



**Tertiary Education Commission**  
**Te Amorangi Mātauranga Matua**

# **TEC Capital Asset Management Standard**

*January 2011*

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## Introduction

The tertiary education sector currently manages in excess of \$7 billion of capital assets. It provides a unique service and requires capital assets that support excellent educational outcomes, including facilities, base infrastructure and specialist teaching equipment. The effective management of assets is therefore an essential business process, providing the opportunity for organisational efficiencies, improved asset utilisation, reduced operating costs and more effective use of capital.

The Tertiary Education Commission (TEC) is committed to working with tertiary education organisations to ensure that these assets are managed effectively to provide world-class education and to meet the changing needs of industries, communities, iwi and learners. The TEC Capital Asset Management (CAM) Standard is a product of this process. It reflects the need to implement best practice asset management with the unique requirements and variations within the tertiary education sector.

The National Asset Management Steering Group (NAMS) provides a best practice standard of asset management and underpins the capital asset management reporting framework between the TEC and Treasury. The TEC has worked with Institutes of Technology and Polytechnics (ITPs) to adapt the principles of NAMS into a CAM framework that captures the unique educational services that Tertiary Education Institutions (TEIs) provide.

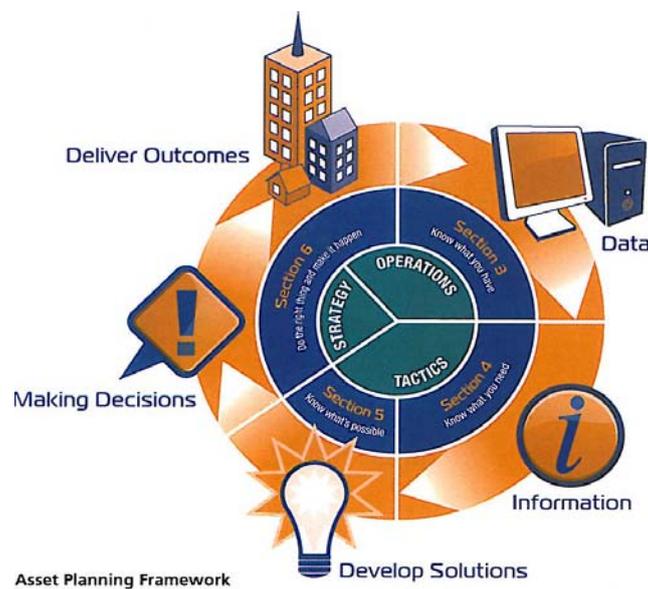
The CAM framework aligns to the Tertiary Education Strategy (TES) 2010 to 2015 priorities and reflects the unique educational business requirements of TEIs.

# Capital Asset Management

## Capital Asset Management principles

The TEC CAM standard is based on the National Asset Management Steering ([NAMS](#)) Group principles as described in the [International Infrastructure Management Manual](#) (IIMM) and the [2006 NAMS Property Manual](#). The overarching approach is illustrated in the figure below which is taken from the NAMS Property Manual. This emphasises the cyclical nature of the process, the importance of defining and understanding desired outcomes, the nature of current assets, the associated current and future needs, the potential solutions, and implementing the optimum decision.

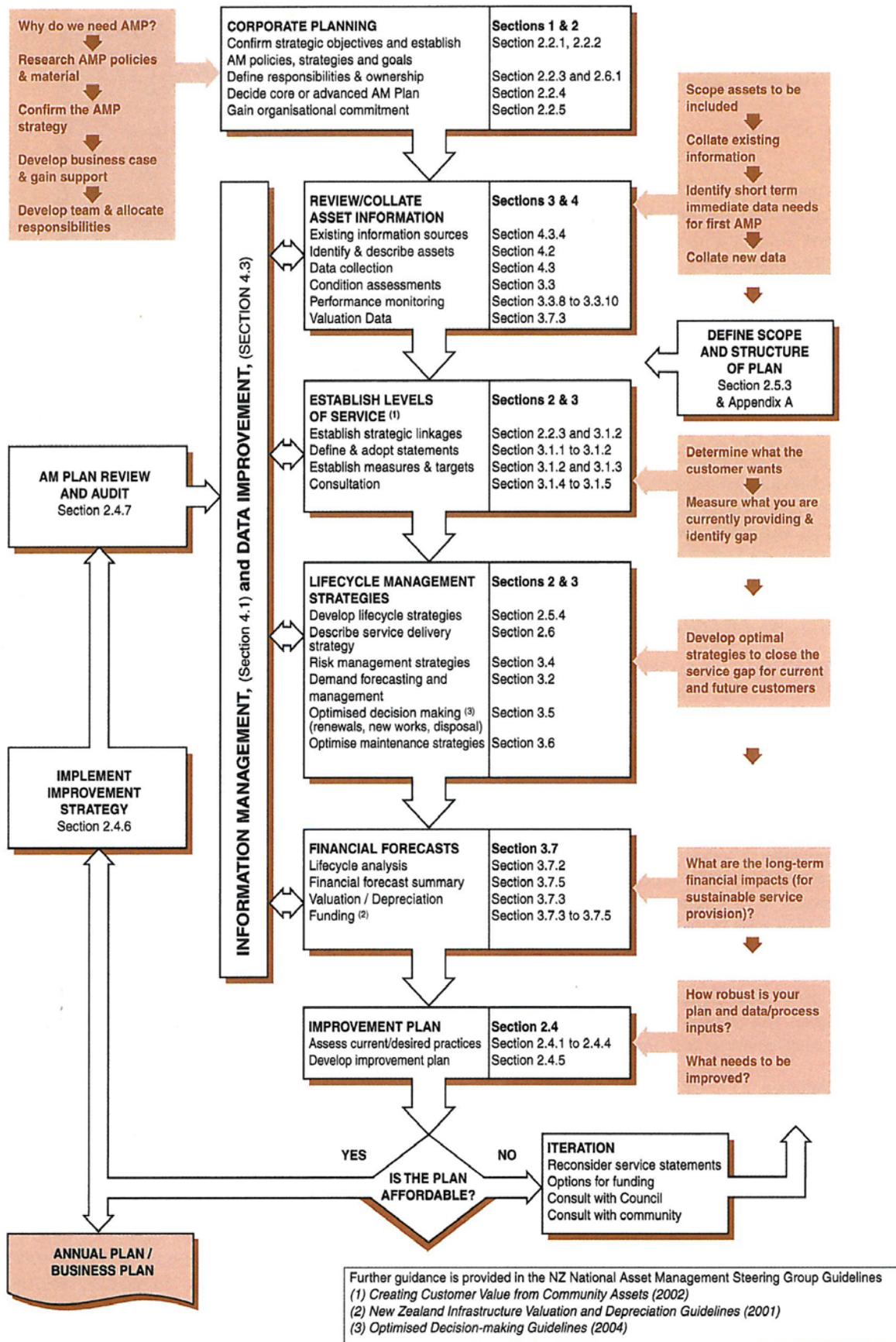
**Figure 1: Principles of Capital Asset Management**



The NAMS Asset Planning Framework is the cornerstone of capital asset management for local government in New Zealand and the underlying principles have been adopted by the [Institute of Public Works Engineers of Australia](#) (IPWEA). It is also linked with the [British Standard PAS 55](#) - Optimal management of physical assets through NAMS' 2010 International Infrastructure Management Manual (IIMM).

The following diagram from the IIMM illustrates the linkages between capital asset management and reporting through the creation of an Asset Management Plan (AMP), and normal business processes.

**Figure 2: IMM Model of Capital Asset Management**



## Asset management guidance to the tertiary sector

Capital Asset Management provides integrity and transparency to the capital planning process. It provides the evidence and supporting material to demonstrate that projects are delivering strategic objectives, consider external influences, and are justified. Asset management planning is a process that also scopes capital projects that address shortfall such as change in demand, lifecycle requirements, and service delivery in general. CAM systems provide assurance that project costs, operational, maintenance and renewal costs are managed and funded effectively.

As Figure 3 shows, the framework is cyclical and targets progressive improvement, and robust decision making at all levels within TEIs. It is also directly linked to NAMS guidance material and The Treasury's CAM framework. By understanding the cost and quality of existing assets, and identifying current and future asset shortfalls, it will be possible for TEIs to develop a pragmatic programme of capital requirements and to recognise funding options.

**Figure 3: Asset management Planning Framework**



The following sections provide further guidance on asset management planning, and describe how it is linked to the CAM framework.

## **Know your services**

TEIs own and control physical assets to deliver education outcomes and services. The nature, capacity and performance of these assets reflect the needs of each TEI and the desired level of services to be provided. Furthermore, these requirements change over time as the needs of users and other interested parties evolve and mature.

Considering this, TEIs should have an agreed and documented understanding of the following factors:

- Strategic objectives and outcomes – what is it that they want to do.
- TES priorities – how they will achieve Government objectives for tertiary education.
- Service levels and quality – how well they want to do it.
- Network integration – where they are positioned relative to other providers.
- Community integration – what level of integration they have with the community, industry and other government organisations.

## **Know your assets and costs**

TEIs need a good understanding of their assets, including those that deliver education and support services, and the associated costs. The level of information required for the CAM Framework should be aligned with the nature and value of the assets. The following aspects are important:

- Knowing the assets that are being used to deliver the educational services.
- Knowing the quality of the assets in terms of condition, function, utilisation and performance.
- Knowing the value of assets.
- Knowing the provisions made for depreciation.
- Knowing the criticality and risks associated with assets.
- Knowing the historical asset costs and the overall cost of ownership including planned maintenance, reactive maintenance and relevant operational costs.

## **Know what you need**

The needs of the individual schools or faculties will change over time. Asset related strategies therefore need to respond to these changes for both the current and future asset base.

It is important to understand and document the following factors:

- The current level of service provided by the assets measured through level of service statements and targets.
- The required changes in the levels of service to achieve strategic objectives.
- The asset renewal and replacement requirements based on the shortfalls that will impact on levels of service e.g. addressing the current backlog for critical assets that are in a very poor condition.
- The shortfalls associated with the future performance issues such as technical obsolescence and reaching capacity.

- The expected changes in demand for existing assets:
  - Changes in the target demographic, e.g. population, age, ethnicity and location.
  - Changing educational needs of the target demographic.
  - Changing needs of academic and support staff.
  - Changing methods of service delivery.
  - Changing needs of the wider community and interested parties, i.e. local government, hospitals, schools, infrastructure, and commercial.
- Current and future shortfalls associated with changes in the way education services are delivered, considering management of demand and available capacity.
- The expected changes in the relationships and linkages with other education providers.

## **Know what is possible**

Based on the identified current and future shortfalls:

- Scope a range of 'possible projects' to address the shortfalls and minimise the associated risks. These would be a mixture of large scale, small scale, and operational based projects.
- Identify the optimum balance between operation and capital expenditure, e.g. proactive maintenance and capital renewal, and energy consumption and capital intervention. This also ensures longer term sustainability.
- Consider potential non-asset solutions, e.g.:
  - Change the way assets are used – more efficient and more effective.
  - Change the way assets are operated and maintained.
  - Change the service delivery methods such as reducing the need for additional space by leasing facilities or delivering services through remote technology.
  - Change the required level of service.
  - Use existing non critical assets for longer – 'sweat the asset'.

## **Know what to do now**

Consider the range of possible scoped projects:

- Identify and document the drivers for each project, i.e. like-for-like replacement, additional capacity, additional functionality, and allocate funding accordingly.
- Prioritise 'possible projects' according to established organisational priorities, in terms of:
  - Achieving levels of service.
  - Risk.
  - Affordability.
  - Value for money.
- Document the projects within an asset management plan, including the funding sources and cost allocations.

- Identify which projects have been recommended for implementation in the current budgeting round based on the outcome of the prioritisation process.
- Update asset data and review asset gaps progressively as projects are implemented, and update financial models to reflect the associated changes.

## Know what is sustainable

Considering the long term nature of the assets:

- Identify what is affordable over the life of an asset given potential funding sources.
- Identify the correct balance between capacity and demand given forecast growth, changing service levels and changes in demand.
- Identify the optimum balance between operating and capital expenditure, e.g. proactive maintenance and capital renewal, energy consumption and capital intervention.
- Identify the environmental, community, and cultural impacts of the assets, particularly how they increase or mitigate risk.

## Know your funding options

Based on the expenditure requirements identified within the financial section of an asset management plan (capital projects, maintenance requirements and operational costs), consider the following:

- Clearly identify the existing funding streams for asset maintenance and replacement. Also consider possible legislative constraints for the sector such as those contained in [Section 192 of the Education Act 1989](#).
- Match the long term expenditure required to address known shortfalls with the funding available and identify surpluses and deficits. The planning horizon is over 10 years and ideally 20 years.
- Identify and understand how funding options may change over time and the associated implications, i.e. through scenario planning and sensitivity analysis. Examples include:
  - Policy changes.
  - Asset disposals.
  - Changes in operating revenue and expenditure.
  - Ability to raise debt.
  - Public-private partnerships.
  - Energy performance contracts.
  - Facilities maintenance contracts.

# Defining the TEC Capital Asset Management Standard

## Overview

The government has articulated its expectations of central government agencies and capital intensive crown entities in terms of capital asset management and planning for future capital requirements. Capital intensive crown entities should be run efficiently, which includes the management of assets, optimisation of decision making, and providing good value for money.

The Treasury has developed and refined a CAM Framework on behalf of the Government in conjunction with key agencies. This reflects the experience of local government New Zealand and best practice international experiences. Agencies are expected to progressively implement CAM practices and provide information consistent with this framework.

The TEC as the monitoring agency for the tertiary education sector will report to Treasury on behalf of the sector on an annual basis. The TEC provided the first aggregated sector report on capital assets and planning to Treasury in March 2009. The TEC will continue to provide CAM information to Treasury each year.

The intention is for TEIs to follow the guidance provided through this Standard to implement good asset management processes and transition to a level of asset management appropriate for the goals and aspirations of that institution.

## Attributes of the TEC CAM framework

The TEC CAM Framework has been developed to identify the attributes of best-practice capital asset management and to assess the generic levels of performance. The TEC CAM Standard is based on the attributes listed below.

Table 1: CAM Attributes		
Attribute		Broad Considerations
1	Strategic Objectives and Outcomes	Vision and objectives Strategies and tactics Stakeholder needs Linkages to assets
2	Managing Demand	Demand drivers Demand forecasts User requirements
3	Levels of Service	Levels of service Changing standard Monitoring and reporting
4	Description of Assets	Physical data Financial data Systems and processes

<b>Table 1: CAM Attributes</b>		
<b>Attribute</b>		<b>Broad Considerations</b>
5	Current and Future Shortfalls	Capacity shortfalls Performance shortfalls Lifecycle modelling
6	Asset and Non-asset Solutions	Scoping potential solutions Analysis of strategic choices Benchmarking and interoperability
7	Optimised Decision Making	Capability and capacity planning Consultation Prioritisation
8	Financial Forecasts	Decision support models Drivers and funding analysis Performance measurement systems
9	Feedback and Improvement	Data confidence Reporting and planning Targeted improvement
10	Planning Assumptions / Confidence Levels	Demographics Strategic outcomes Constraints Performance changes
11	Risk Management	Integrated processes Identification and reporting Mitigation and monitoring
12	Organisational Commitment	Governance Asset management organisation Reporting and monitoring

Although the CAM Attributes exclude references to 'lifecycle analysis' (refer to NAMS manual for definition), the process should be part of the optimised decision making, levels of service, risk management and financial forecasts attributes. The term is often confused with the prediction of the remaining life of a specific asset, whereas, this is only part of the lifecycle analysis process.

## Key components for TEIs

Considering the attributes of TEC's CAM Framework, NAMS guidance, and the principles of effective asset management planning, the following key components are required for the TEC CAM Standard to be successfully implemented within each TEI and at a sector level:

- Establish buy-in and commitment from the governing Council, and clearly communicate this commitment to internal and external stakeholders.
- Establish good management and planning practices to maintain asset information, ensure its effective use and align to core business processes.
- Train operational and management staff so that the 'process' is owned internally and is enduring. Remove incentives to 'sub-contract' ownership.
- Implement effective information systems to make the asset management planning process possible, and provide links to maintenance and financial systems at appropriate levels. In the short to medium term, interim computer systems should be considered to enable the process – it's best to use an immediately available solution rather than using nothing at all.
- Progressively build an asset register that identifies all asset types to an appropriate level of detail. Recognise there will be data gaps and address these progressively.
- Assess the condition and performance of existing assets to ascertain shortfalls, determine valuations and depreciation, and to justify the need for future capital projects.
- Identify through analysis when specific assets will need to be replaced or renewed considering their condition, performance, age, asset type and desired quality standard. This can often be referred to as a 'lifecycle analysis'.
- Identify critical and high value assets within each TEI and target these for assessment first. Work progressively through all assets according to priority and determine appropriate maintenance regimes.
- Develop a long term AMP that reports the information resulting from the CAM process and identifies current and future shortfalls and ways to address these shortfalls.
- Use the AMP to record the range of possible projects and the outcome of the decision making process. Projects are then implemented following a best practice project management discipline.
- Consider the affordability of addressing these shortfalls over time, considering the operational consequences of capital expenditure, the cost of capital, and funding sources.

## The asset management plan

The Asset Management Plan (AMP) is a key part of the asset management process. It provides a description of the overall process and summarises key asset and planning information at a single point in time. It is also the primary means of documenting adherence with the TEC CAM Standard.

It is important to recognise the difference between the reporting requirements (CAM Attributes) and the business process (the Framework). The NAMS guidance and CAM Attributes are directly aligned with the sections of an AMP as listed below. However, the process of capital asset management follows the Framework described in Figure 1 and Figure 3.

An AMP will typically include the following sections:

### **Executive Summary**

**Introduction** – The Introduction section describes the purpose, background, and structure of the Asset Management Plan. It explains the importance of asset management, the level of organisational commitment, and progress made to improve the quality of the information. It also summarises the key links to strategic and other asset planning documents and the main issues.

**Demand Management** – The Demand Management section reflects the changes in demand over time and provides a statement of demand so that demand management strategies can be developed. It considers how growth will be managed including discussions on demand drivers and impacts on faculty / school requirements.

**Levels of Service** – The Levels of Service section defines the current and future customer to technical quality standards associated with catering for future demand, technology changes, service delivery changes and the standard of care for existing facilities. The first step in the process is to document and measure the current levels of service before determining the future desired levels of service. Level of service shortfalls are identified, measured and monitored in this section.

**Asset Description** – The Asset Description section is a direct output from the asset register and survey process that captures asset condition and performance. This section should also identify the availability and utilisation of space, describe the current configuration of spaces including its functionality, and condition taking into account modern learning spaces. The section describes the assets in their physical and financial form including gross replacement costs, historic values, depreciated replacement costs and fair values.

**Challenges and Investments** – The Challenges and Investments section is where the current and future shortfalls are summarised considering the demand projections and level of service requirements. It is also where the impact of currently funded projects and the planned response to the remaining shortfalls are identified.

**Optimised Decision Making (ODM)** – The Optimised Decision Making section is where the range of possible projects is identified and considered through prioritisation

and optimisation. It is where maintenance and capital are optimised through applying various policies, i.e. applying maintenance regimes that increase annual operating costs but minimise risks, and delaying refurbishment or replacement in order to reduce the whole of life costs.

**Financial Forecasts** – Where the ODM section lists the range of possible projects the Financial Forecasts section identifies the selected projects based on risk, levels of service, and funding. The section shows how the ‘preliminary strategic choices’ have been considered and why the final list of recommendations have been selected. It considers income and funding sources where possible and forecasts future values and associated depreciation.

**Key Assumptions and Policies** – The Key Assumptions and Policies section identifies the assumptions made throughout the planning process and states the policies applied such as maintenance and renewal policies. It also makes an assessment of the confidence in the quality of the information.

**Improvement Plan** – The Improvement Plan section is an important part of the AMP. It identifies the planned improvements to the asset management systems, including the associated responsibilities, resources, and milestones. In a summary level AMP this section will summarise the key improvement activities from each of the component AMPS, i.e. faculty AMPs and supporting AMPs.

The TEC has produced a draft [CAM Toolkit](#) that is available to download from the TEC. The Toolkit includes an AMP Template that can be used to develop Faculty, Support, and Summary level AMPs based on the CAM Attributes.

## Defining the TEC CAM standard

### Overview

Each Tertiary Education Institute (TEI) should integrate capital asset management into its planning, systems and reporting business processes. Examples of the essential requirements for the ‘Core’ standard<sup>1</sup> are:

- Having a clear definition of the TEI’s strategic intent or areas of business including a summary of how asset management links with the strategic goals and describing how the education service is being delivered.
- Knowing the status of the current assets, i.e. functionality, operational costs, condition, and how well the asset is utilised.
- Knowing what’s needed from the assets over the next 5, 10 and 20 years to support each faculty’s requirements considering demographic, technology and service delivery changes.
- Scope project options to address the shortfalls between what you have and what you need.

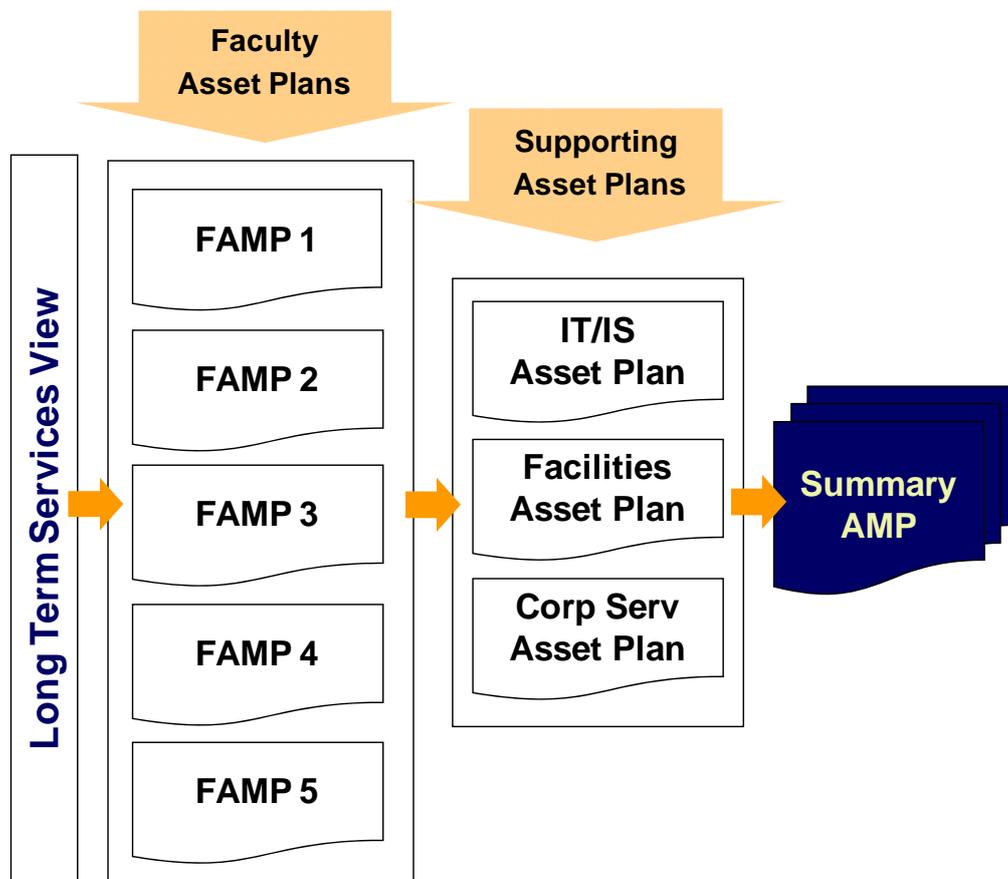
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<sup>1</sup> See Capital Asset Management Performance Assessment Section for description of a ‘Core’ standard of asset management

- Identify the selected projects that will provide the best financial and non-financial outcomes considering funding options and affordability, and describe their implementation and the impact on identified shortfalls.

It is essential to involve all faculties and support services (considering interdependencies between faculties for shared services) in the capital asset planning process. Ideally each faculty would develop its own AMP (nominally called a Faculty AMP), which can be aggregated to provide an integrated view of capital asset management requirements across the TEI. The Faculty AMP would record the assets and associated requirements for each faculty or department, and the Supporting AMPs would use the outputs to provide a holistic view of the TEI and ultimately a Summary level AMP as illustrated in Figure 4.

**Figure 4: Faculty, Support and Summary Asset Management Plans**



The main objective of the TEC CAM Standard is to provide a consistent approach to asset management across the sector and to encourage continuous improvement. The initial focus is to document current information rather than investing in collecting new data or procuring new systems.

The primary difference between ‘core’ and ‘advanced’ asset management is a change from ‘judgement’ to ‘evidence’ based planning. The framework, policies, processes, systems and information can be progressively implemented over time so that the TEI moves from Core to Advanced in a carefully planned approach.

The recommended approach is for the Finance department to facilitate the process and for the faculties, facilities and IT/IS departments to retain ownership of the information, processes and the outcomes.

## **Faculty and Supporting Plans**

Faculty and Supporting Plans should include the following information:

### **Education provision description**

Each TEI should document the current and future services provided through the current and future assets.

The following points should be considered by each TEI when using the TEC CAM Toolkit to develop their AMPs:

- Clearly articulate the range of educational services that are currently provided.
- Clearly articulate the needs of industry, learners, communities and iwi and what educational services should be provided.
- Describe the future educational services that are likely to be provided.
- List key tertiary performance indicators associated with enrolments by faculty, including the changes over the past 5 years.
- Describe possible service delivery changes over the next 10 years, e.g. changing demand from different courses, impact of changing technology, changing demographics, and the impact of changing international student numbers.

### **Demand management**

Demand Management recognises that a TEI will need to target the management of changing demand rather than managing growth.

Each TEI should:

- List the student numbers by faculty over the past 3 years and forecast likely future student numbers.
- Identify any demographic changes that are likely to influence services provided considering a 10 year planning horizon.
- Use the collected utilisation data to determine whether buildings are being well utilised considering their design capacity, current student numbers and the likely future demand for courses.
- Identify possible projects and non-asset initiatives to address utilisation shortfalls, i.e. buildings that are under or over utilised.

## Levels of service

The term 'levels of service' is used in the NAMS guidance material. Within a TEI context, this is interpreted as whether facilities and equipment is sufficient to support high quality learning outcomes. The key principle is to document the cost of the current 'level of service', i.e. delivering learning outcomes, and to assess whether it is consistent with the strategic objectives. It is also important to document the likely changes to the level of service based on changing demographics, utilisation, service delivery, and other issues that could influence how the assets are managed.

Each TEI should:

- Document the current and aspirational levels of service provided at the TEI in the following way:
  - Objectives – what the organisation wants to achieve, e.g. quality of facilities.
  - Statement – detailed description of the objective, e.g. provide a modern learning environment.
  - Target – specified level of performance for each level of service statement, e.g. 90% of all learning spaces at the required standard.
  - Current measure – current level of performance, e.g. 60% of learning spaces are to the specified standard for a modern learning environment.
  - Shortfall – the 'gap' between the current level of performance and the target.
  - Current strategy to address shortfall, e.g. learning space refurbishment programme.
- Define the quality standards required for each building managed by the TEI considering condition, modernisation, utilisation and functionality.
- List possible changes to the way faculties deliver services over the next 5, 10 and 20 years and describe what the possible impact of these changes could have on the assets. Consider for example:
  - New technology.
  - New service delivery models.
  - Changes in workforce availability.
  - Changes in workforce roles.
  - Changes in location/setting of service delivery.
  - Any other relevant items.

- Document the current and future faculty requirements within the existing and planned assets over the next 5, 10, and 20 years:
  - Total students by faculty.
  - International students by faculty.
  - Remote learning students by faculty.
  - Staff to student ratios.
  - Educational efficiency measures, i.e. number of years attending, proportion of lecture hours, portion of lab hours, etc.
  - Utilisation of Faculty assets, i.e. comparing the design capacity to actual use.
  - Any other relevant items.
- Considering the above, list the known shortfalls.

### **Asset and cost information – asset description**

Each TEI should describe the current assets, and each faculty will identify the assets they need to deliver their services. The Supporting Departments will describe the more generic assets beyond the faculties, e.g. infrastructure assets and use the information from the Faculty AMPs to develop specific capital asset strategies and justifications.

The following points should be considered:

- Provide an overview of the current valuations by asset type and by department.
- Provide an assessment of the capital replacement value at a building level, and summarise condition, utilisation, and seismic compliance.
- As part of the performance assessment, provide an indication of which buildings have current and future functionality shortfalls, e.g. Building A is being used for automotive trades and was designed for office administration.
- Record the utilisation of buildings down to room level if possible. The core requirement is for a judgement of utilisation, which will be backed up by evidence when implementing advanced asset management.
- List the annual average operational costs associated with each building over the past 3 years and report by reactive maintenance, planned maintenance, energy use, and general operational costs.

## Analysis and scoping of possible projects

Each TEI should analyse the asset data, levels of service shortfalls and demand management shortfalls to determine the possible projects that could be required to address the current and future shortfalls. As an example, the type of analysis may include:

- Predictive modelling to determine the remaining life of specific assets and groups of assets based on condition, age, expected lives and criticality. For example, an old asset that is critical to service delivery and in a poor condition may only have a few years of remaining life before it needs to be renewed or replaced. The 'lifecycle analysis' should determine the optimum time for scheduled work considering maintenance regimes and the eventual full replacement of the asset or group of assets.
- Analysing the quality of building by comparing the condition and performance assessments to the desired quality. Shortfalls should be identified for each building and by quality criteria such as condition, utilisation, functionality, availability, etc.
- Considering what is currently known about possible future changes in service delivery, student projections, and other related factors, predict the floor space needed over the next 5, 10, and 20 years by faculty. Where some floor space requirements could increase, others may decrease.
- Risk analysis should also be undertaken from a macro level considering the strategic goals of the TEI.

Each TEI should document its list of projects that will address the current and future shortfalls. The list of projects will include current work in progress, budgeted procurements, projects that have been deferred, and new projects that have been scoped. For example, the 'Core' requirement is to list the cost and timing of the new projects using the high level knowledge of staff. The following points need to be considered:

- For projects and procurements above a cost threshold defined by the TEI, produce a one-page summary sheet that provides justification of the project.
- Describe why the project is needed, e.g. increased floor area to cater for a growing student numbers or refurbishment to address the deteriorating condition of the facility.
- List and briefly describe the options that were considered to have the potential to deliver similar outcomes and the process undertaken and criteria applied to select the preferred option.
- Identify the possible adverse consequences of deferring the project and state the likelihood of these happening.
- Apportion the project costs to their main drivers, e.g. increase in student numbers, changes in service delivery, condition, and modernisation.

## **Optimised decision making and strategic choices**

Each TEI should list which projects are prioritised for implementation considering affordability, funding, risks, and levels of service shortfalls. This should consider both the immediate needs and the longer term list of possible projects.

The analysis of 'strategic choices' is a critical step in the process and is made possible through comparing project scenarios. The scenario planning process allows for specific shortfalls to be addressed, recognising that the different projects (having different costs) will deliver different outcomes.

The following points should be considered by each TEI:

- Develop a summary list of shortfalls and identify the 'possible projects' that could address the shortfall recognising that one large scale project could address multiple shortfalls – the converse is also true.
- Determine which shortfalls must be addressed over the next three years. This should take into account priorities for each TEI as well as the wider sector guidelines such as risk management and affordability.
- For those high priority shortfalls that must be addressed, consider project alternatives to reduce lifecycle costs taking into account whether the project alternatives will achieve the desired outcomes. This could include capital expenditure or a non-asset solution.
- For priority projects that may need to be deferred, consider the impact of changing operations such as maintenance regimes and utilisation. Consider whether a change in the way the asset is maintained and used could partly address the shortfall.

## **Financial forecasts and affordability**

Each TEI should document how they will implement its projects considering affordability and funding.

Each TEI should:

- Build a financial forecast over 10 years considering operational and capital expenditure types associated with both committed projects and various programmes such as planned maintenance.
- Categorise expenditure so that it is aligned with project drivers and funding. For example, a like for like replacement will be associated with a renewal expenditure category whereas a replacement that could also add functionality and capacity could be categorised as new expenditure.
- Show the affordability of projects considering their capital expenditure requirements and the associated operational costs such as staff, maintenance and general operations.
- Produce a list of capital expenditure projects showing how they will be funded and in which years. Funding to include proposed sources such as Public Private

Partnerships, Energy Efficiency and Conservation Authority grant subsidies, local government funding etc.

### **Advanced requirements**

Moving to Advanced Asset Management requires a movement from 'judgement' to 'evidence' based planning. Although providing evidence to justify possible projects can be a challenging process, this is a fundamental principle of good asset management planning. An evidence based approach would involve collecting the data, analysing it, determining possible projects, and making decisions that factor in affordability and funding options. All of this requires good quality supporting information, process, systems and people.

The advanced state is described in detail throughout the TEC CAM Standard and further defined in Appendix A.

## Capital Asset Management performance assessment

### Overview

CAM performance in the tertiary education sector is assessed using the approach and the definitions described in the International Infrastructure Management Manual (IIMM) and the 2006 National Asset Management Steering group (NAMS) Property Manual using the following five point scale.

Table 2: TEC and CAM Standards	
TEC CAM Standard	Generic CAM Standard
Unawareness	Core
Awareness	
Systematic Approach (Knowledge)	Moderate
Competent	
Excellence	Advanced

The definition of each standard level within each attribute area is described in Appendix A.

### Improvement programme

The following matrix has been used to summarise a TEI's current level of performance in each attribute area of the TEC CAM Standard. The matrix also identifies the planned target level of performance over the next Investment Plan cycle.

Individual assessments of each TEI are contained in the CAM Improvement Plan.

Table 3: CAM Maturity Matrix										
Attribute area	Core				Mod				Adv	
Strategic Objectives and Outcomes	■	■	■	■	■	■	■	■	■	■
Managing demand	■	■	■	■	■	■	■	■	■	■
Levels of service	■	■	■	■	■	■	■	■	■	■
Description of Assets	■	■	■	■	■	■	■	■	■	■
Current and Future Shortfalls	■	■	■	■	■	■	■	■	■	■
Asset and Non-asset Solutions	■	■	■	■	■	■	■	■	■	■
Optimised Decision Making	■	■	■	■	■	■	■	■	■	■
Financial Forecasts	■	■	■	■	■	■	■	■	■	■

Feedback and improvement										
Planning Assumptions / Confidence Levels										
Risk management										
Organisational commitment										

## Implementation of the standard

### Commitment from the governing body

The implementation of the CAM Standard will only be successful and effective if its importance and purpose is communicated clearly at all levels within the tertiary education sector. The TEC has worked with the TEI sector to develop the TEC CAM Standard and define the level of performance expected within the TEI sub-sector and by Government.

In order for the CAM Standard to be effective at an individual TEI level, Councils must clearly communicate their commitment and expectations. The Improvement Plan resulting from the implementation of the standard will provide focus, but Councils will need to ensure that capital management is embedded within core business processes and that TEIs are working towards achieving the level of performance defined in the TEC CAM Standard.

### People

People are the critical element in any asset management system. Staff and students will benefit from the services and outputs delivered by the organisation. Staff will also be responsible for resourcing the asset management processes – providing and maintaining the asset information, identifying and assessing the asset shortfalls, and selecting and implementing the agreed solutions.

Effective capital asset management requires the collection and analysis of asset data for the purpose of supporting long term and robust decision making. The information is generally held in dedicated asset registers, and capital projects are identified, scoped and scheduled progressively to form a long term view of asset requirements over 20 years. Asset registers should reflect the nature of the assets and their potential lives, for example long life buildings and utilities infrastructure.

Asset management systems require appropriate resources at all levels within an organisation and a sharing of information between academic, management and facility staff to understand how best to meet the educational and organisational objectives. In large TEIs this may mean dedicated positions responsible for capital asset management activities, decision making, and reporting. In smaller TEIs, key aspects of asset management must be integrated into the roles and responsibilities of existing staff. These staff should establish internal steering groups to develop and implement capital asset management policy, business processes and to support capital asset management decision making.

In a TEI context, the following roles are likely to have elements of capital asset management incorporated into their position descriptions:

- Chief Executive Officer.
- Chief Financial Officer.
- Facilities Manager.
- Heads of School or Faculty Directors.

Staff with specific CAM responsibilities may require training to provide them with the necessary knowledge and skills. Their performance within these roles should be reflected in individual performance reviews and indicators.

## Business process

CAM is an integral component of good business management and planning, using data and information generated within the organisation for long term planning and to assist decision making. It should therefore be an integrated part of core business processes to ensure asset data are maintained and the information used to support robust decision making and planning. Key elements include:

- The update of asset registers to reflect acquisitions and disposals.
- The update of asset data to reflect replacement costs and economic lives.
- The update of asset data to reflect maintenance activities and condition surveys.
- The collection and analysis of historical asset cost information to inform decision making.
- The use of asset information to identify, scope, and schedule operation budgets, maintenance and capital projects.
- The use of asset information to develop annual and strategic budgets.

The following diagram from the NAMS Property Manual illustrates the links between asset data and decision making. It shows the transformation of data to knowledge, and the use of knowledge to make and implement decisions.

**Figure 5: Relationship Between Asset Data and Decision Making**



## **Data and information**

A TEI should articulate its specific business needs and review how it is using its existing data before starting to collect new data. The existing data (including documenting organisational knowledge) could be sufficient to address the Core requirements of the TEC CAM Standard. However, it is likely that further data will be required to move towards the evidence based planning environment. This can be progressively implemented.

A TEI should develop an information management strategy (IMS) that considers how the data are stored, used, analysed, reported and updated over time. Computer systems such as the financial, asset register, project management, asset planning and maintenance systems could all hold different data and may need unique identifiers to ensure links.

## **Computer systems**

The size and potential complexity of the CAM process generally requires the use of computer and other information systems. There is a range of tools and solutions available to meet this requirement, but it is important to recognise that the underlying data and information will often exist in different forms and formats. It is also important to recognise that the level of detail must be sufficient to address the underlying business requirements and reflect the intended use of the information.

TEIs will generally hold information about major assets in a fixed asset register. These registers will typically have a financial and accounting focus and often lack the level of detail necessary for the operational aspects of CAM planning and reporting. Dedicated asset registers may be required to hold and maintain asset data at an increased level of detail. For example, high cost and high criticality equipment data should be recorded at a component or major subassembly level. Asset registers would typically hold the following type of asset data and information:

- Identifiers.
- Descriptions.
- Purchase or construction dates.
- Expected and economic lives.
- Location information.
- Geographic information data.
- Replacement costs.
- Condition and performance.
- Required service levels.
- Criticality and risk.
- Levels of confidence in the information.

- Planned projects.
- Replacement strategies and the associated drivers.

The asset information may be held in one or a number of different information systems. TEI staff should have the tools to update and use the asset information properly. It is important to understand:

- The overarching data and information requirements.
- Where that data and information will be held.
- The links between systems and data.
- The processes in place to ensure data and information is understood, maintained and updated.

## **The TEC CAM toolkit**

The TEC has developed a set of draft template tools for TEIs to use to support CAM planning and internal reporting. These tools are optional for TEIs to use and are not required by the TEC for formal data collection purposes. They are available to download from [the TEC](#) and include:

- A spreadsheet to help record service level justification for capital intentions. This template can be used to justify and describe the drivers for investment.
- Asset information spreadsheet to record the state of existing assets.
- A 'capital intentions' spreadsheet to summarise long term capital intentions, the associated drivers, and the funding requirements.
- A standard Asset Management Plan template to provide a consistent approach to reporting.

## Appendix A – Definition of standard levels by attributable area

### Know your services

Attribute Area 1 - Strategic Objectives and Outcomes	
CAM Performance	Description
Unawareness	<ul style="list-style-type: none"> <li>• High level definition of vision and objectives within key planning documents.</li> <li>• Limited information about the strategies necessary to achieve the vision and objectives.</li> <li>• Limited information about the link between assets and achievement of the vision and objectives.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Definition of vision and objectives within key planning documents.</li> <li>• High level definition of the strategies necessary to achieve the vision and objectives.</li> <li>• High level description of the link between assets and achievement of the vision and objectives.</li> <li>• Identification of key stakeholders.</li> <li>• Identification of key community and other government organisations.</li> <li>• Identification of adjacent network providers.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Clear definition of vision and objectives within key planning documents.</li> <li>• Clear definition of the strategies necessary to achieve the vision and objectives.</li> <li>• Clear definition of the link between assets and achievement of the vision and objectives.</li> <li>• Identification of key stakeholders and evidence of consultation.</li> <li>• Identification of key community and other government organisations and a description of the interaction.</li> <li>• Identification of adjacent network providers and a description of the interaction.</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Clear definition of vision and objectives within key planning documents, and linkages with faculty and asset plans.</li> <li>• Clear definition of the strategies and tactics necessary to achieve the vision and objectives, and linkages with faculty or sub-group plans.</li> </ul>

<b>Attribute Area 1 - Strategic Objectives and Outcomes</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Clear definition of the link between assets and achievement of the vision and objectives described at a faculty or sub-group level.</li> <li>• Identification of key stakeholders and evidence of consultation and integration with planning processes.</li> <li>• Identification of adjacent network providers and evidence of consultation and integration with planning processes.</li> <li>• Identification of key government and community organisations, e.g. local councils, schools, hospitals, and commerce, and some evidence of collaboration and planning.</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Clear definition of vision and objectives within key planning documents, and linkages with faculty and asset plans.</li> <li>• All planning assumptions and constraints described, and the linkages with demand, assets, and expenditure identified (including sensitivity analysis).</li> <li>• Clear definition of the strategies and tactics necessary to achieve the vision and objectives, and linkages with faculty or sub-group plans.</li> <li>• Clear definition of the link between assets and achievement of the vision and objectives described at a faculty or sub-group level, i.e. linkage between academic facilities and the academic programmes.</li> <li>• Identification of key stakeholders and evidence of strong consultation and integration with planning processes.</li> <li>• Identification of adjacent network providers and industry standard setting bodies and evidence of strong consultation and integration with planning processes.</li> <li>• Documented understanding of link with other government and community organisations, e.g. local councils, schools, hospitals, and commerce, and evidence of consultation and integration with planning processes.</li> </ul>

<b>Attribute Area 2 - Managing Demand</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Identification of the potential changes in demand and the associated drivers e.g. demographics, technology, and methods of teaching delivery.</li> <li>• Identification of the tactics and strategies available to address changes in demand.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Documentation of the likely changes in demand and the associated drivers over an initial five year period, e.g. demographics, technology, and methods of teaching delivery.</li> <li>• Documentation of the feasible tactics and strategies available to address the changes in demand.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Documentation of the likely changes in demand and the associated drivers over an initial ten year period, e.g. demographics, technology, and methods of teaching delivery.</li> <li>• Documented understanding of current and future supply capacity and solutions.</li> <li>• Documentation of the feasible tactics and strategies available to address changes in demand.</li> <li>• Documentation of the analysis of factors that affecting demand, including sensitivity analysis.</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Documented understanding of current and likely future changes in demand and the associated drivers beyond ten years, e.g. demographics, technology, and methods of teaching delivery, based on robust statistical projections and stakeholder engagement.</li> <li>• Documented understanding of current and likely future supply capacity and solutions for each faculty or course.</li> <li>• Documented understanding of the likely changes in demand and the associated drivers beyond ten years based on robust statistical projections and stakeholder engagement.</li> <li>• Documented understanding of the factors that influence demand.</li> <li>• Documented understanding of the feasible tactics and strategies available to address changes in demand.</li> <li>• There is confidence in demand projections.</li> </ul>

<b>Attribute Area 2 - Managing Demand</b>	
<b>CAM Performance</b>	<b>Description</b>
Excellence	<ul style="list-style-type: none"> <li>• Documented understanding of current and likely future changes in demand and the associated drivers beyond ten years, e.g. demographics, technology, and methods of teaching delivery, based on robust statistical projections and stakeholder engagement.</li> <li>• Documented understanding of current and likely future supply capacity and solutions for each faculty or course.</li> <li>• Documented understanding of the likely changes in demand and the associated drivers beyond ten years based on robust statistical projections and stakeholder engagement, and independent review.</li> <li>• Documented understanding and analysis of the factors that influence demand, including sensitivity analysis.</li> <li>• Documented understanding and analysis of the feasible tactics and strategies available to address changes in demand.</li> <li>• High level of confidence in demand projections.</li> </ul>

<b>Attribute Area 3 - Levels of Service</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Limited or no description of the level of service and quality necessary to address strategic objectives.</li> <li>• Limited or no stakeholder or wider community consultation carried out.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• High level description of the level of service and quality necessary to address strategic objectives.</li> <li>• Level of service management (response, frequency, appearance, use requirements, availability, safety, cleanliness, quality, etc.) is considered.</li> <li>• Level of service measures are reported objectively.</li> <li>• Student, employer and community needs assessment is done</li> </ul>

<b>Attribute Area 3 - Levels of Service</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• There is an understanding of levels of service required by external agencies, e.g. local authority conditions of consent (car parking).</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Strategic level of service statements reflect the strategic objectives and are linked to objectives.</li> <li>• Operational level of service statements define how the service will be managed (response, frequency, appearance, use requirements, availability, safety, cleanliness, quality, etc.).</li> <li>• There are some linkages between programmes of expenditure and the agreed levels of service but it is difficult to isolate the associated costs.</li> <li>• There is some reporting of level of service measures and other key performance indicators.</li> <li>• Levels of services are informally linked to growth but not fully documented, i.e. reflecting the change in level of service with future changes in demand.</li> <li>• Processes are in place to engage with the community to define customer requirements, i.e. students, industry, community, and TEC.</li> <li>• There is good understanding and adoption of levels of service required by external agencies, e.g. local authority conditions of consent (car parking).</li> <li>• The agreed levels of services are generally understood throughout the organisation.</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Level of service statements reflect the strategic objectives and are linked to vision objectives.</li> <li>• There are tactical level of service statements that define the nature and quantum of service provided (size, capacity, quantity, proximity, safety, environment, comfort, etc.).</li> <li>• There are operational levels of service statements that define how the service will be managed (response, frequency, appearance, use requirements, availability, safety, cleanliness, quality, etc.)</li> <li>• There are linkages between programmes of expenditure and the agreed levels of service.</li> <li>• There is reporting of level of service measures and other key performance indicators linked to strategic objectives.</li> </ul>

<b>Attribute Area 3 - Levels of Service</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Levels of services are linked to growth through demand analysis, i.e. reflecting the change in level of service with future changes in demand.</li> <li>• The need for new assets and other projects is linked to the required levels of service.</li> <li>• Processes are in place to engage with all stakeholders to define customer requirements, i.e. students, industry, community, and TEC.</li> <li>• Customer needs assessment is done.</li> <li>• There is a documented understanding and adoption of levels of service required by external agencies, e.g. local authority conditions of consent (car parking).</li> <li>• The agreed levels of services are defined and generally understood throughout the organisation.</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Level of service statements reflect the strategic objectives and are clearly linked to the vision and objectives.</li> <li>• There are tactical level of service statements that clearly define the nature and quantum of service provided (size, capacity, quantity, proximity, safety, environment, comfort, etc.)</li> <li>• There are operational levels of service statements that clearly define how the service will be managed (response, frequency, appearance, use requirements, availability, safety, cleanliness, quality, etc.)</li> <li>• There are linkages between programmes of expenditure and the agreed levels of service in sufficient detail to isolate the associated costs.</li> <li>• There are linkages between budgets and changing levels of service.</li> <li>• There is regular reporting of level of service measures and other key performance indicators. These include quantitative and qualitative measures and accurately reflect strategic objectives.</li> <li>• Levels of services are linked to growth through demand analysis, i.e. reflecting the change in level of service with future changes in demand.</li> <li>• Level of service capacities are reported to assess relationship between asset capacity and demand for</li> </ul>

<b>Attribute Area 3 - Levels of Service</b>	
<b>CAM Performance</b>	<b>Description</b>
	<p>service over the long term.</p> <ul style="list-style-type: none"> <li>• The need for new assets and other projects is linked to the required levels of service.</li> <li>• Processes are in place to engage with all stakeholders to define customer requirements, i.e. students, industry, community, and TEC.</li> <li>• Customer needs assessment. Customer segmentation is understood and there is a process to manage the needs of special customers, e.g. international students or those with disabilities.</li> <li>• There is a documented understanding and adoption of levels of service required by external agencies, e.g. local authority conditions of consent (car parking).</li> <li>• Support and maintenance contracts reflect the level of service requirements, e.g. cleaning quality and frequency, cafe hours of operation, and security provisions.</li> <li>• The agreed levels of services are clearly defined and understood throughout the organisation.</li> </ul>

### Know your assets and costs

<b>Attribute Area 4 - Description of Assets</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Assets not segregated to property, infrastructure and specialist assets.</li> <li>• Information held at a global level within the fixed asset register.</li> <li>• General understanding of the quality of main facilities, infrastructure or specialist assets.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Assets segregated by type (building, infrastructure, specialist).</li> <li>• Information held within the fixed asset register at a building, infrastructure, and specialist asset type level.</li> <li>• Documented information about the quality of facilities assets summarised at an asset type, e.g. external</li> </ul>

<b>Attribute Area 4 - Description of Assets</b>	
<b>CAM Performance</b>	<b>Description</b>
	<p>fabric, internal fabric, building systems, site features.</p> <ul style="list-style-type: none"> <li>• Documented information about the quality of the infrastructure and major specialist assets at an asset level, e.g. water supply, electrical distribution, workshops.</li> <li>• Asset registers updated in an ad hoc manner.</li> <li>• Assumed levels of confidence for some data.</li> <li>• Judgement based lifecycle plans exist for major assets, but with a focus on short term and operational maintenance.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Information held for all major facilities, infrastructure, and specialist assets in a dedicated asset register, including valuation, depreciation, replacement cost, construction dates, utilisation, criticality, and risk.</li> <li>• Documented information about the quality of facilities assets summarised at an asset component type level, e.g. external walls, internal floors, mechanical systems, walkways.</li> <li>• Documented information about the quality of major specialist assets at an asset type level, e.g. workshop equipment, particularly in terms of reliability, supportability, and obsolescence.</li> <li>• Summary list of infrastructure assets and associated quantities and locations, and information their quality, particularly in terms of age, condition, reliability, capacity, and remaining.</li> <li>• Evidence based lifecycle plans exist for all assets, including refurbishment, renewal, upgrade, and maintenance, and the associated budgets.</li> <li>• Processes in place to systematically update the asset data, information and associated forecasts.</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Detailed list of all buildings and their functions, infrastructure assets and all specialist assets within a dedicated asset register.</li> <li>• Documented detailed information about the quality of facilities assets held at an asset component level, e.g. external paint, roof tiles, carpet, lights, master switch boards.</li> <li>• Documented information about the quality of major specialist assets at an asset level, e.g. lathe,</li> </ul>

<b>Attribute Area 4 - Description of Assets</b>	
<b>CAM Performance</b>	<b>Description</b>
	<p>particularly in terms of reliability, supportability, and obsolescence.</p> <ul style="list-style-type: none"> <li>• Documented list of infrastructure assets and associated quantities and locations, and information their quality, particularly in terms of age, condition, reliability, criticality capacity, and remaining life.</li> <li>• There are strategic plans for infrastructure assets including use and integration.</li> <li>• Understanding of the historical operating and maintenance costs based on collected data.</li> <li>• Valuation information held for each asset, including replacement costs, market value, construction dates, and quality based depreciation, i.e. ODRC.</li> <li>• Description of asset utilisation, asset criticality, and risk mitigation, and a programme to address deficiencies and mitigate risk.</li> <li>• Processes in place to systematically update the asset data, information and associated forecasts, including the transfer of key asset information between the asset register and the financial asset registers.</li> <li>• Evidence based lifecycle plans exist for each building and asset group, including refurbishment, renewal, upgrade and maintenance, i.e. the associated budgets are based on the assessed condition and performance, and the calculated replacement cycle.</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Detailed list of all buildings and their functions, infrastructure assets and all specialist assets within a dedicated asset register.</li> <li>• Facilities information is held at a functional sub-building level (i.e. teaching areas, administration area, laboratory areas) within a dedicated asset register updated systematically and in a timely manner.</li> <li>• Documented detailed information about the quality of facilities assets held at an asset component level, e.g. external paint, roof tiles, carpet, lights, master switch boards.</li> <li>• Detailed list of all infrastructure assets held with associated quantities geospatially at a functional sub-asset level (i.e. boilers, generators, waste water, and storm water) within a dedicated asset register.</li> </ul>

<b>Attribute Area 4 - Description of Assets</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• There are strategic plans for infrastructure assets including use, improvement and integration.</li> <li>• Documented information about the quality of major specialist assets at an asset level, e.g. lathe, particularly in terms of reliability, supportability, and obsolescence.</li> <li>• Understanding of the historical operating and maintenance costs based on collected data, and the information is used to influence lifecycle planning and decision making.</li> <li>• Valuation information is held for each asset component, including replacement costs, market value, construction dates, and quality based depreciation, i.e. ODRC.</li> <li>• Record of asset utilisation, asset criticality, and risk mitigation, and evidence of a programme to address deficiencies and mitigate risk.</li> <li>• Processes in place to systematically update the asset data, information and associated forecasts, including the transfer of key asset information between the asset register and the financial asset registers.</li> <li>• Evidence based lifecycle plans exist for each building and asset group, including refurbishment, renewal, upgrade and maintenance, i.e. the associated budgets are based on the assessed condition and performance, and the calculated replacement cycle.</li> </ul>

### Know what you need

<b>Attribute Area 5 - Current and Future Shortfalls</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Limited understanding and documentation of current and future asset shortfalls.</li> <li>• Limited understanding and documentation of the factors affecting the demand and supply for courses, e.g. technological obsolescence, legislation and policy, network provisions, and economy.</li> </ul>

<b>Attribute Area 5 - Current and Future Shortfalls</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• No knowledge of infrastructure and external constraints.</li> <li>• Limited understanding and documentation of likely asset condition and performance shortfalls.</li> <li>• Short term focus of capital project identification, i.e. &lt; 3 years.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Basic but inconsistent understanding and documentation of current and future asset shortfalls.</li> <li>• Basic but inconsistent understanding and documentation of future demographic changes.</li> <li>• Basic but inconsistent understanding and documentation of the factors affecting the demand and supply for courses, e.g. technological obsolescence, legislation and policy, network provisions, and economy.</li> <li>• Some knowledge of infrastructure and external constraints.</li> <li>• Basic but inconsistent understanding and documentation of likely asset condition and performance shortfalls both now and in the future.</li> <li>• Short term focus of capital project identification, i.e. &lt; 5 years.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Sound understanding and documentation of current and future asset shortfalls.</li> <li>• Sound understanding and documentation of future demographic changes and description of the impact on current and future assets.</li> <li>• Sound understanding, measurement and documentation of the factors affecting the demand and supply for courses (technology, economic, policy, service delivery), and description of the impact on current and future assets.</li> <li>• Sound understanding and documentation of the broader factors affecting the need for current and future assets, i.e. network provision, energy efficiency, sustainability, CPTED, and seismic compliance.</li> <li>• Plans for infrastructure and external requirements for the future exist.</li> <li>• Sound understanding and documentation of likely asset condition and performance shortfalls described at a major asset level, e.g. building.</li> </ul>

<b>Attribute Area 5 - Current and Future Shortfalls</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Medium term focus of capital project identification, i.e. &lt; 10 years.</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Detailed understanding and documentation of current and future asset shortfalls at a TEI level.</li> <li>• Detailed understanding and documentation of future demographic changes and description of the impact on current and future assets at a TEI level.</li> <li>• Detailed understanding, measurement and documentation of the factors affecting the demand and supply for courses, and description of the impact on current and future assets at a TEI level.</li> <li>• Detailed understanding and documentation at a TEI level of the broader factors affecting the need for current and future assets, i.e. network provision, energy efficiency, sustainability, CPTED, and seismic compliance.</li> <li>• Planning and projects exist for infrastructure and external requirements.</li> <li>• Detailed understanding and documentation of likely asset condition and performance shortfalls described at a major asset component level, e.g. building fabric type, building fabric component, or building system.</li> <li>• Medium term focus of capital project identification, i.e. &gt; 10 years.</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Detailed understanding and documentation of current and future asset shortfalls at a faculty level and integrated into a TEI view.</li> <li>• Detailed understanding, documentation and regular measures of future demographic changes and description of the impact on current and future assets at a faculty level and integrated into a TEI view.</li> <li>• Detailed understanding and documentation of the factors affecting the demand and supply for courses, and description of the impact on current and future assets at a Faculty level.</li> <li>• Detailed understanding and documentation at a Faculty level of the broader factors affecting the need for current and future assets, i.e. network provision, energy efficiency, sustainability, CPTED, and seismic compliance.</li> </ul>

<b>Attribute Area 5 - Current and Future Shortfalls</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Integrated campus development plan(s) exist, and external requirements for future changes are known and planned, including customer expectations of value added services (shopping, car parking etc.)</li> <li>• Detailed understanding and documentation of likely asset condition and performance shortfalls and solutions described at an asset component level.</li> <li>• Long term focus of capital project identification, i.e. &gt; 20 years.</li> </ul>

### Know what's possible

<b>Attribute Area 6 - Asset and Non-asset Solutions</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Capital projects based on judgement, generated without prioritisation.</li> <li>• Limited or no formal documented options analysis.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• List of possible projects based largely on sound judgement.</li> <li>• Predictive models used to determine the likely future timing of replacements and renewals</li> <li>• Capital projects generated and prioritised by an established capital committee.</li> <li>• There is evidence that non-asset solutions are considered as part of the decision making process.</li> <li>• The interaction between solutions and existing processes is considered.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• List of possible projects with supporting information, some based on evidence.</li> <li>• Predictive models at a high level based on condition, age, criticality and quality standards are applied to assets and groups of assets to determine the likely future timing of replacements and renewals.</li> <li>• Projects scoped according to an established process, considering the identified asset shortfalls.</li> <li>• Evidence that non-asset solutions are considered as part of the decision making process, including</li> </ul>

<b>Attribute Area 6 - Asset and Non-asset Solutions</b>	
<b>CAM Performance</b>	<b>Description</b>
	<p>network and community integration and collaboration.</p> <ul style="list-style-type: none"> <li>• Non-capital solutions considered including external funding.</li> <li>• Interoperability of solutions is considered.</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• List of possible projects that are scoped and have supporting information that is based on evidence.</li> <li>• Predictive models based on condition, age, criticality and quality standards are applied to assets and groups of assets to determine the likely future timing of replacements and renewals.</li> <li>• Evidence of a formal process covering the identification and scoping of capital projects at a TEI level.</li> <li>• Evidence of a formal process to consider non-asset and non-capital solutions at a TEI level.</li> <li>• 'Do nothing' options considered and consequences documented.</li> <li>• Interoperability of solutions is understood.</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Detailed and well maintained list of possible projects that are well scoped and have supporting information that is based on evidence.</li> <li>• Predictive models based on condition, age, criticality and quality standards are applied to assets and groups of assets to determine the likely future timing of replacements and renewals.</li> <li>• Evidence of a formal process covering the identification and scoping of capital projects at a Faculty level but integrated to form a TEI view, i.e. identifying projects at a Faculty level but prioritising at a TEI level.</li> <li>• Evidence of a formal process to consider non-asset and non-capital solutions, e.g. operating maintenance initiatives, solutions as part of the decision making process.</li> <li>• Benchmarking and solutions from other TEIs have been considered and analysed.</li> <li>• Interoperability of solutions is understood and documented.</li> </ul>

## Know what to do now

<b>Attribute Area 7 - Optimised Decision Making (Prioritisation and Decision-making)</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Prioritisation according to professional judgement.</li> <li>• Limited definition of capital prioritisation policies or processes.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Decisions based on informal capital prioritisation policies and processes</li> <li>• The capital programme is based on the evaluation and ranking using robust criteria to assess options.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Evidence of an established options analysis and project prioritisation process.</li> <li>• Some evidence of stakeholder consultation within the decision making process.</li> <li>• Whole of life costs are considered</li> <li>• Decision are made with known imperfect knowledge often subject to constraints</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Evidence of an established options analysis and project prioritisation process, considering key organisational factors, i.e. asset criticality and risk.</li> <li>• Clear evidence of stakeholder consultation within the decision making process.</li> <li>• Clear record of the capital intentions decision making process, including the considerations, decisions, and project prioritisation over a long term (&gt;10 years).</li> <li>• Life-cycle costs are considered and analysed in terms of operation/capital tradeoffs.</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Evidence of an established options analysis and project prioritisation process, considering key organisational factors, i.e. asset criticality and risk.</li> <li>• Clear evidence of stakeholder consultation within the decision making process.</li> <li>• Detailed record of the drivers for each capital project and the associated whole of life funding requirements.</li> <li>• Detailed record of the capital intentions decision making process, including the considerations, decisions, and project prioritisation for all projects over the life of the asset.</li> </ul>

<b>Attribute Area 7 - Optimised Decision Making (Prioritisation and Decision-making)</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Market differentiation is understood and considered in decision making, i.e. reflecting how project selection and capital investment will affect the organisation's position relative to other network providers.</li> <li>• Future proofing considered within the decision making process, including governance and policy.</li> </ul>

### Know your funding options

<b>Attribute Area 8 - Financial Forecasts (Funding Requirements and Options)</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Short term, i.e. &lt;3 years, financial summary based on judgement.</li> <li>• Limited linkages between capital projects, the underlying drivers, and the allocation of funding.</li> <li>• Limited consideration of consequential operational expenditure, impact on valuations, or affordability.</li> <li>• Limited consideration of alternative funding mechanisms.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Short term, i.e. &lt;5 years, financial summary based largely on judgement.</li> <li>• Some discussion about linkages between capital projects, the underlying drivers, and the allocation of funding associated with the long term capital requirements.</li> <li>• Some discussion about consequential operational expenditure, impact on valuations, or affordability.</li> <li>• Some discussion about alternative funding mechanisms associated with the long term capital requirements.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Medium term, i.e. &lt;10 years, financial summary that shows the capital expenditure, operational expenditure and revenue categories. The information is based on a mix of evidence and judgement, updated annually, and included in the AMP.</li> <li>• Evidence of discussions about linkages between capital projects, the drivers, and the allocation of funding associated with the long term capital requirements.</li> </ul>

<b>Attribute Area 8 - Financial Forecasts (Funding Requirements and Options)</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Evidence of discussions about consequential operational expenditure, impact on valuations, and affordability associated with the long term capital requirements.</li> <li>• Evidence of discussions about alternative funding mechanisms associated with the long term capital requirements.</li> <li>• Financial forecasts of long term capital requirements to summarise funding requirements, funding mechanisms, and the associated drivers.</li> <li>• Financial assumptions are documented.</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Medium term, i.e. &gt;10 years, financial summary that shows the capital expenditure, operational expenditure and revenue categories. The information is based on evidence, updated annually, and included in the AMP.</li> <li>• Clear records of the linkages between capital projects, the drivers, and the allocation of funding associated with the long term capital requirements.</li> <li>• Clear identification of the consequential operational expenditure, impact on valuations, and affordability associated with the long term capital requirements.</li> <li>• Clear records of consideration of alternative funding mechanisms and the associated risks associated with the long term capital requirements.</li> <li>• Financial forecasts of long term capital requirements to provide a detailed description of funding requirements, funding mechanisms, and the associated drivers.</li> <li>• Financial assumptions are understood and confidence reported</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Long term, i.e. &gt;20 years, financial summary that shows the capital expenditure, operational expenditure and revenue categories. The information is based on evidence, updated annually, and included in the AMP.</li> <li>• Clear understanding and documentation of the linkages between capital projects, the drivers, and the</li> </ul>

<b>Attribute Area 8 - Financial Forecasts (Funding Requirements and Options)</b>	
<b>CAM Performance</b>	<b>Description</b>
	<p>allocation of funding associated with the long term capital requirements.</p> <ul style="list-style-type: none"> <li>• Clear understanding and documentation of the consequential operational expenditure, impact on valuations, and affordability associated with the long term capital requirements.</li> <li>• Clear understanding and documentation of alternative funding mechanisms and the consideration of the associated risks and risk mitigation initiatives (including PPP/EPC/debt/asset sales) associated with the long term capital requirements.</li> <li>• Detailed financial forecasts of long term capital requirements to provide a complete description of funding requirements, funding mechanisms, and the associated drivers.</li> <li>• Sensitivity of financial assumptions is analysed and the level of confidence is documented.</li> </ul>

### Capital Asset Management System Performance

<b>Attribute Area 9 - Feedback and Improvement</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Asset and attribute information is known to have shortfalls. These are not quantified.</li> <li>• Asset Management Plans (AMP) are irrelevant, out of date or do not exist.</li> <li>• Improvements are performed in an ad hoc manner.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Completeness of asset and attribute information is quantified.</li> <li>• AMPs exist but are not used.</li> <li>• Improvements are coordinated into a planning document.</li> <li>• KPIs are reviewed</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Completeness of asset and attribute information is documented and included in improvement plans.</li> <li>• Levels of confidence in the asset data are reported.</li> </ul>

<b>Attribute Area 9 - Feedback and Improvement</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• AMPs meet the 'Core' standard as defined in the International Infrastructure Management Manual (IIMM).</li> <li>• Improvement plans are updated and monitored.</li> <li>• KPIs and service levels are reviewed</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Asset and attribute information has only immaterial gaps.</li> <li>• Levels of confidence in the asset data are reported and improvements noted.</li> <li>• AMPs are approaching the 'Advanced' standard as defined in the International Infrastructure Management Manual (IIMM).</li> <li>• Improvement plan actions are clearly scoped and monitored.</li> <li>• KPIs and service levels are reviewed regularly</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Asset and attribute information is complete and continually updated.</li> <li>• Levels of confidence in the asset data are reported and improvements ongoing.</li> <li>• AMPs meet the 'Advanced' standard as defined in the International Infrastructure Management Manual (IIMM).</li> <li>• Improvement tasks are clearly scoped, plans are updated, monitored and benchmarking occurs to continually improve.</li> <li>• KPIs and service levels are continually reviewed to ensure they are accurate, appropriate, useful and systematic.</li> </ul>

<b>Attribute Area 10 - Planning Assumptions and Confidence Levels</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• Key planning assumptions are identified but limited links to the strategic or asset requirements.</li> <li>• Low level of confidence in the planning assumptions and/or for a period less than three years.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• Key planning assumptions are identified and linked to the strategic or asset requirements.</li> <li>• High level of confidence in the planning assumptions for first 3 years and moderate for a further 5 years.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• Evidence that assumptions are being addressed and improved through a planned programme.</li> <li>• Key planning assumptions are identified and linked to the strategic or asset requirements.</li> <li>• Key planning assumptions and constraints described, and the linkages with demand, assets, and expenditure identified.</li> <li>• High level of confidence in the planning assumptions for first 5 years and moderate for a further 10 years, including: <ul style="list-style-type: none"> <li>○ asset condition data, asset performance data, and asset inventory data</li> <li>○ demand forecasts</li> <li>○ expenditure forecasts</li> </ul> </li> </ul>
Competence	<ul style="list-style-type: none"> <li>• Some evidence that assumptions are being addressed and improved through regular iterations of the AMP</li> <li>• Key planning assumptions are identified and linked to the strategic or asset requirements based on potential scenarios e.g. zero growth, medium growth, and high growth.</li> <li>• Key planning assumptions and constraints described, and the linkages with demand, assets, and expenditure identified for each scenario.</li> <li>• High level of confidence in the planning assumptions for first 10 years and moderate for a further 10 years, including: <ul style="list-style-type: none"> <li>○ asset condition data, asset performance data, and asset inventory data</li> </ul> </li> </ul>

<b>Attribute Area 10 - Planning Assumptions and Confidence Levels</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>○ demand forecasts</li> <li>○ expenditure forecasts</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>● Evidence that assumptions are being addressed and improved through annual iterations of the AMP.</li> <li>● Key planning assumptions are identified and linked to the strategic or asset requirements based on potential scenarios e.g. zero growth, medium growth, and high growth.</li> <li>● Key planning assumptions and constraints described and justified, and the linkages with demand, assets, and expenditure identified for each scenario.</li> <li>● High level of confidence in the planning assumptions for first 10 years and moderate for a further 10 years, including: <ul style="list-style-type: none"> <li>○ asset condition data, asset performance data, and asset inventory data</li> <li>○ demand forecasts</li> <li>○ expenditure forecasts</li> </ul> </li> </ul>

<b>Attribute Area 11 - Risk Management</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>● Limited or no evidence of risk management influencing asset management or asset management decision making.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>● Risk management is used to identify critical assets and the associated risks, and to develop and implement mitigation strategies.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>● Corporate risk management processes exist and there is evidence they influence the identification of critical assets and the development of risk management strategies, including disaster recovery and business continuity plans, maintenance strategies, and replacement strategies.</li> </ul>

<b>Attribute Area 11 - Risk Management</b>	
<b>CAM Performance</b>	<b>Description</b>
Competence	<ul style="list-style-type: none"> <li>• Corporate risk management processes are an integral part of core business processes and planning.</li> <li>• There is an active programme to identify and manage risk across the organisation, with appropriate links to capital asset planning and decision making.</li> <li>• Critical assets are identified, and the associated risks and risk management activities are identified and documented, including disaster recovery and business continuity plans, maintenance strategies, and replacement strategies.</li> <li>• There is a regular review of risk and risk management activities.</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• Corporate risk management processes are an integral part of core business processes and planning.</li> <li>• There is an active programme to identify and manage risk across the organisation, with appropriate links to capital asset planning and decision making.</li> <li>• Critical assets are identified, and the associated risks and risk management activities are identified and documented, including disaster recovery and business continuity plans, maintenance strategies, and replacement strategies.</li> <li>• There is a programme of regular risk management review and monitoring at key levels of the organisation, including Council, Executive, and faculty.</li> <li>• There are people and resources dedicated to the management of organisational risk and the associated risk management strategies.</li> </ul>

<b>Attribute Area 12 - Organisational Commitment</b>	
<b>CAM Performance</b>	<b>Description</b>
Unawareness	<ul style="list-style-type: none"> <li>• There is little evidence of organisational awareness of the benefits of capital asset management.</li> <li>• There is a diffused decision-making framework for investing in assets.</li> </ul>

<b>Attribute Area 12 - Organisational Commitment</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• Assets are not seen as important enablers of education service delivery.</li> <li>• There is limited consideration given to relationship between organisational structure and asset management.</li> </ul>
Awareness	<ul style="list-style-type: none"> <li>• There is general awareness of the benefits of capital asset management at key points in the organisation.</li> <li>• Assets are seen as a tactical resource to enable the delivery of education services.</li> <li>• The importance of bring investment decisions and asset management together is recognised at an organisational level.</li> <li>• There is visibility and transparency of the relationships and decisions being developed for asset management.</li> <li>• The definition of roles, responsibilities and authority levels for asset management is being put in place within the organisational structure.</li> <li>• There are one or more individuals with adopted informal advocacy role for asset management at tactical level.</li> </ul>
Systematic Approach	<ul style="list-style-type: none"> <li>• There is good awareness of capital asset management at key points in the organisation, and there are programmes in place to address some of the requirements although not necessarily in a coordinated and integrated manner.</li> <li>• Organisational capacity and capability has some but not all core requirements for strategic and tactical asset management in place.</li> <li>• An asset management champion has been appointed, and there are people within the organisation at appropriate levels with the necessary asset management skills and knowledge.</li> <li>• Established organisation and associated resources with allocated asset management responsibilities.</li> <li>• Evidence of Council linkages with capital asset management. An Asset Management Steering Group is</li> </ul>

<b>Attribute Area 12 - Organisational Commitment</b>	
<b>CAM Performance</b>	<b>Description</b>
	<p>being established, and links with other management committees are being defined.</p> <ul style="list-style-type: none"> <li>• There are linkages between time-based investment decisions, asset management policy, and strategy, including sustainability.</li> <li>• There is visibility and transparency of relationships and decisions.</li> </ul>
Competence	<ul style="list-style-type: none"> <li>• There is good awareness of capital asset management across the organisation, and there are coordinated and integrated programmes in place to address the associated requirements.</li> <li>• Organisational capacity and capability covers all requirements of asset management.</li> <li>• An asset management Champion is embedded at the Executive level with executive authority, and there are clearly defined roles, responsibilities and authority levels embedded within the organisation.</li> <li>• Evidence of Council involvement in key capital asset management decision making, and there are established organisation and associated resources with allocated asset management responsibilities.</li> <li>• An Asset Management Steering Group has been established, and links with other management committees are defined.</li> <li>• The skills requirements for asset management are communicated to all relevant staff throughout structure.</li> <li>• There is visibility and transparency of relationships and decisions.</li> </ul>
Excellence	<ul style="list-style-type: none"> <li>• There is a very strong awareness of capital asset management across the organisation, and there are coordinated and integrated programmes in place to address the associated requirements.</li> <li>• Capital asset management is an integrated part of core business processes, with the associated programmes coordinated and integrated and the expectations clearly communicated across the organisation.</li> <li>• An asset management Champion is embedded at the Executive level with executive authority, and there are clearly defined roles, responsibilities and authority levels embedded within the organisation.</li> </ul>

<b>Attribute Area 12 - Organisational Commitment</b>	
<b>CAM Performance</b>	<b>Description</b>
	<ul style="list-style-type: none"> <li>• There are appropriate governance, capacity and capability, policies and procedures, information systems, performance and audit enablers in place.</li> <li>• All asset management capability and capacity requirements are in place, with structure roles and responsibilities embedded, reflecting the size and nature of asset base.</li> <li>• Evidence of Council governance and involvement in capital asset management decision making, and there are established organisation and associated resources with allocated asset management responsibilities.</li> <li>• An Asset Management Steering Group has been established and is actively working to identify and manage future capital requirements. Its activities are linked to other management and planning activities.</li> <li>• Senior managers are fully conversant with business technology and sustainability implications of asset management.</li> </ul>



