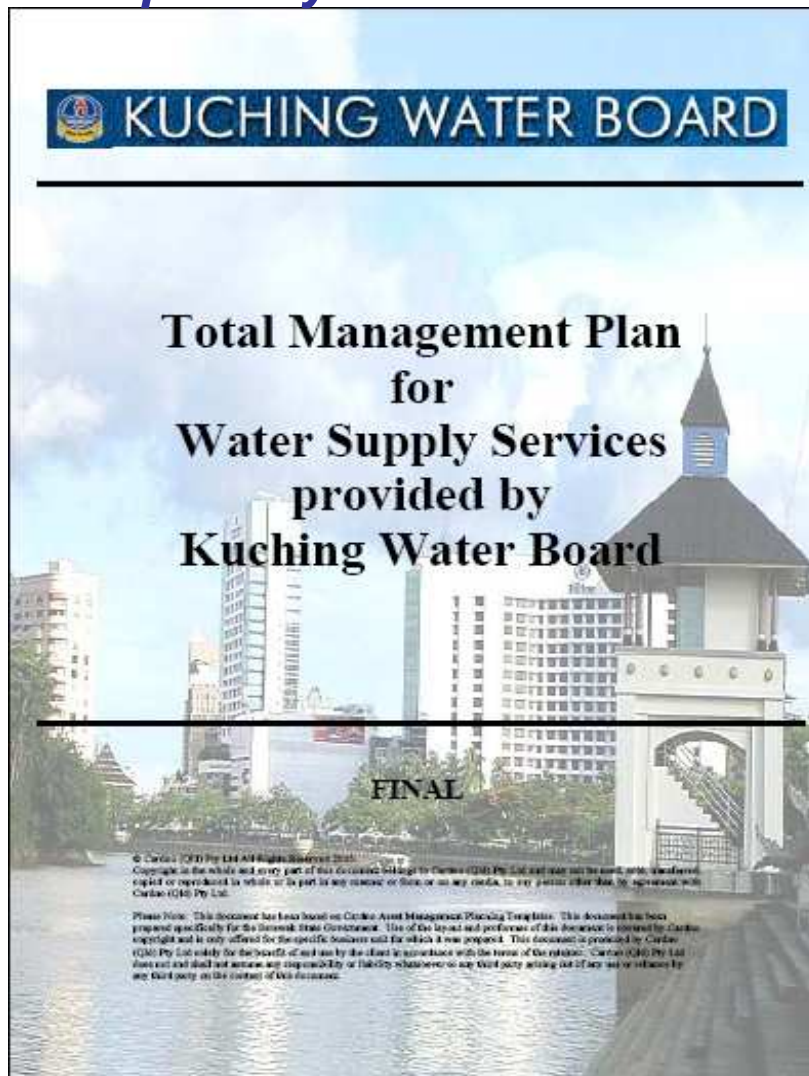
# ASSET MANAGEMENT TOOLS

- Workshops
- Total management planning
- Long-term financial modelling
- Organisational structural analysis techniques
- Key accountability documentation
- Activity analysis

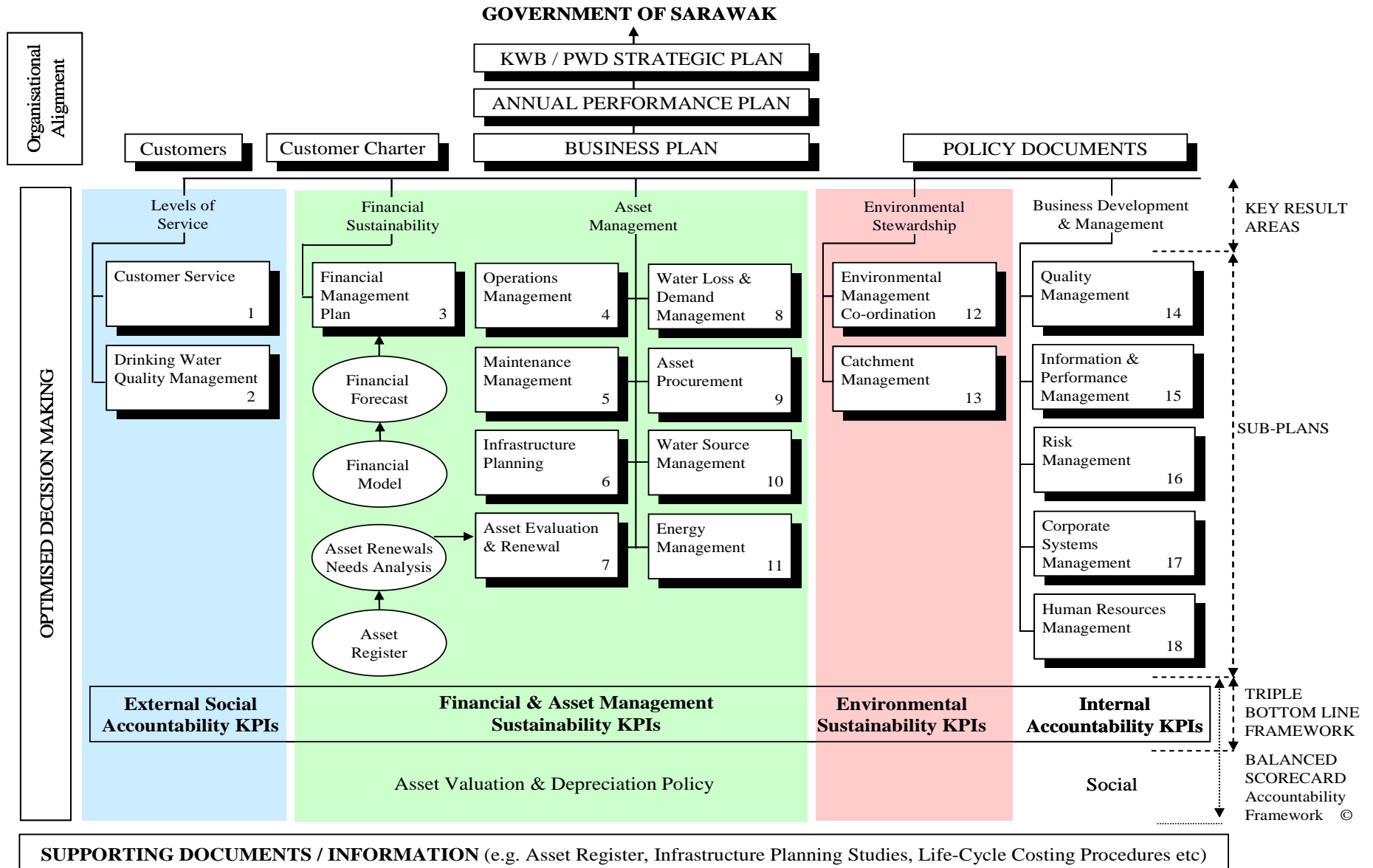




## Use of Total Management Planning to evaluate existing situation and quantify asset centric business improvement strategies

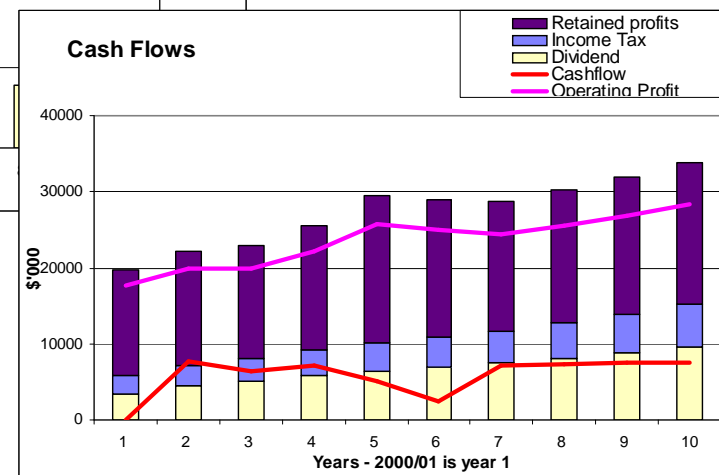
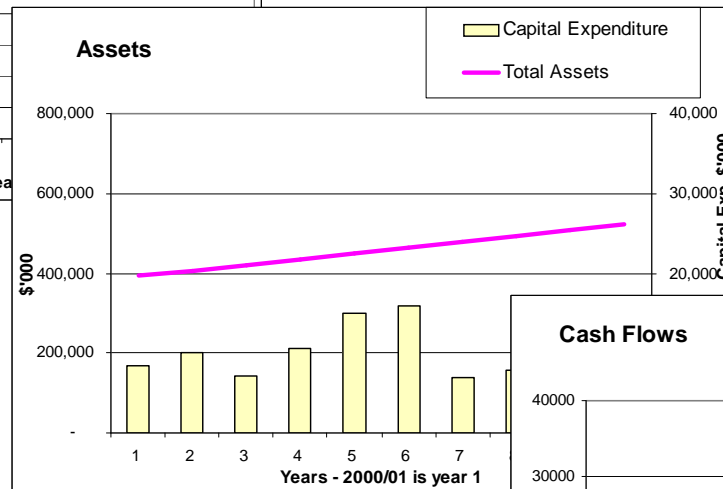
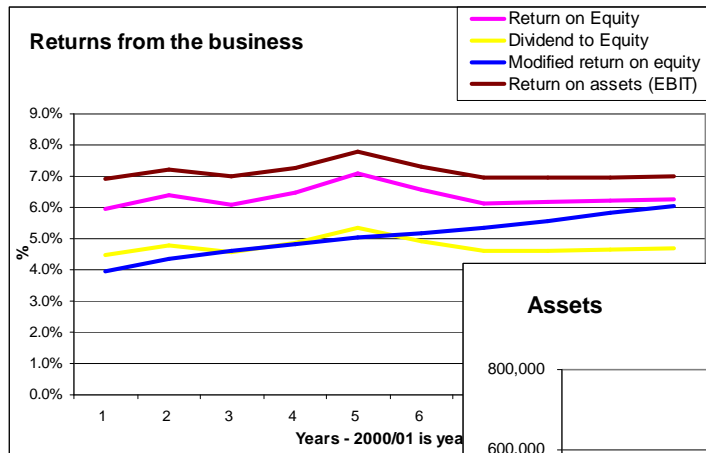


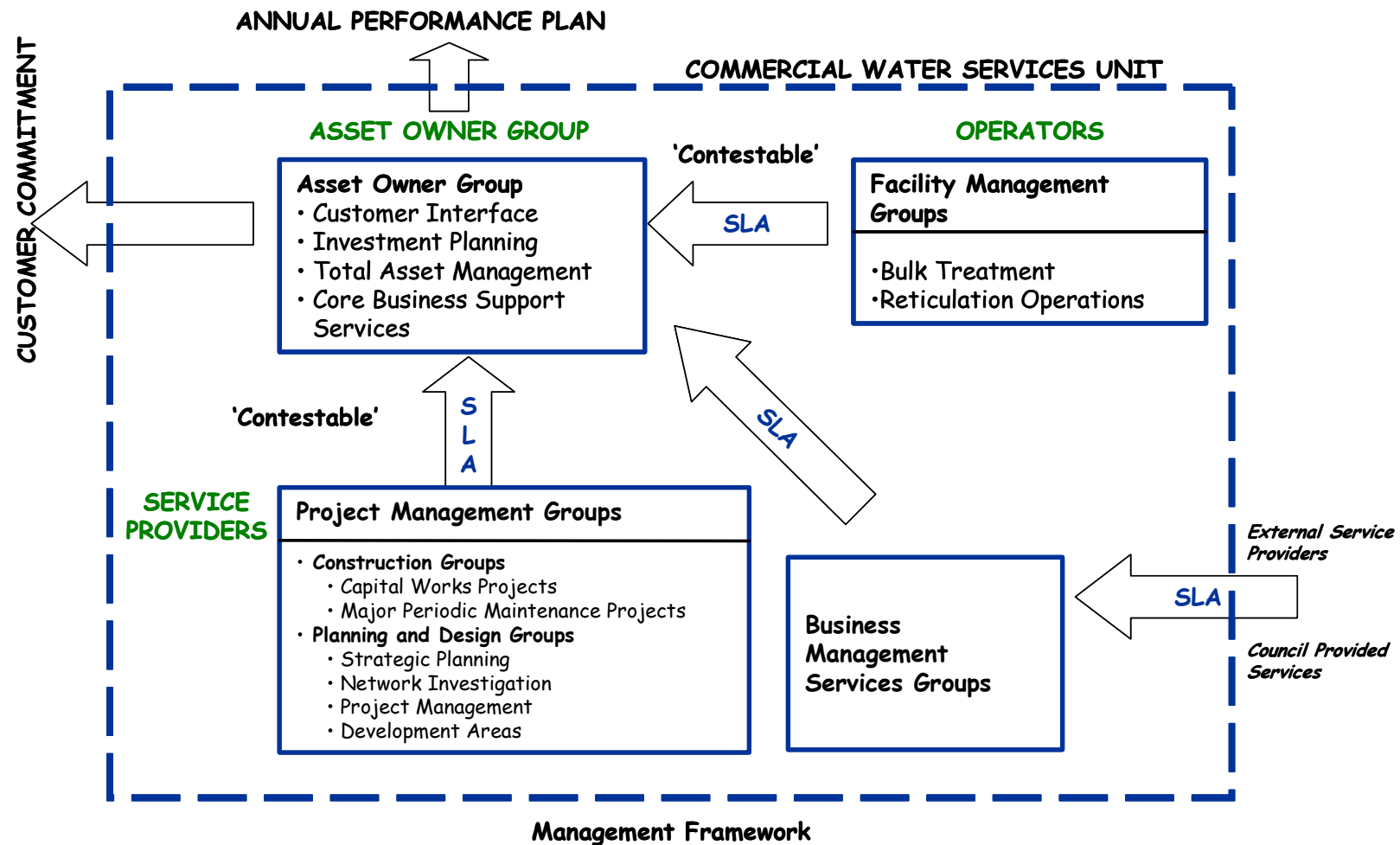






# Financial modelling used to identify funding issues

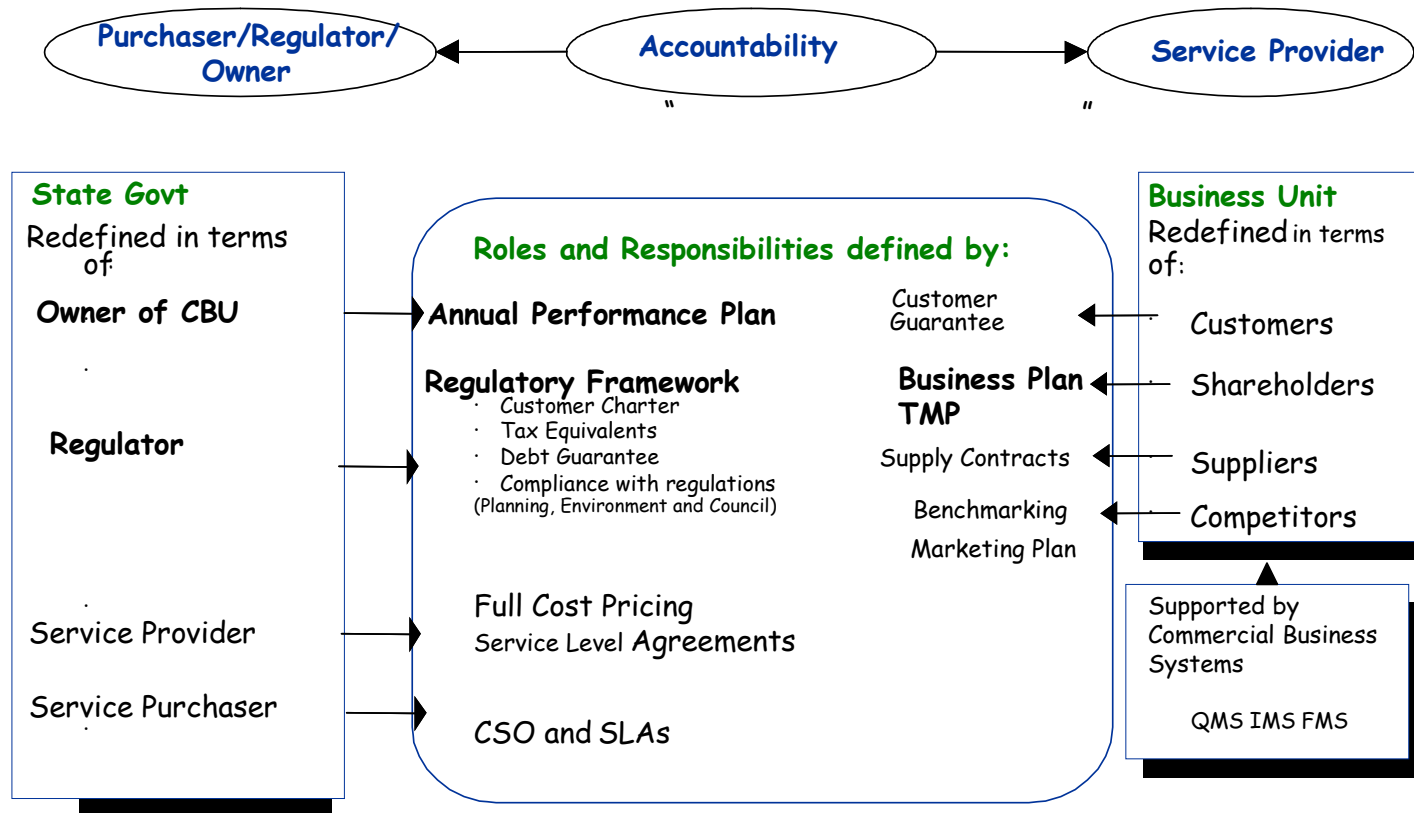






# Use of Key Accountability Documentation to define all Relationships

## Defined Relationships







# REGULATORY FRAMEWORK



## Evaluation of Current Regulatory Arrangements

The most significant observation on the existing regulatory framework was the absence of requirements for: -

- asset management planning;
- infrastructure performance monitoring and reporting;
- customer service performance monitoring and reporting; and
- best practice governance framework for ownership of long life assets.



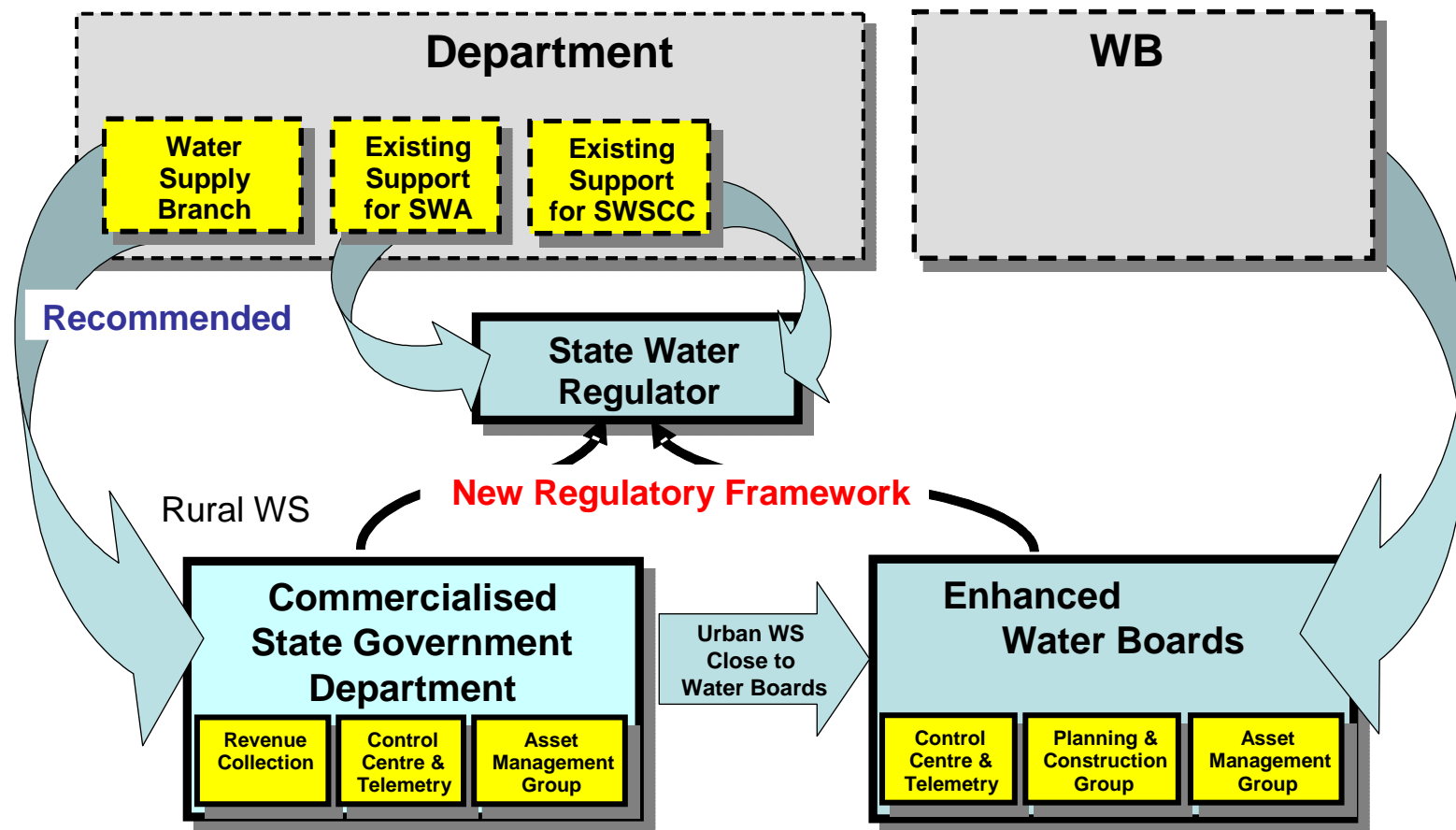
## We recommend that the existing regulatory framework be enhanced through:

- mandating of **asset management planning** and auditing of water supply agencies performance against their asset management plans; mandating establishment of customer service targets and annual performance reporting;
- Establishment of a government agency responsible for a water industry regulation including **asset management regulation**;
- enhancement of the functions of **asset ownership** so all State owned water infrastructure is managed for performance and outcomes.



# Recommended Organisational Arrangements & Regulatory Framework

Existing



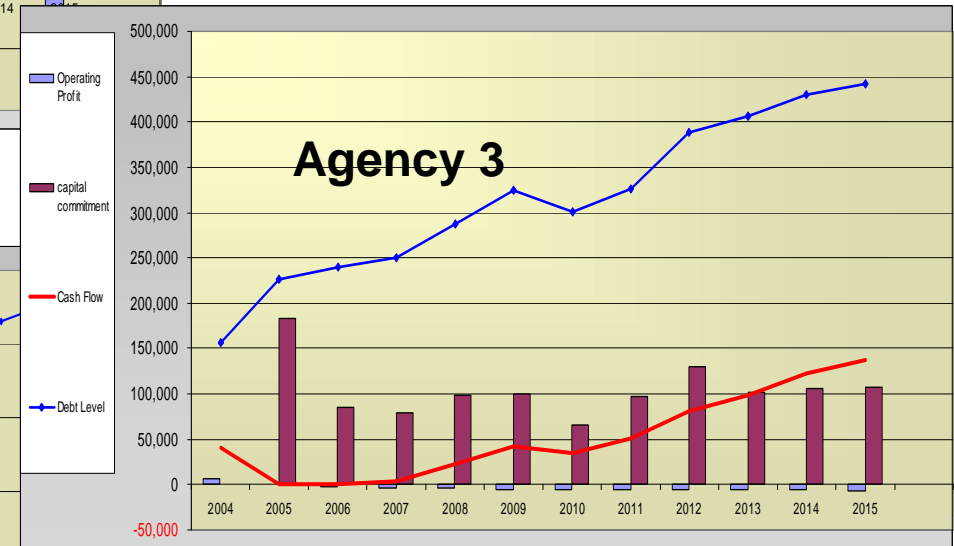
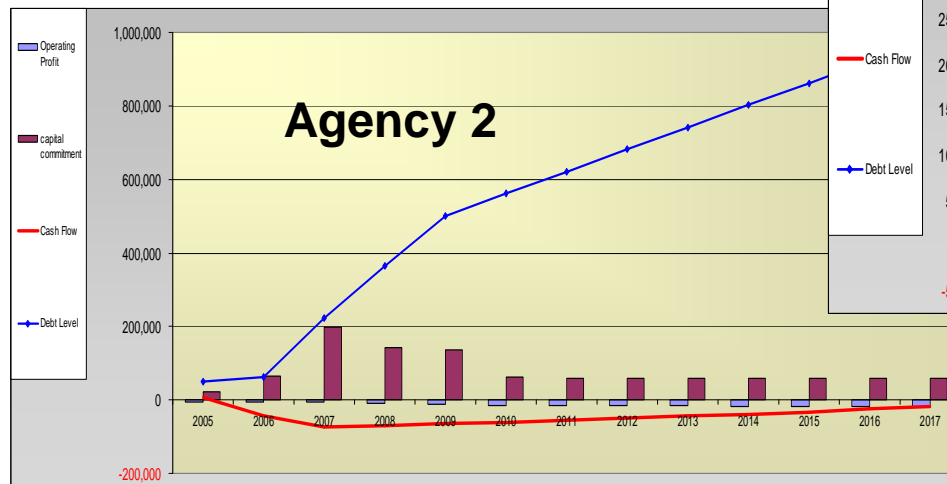
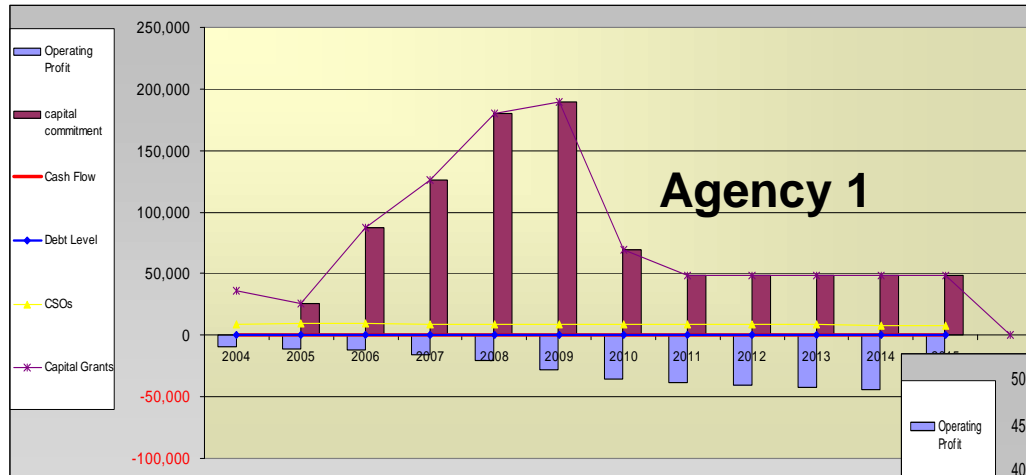




# FINANCIAL SUSTAINABILITY



## Each agency required a different financial strategy





## **The Agencies have many Management Strengths:**

- Capability of customer information systems and reporting of customer information;
- Quality systems and use of 5S;
- Dedication of staff and management enthusiasm for quality outcomes;
- Performance measurement;
- Use of variable speed pumping by zoned water supply system Sibu Water Board;
- Use of WTP SCADA by Sibu Water Board.



## However the Management Challenges included:

- One agency currently operating in a cash flow negative position;
- Public sector constraints and requirements from permanent positions;
- Lack of management autonomy;
- Limited Mechanisms for ongoing review of tariff and charges;
- X-subsidies from commercial to domestic;
- Expectations to extend systems into rural areas.





## **We concluded that Agencies could Improve:**

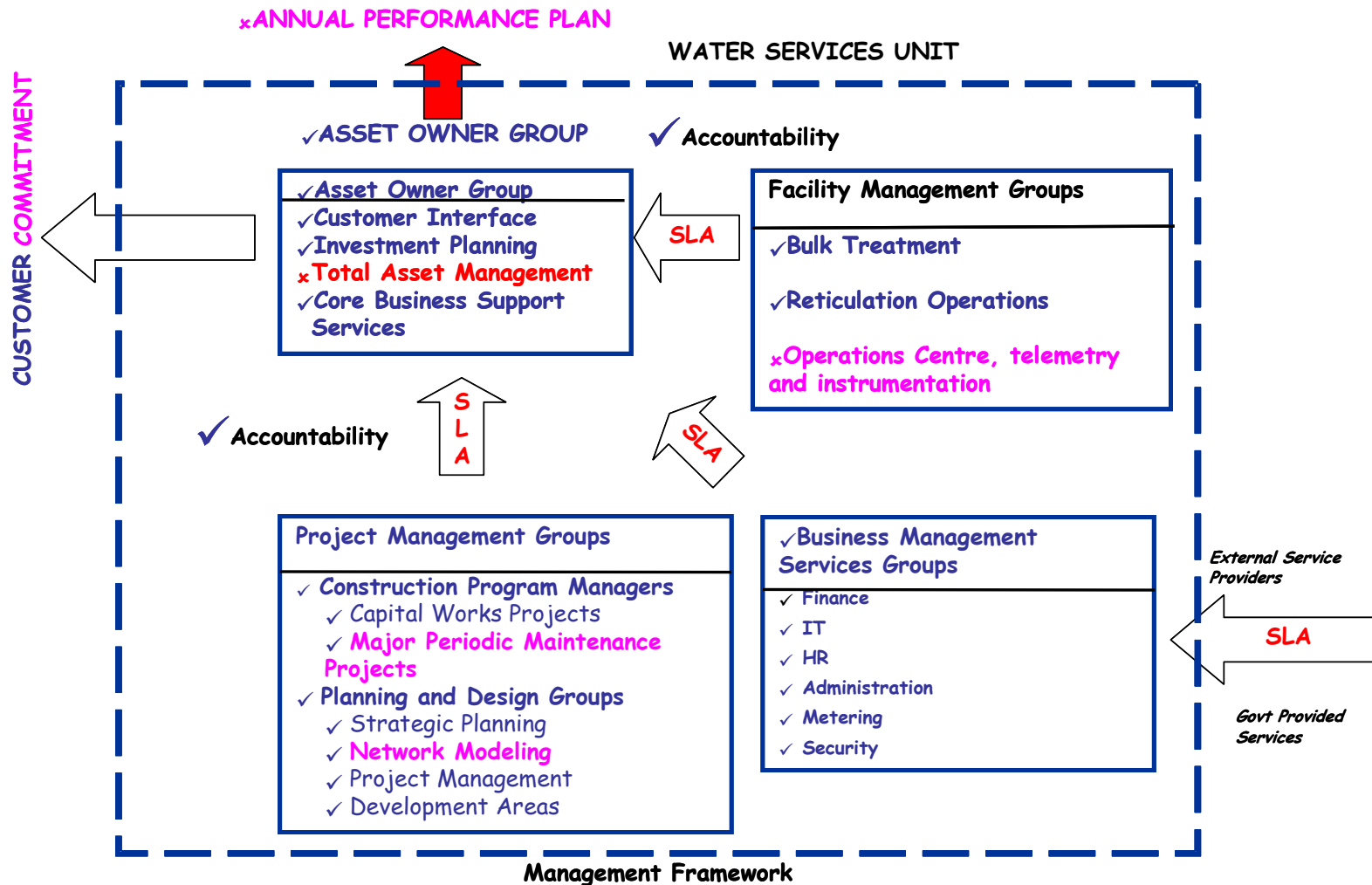
- Asset Management and Total Life Cycle costing approaches;
- Use of monitoring and telemetry;
- Trending analysis of data currently being collected in particular analysis of reservoir level and pump station data to identify NRW hotspots;
- Optimisation of energy consumption;
- Maintenance of telecommunications and SCADA equipment;
- Network modelling and NRW capability;
- The level and hierarchy of infrastructure plans;
- Capital works planning capacity and capability.



# **Use of Organisational structural analysis to identify areas for asset management capacity improvement**

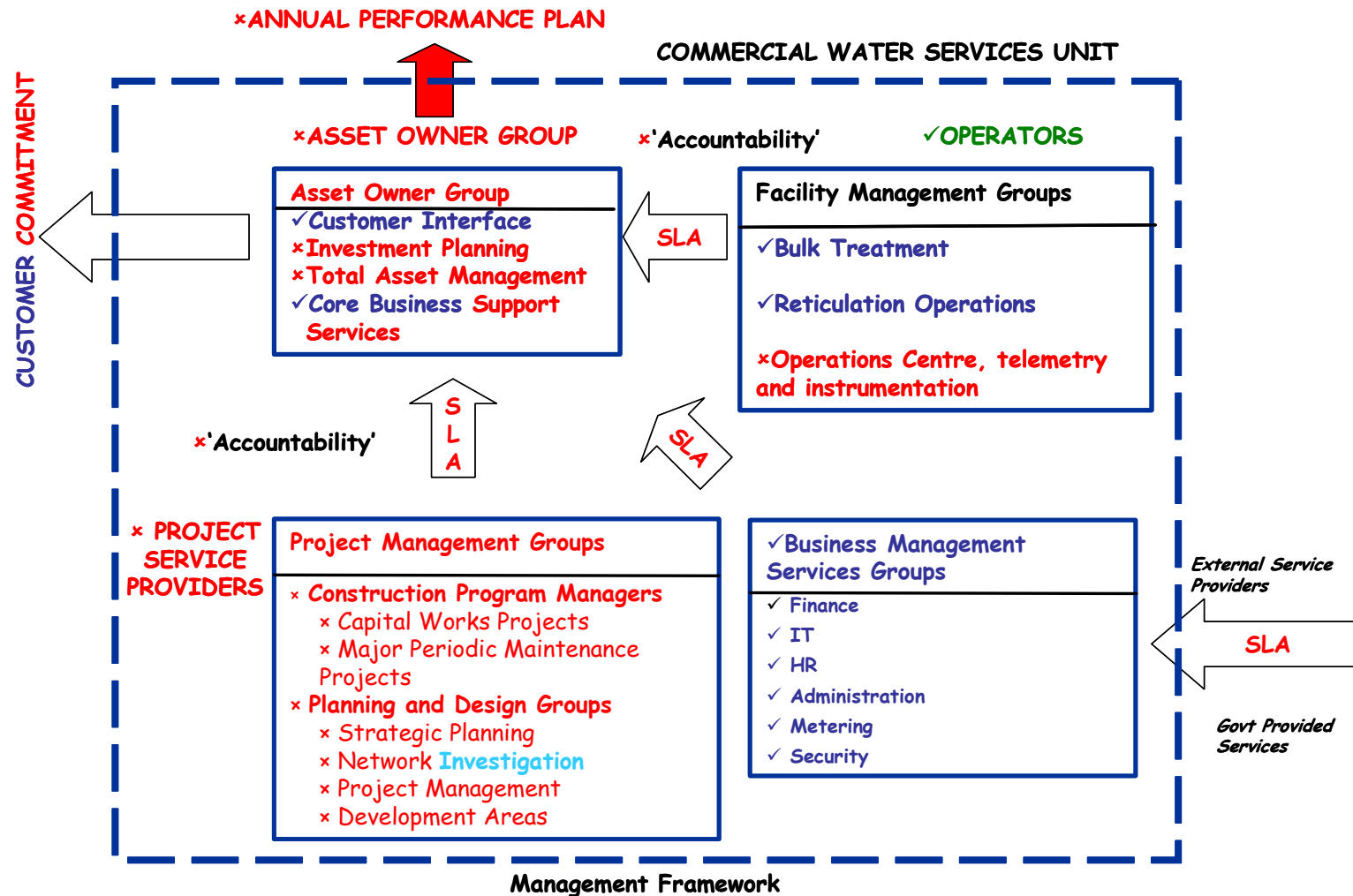


# Agency 1 Organisational Analysis





# Agency 2 Organisational Analysis





# Any Questions???

