

# iLembe DM, Mandeni LM and KwaDukuza LM



## INFRASTRUCTURE ASSET MANAGEMENT - PRACTICE ASSESSMENT & IMPROVEMENT PLAN

19 AUGUST 2019

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PREPARED BY: IMQS SOFTWARE

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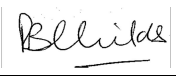
## APPROVAL AND CHANGE HISTORY

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Practice Assessment Report	29 April 2019	Caroline van Heerden	Discussion of the practice assessment results and the improvement plan agreed with the participating municipalities at a workshop on 1 March 2019.
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## ABBREVIATIONS

<b>AM</b>	Asset Management
<b>AMP</b>	Asset Management Plan
<b>AMS</b>	Asset Management System
<b>CAPEX</b>	Capital Expenditure
<b>CIDMS</b>	Cities' Infrastructure Delivery and Management System
<b>EAM</b>	Enterprise Asset Management
<b>IDP</b>	Integrated Development Plan
<b>IIMM</b>	International Infrastructure Maintenance Manual
<b>IDM</b>	iLembe District Municipality
<b>ISO</b>	International Standards Organisation
<b>KDM</b>	KwaDukuza Local Municipality
<b>KPI</b>	Key Performance Indicators
<b>KZN DETEA</b>	KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs
<b>MLM</b>	Mandeni Local Municipality
<b>O&amp;M</b>	Operations and Maintenance
<b>SECO</b>	Switzerland State Secretariat for Economic Affairs
<b>SOW</b>	Scope of Work
<b>WBS</b>	Work Breakdown Structure

## SUMMARY

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This report indicates the outcomes of an assessment of infrastructure asset management practices conducted as part of the Vuthela-Ilembe LED Programme. A practice assessment entails the evaluation of all the asset management practices that take place within the municipality. These practices are divided into six categories that are assessed by defining a score to each of the 210 criteria. The results are summarised per category and sub-categories.

The assessments of AM practice maturity were based on interviews with members from the different departments at the respective municipalities and confirmed in a workshop. There were no significant differences between the three municipalities -all are coming off a low base. Each of the municipalities obtained an “awareness” result for the following categories: strategic planning, AM Plans, and organisational tactics. While the remaining three categories (asset knowledge, systems, and capital projects and maintenance management the municipalities scored a result between “aware” and having a “systematic approach”.

Whilst competence across the full range of practice may be the ultimate objective, it will be necessary to elevate the practice iteratively across the various categories (and sub-categories) of practice, giving priority to the aspects that will have the greatest benefit in relation to the cost. Accordingly, a three-year practices improvement plan, consistent across the three municipalities was proposed. This was workshopped and supported by the respective municipalities. The first year will focus on the improvement of maintenance management efficiency and effectiveness and asset management process. Year two will focus on the implementation of enhanced, standardise and structure the asset register for strategic (physical) and tactical life cycle management improvement and asset management training. While the final year will focus on establishing enhanced, standardise project management practices, reviewing and updating Asset Management Plans (AMPs) and a Strategic Asset Management Plan (SAMP) for all immovable assets and risk management.

## TABLE OF CONTENTS

<b>1</b>	<b>Introduction and approach to the assessment .....</b>	<b>1-1</b>
1.1	Project Introduction and Background.....	1-1
	Project Consultant and Sub-Consultants / Contractors.....	1-1
	Objectives of the Assignment as per the ToR.....	1-1
	Main Project Components or Deliverables.....	1-2
	Contractual Dates .....	1-3
1.2	Purpose .....	1-3
1.3	Background .....	1-3
1.4	Approach.....	1-4
1.5	Scoring .....	1-7
<b>2</b>	<b>Industry Status .....</b>	<b>2-1</b>
<b>3</b>	<b>Current Infrastructure Management Practice .....</b>	<b>3-1</b>
3.1	Asset Knowledge.....	3-1
3.2	Strategic Planning .....	3-2
3.3	Capital and Maintenance Management .....	3-3
3.4	Asset Management Planning .....	3-4
3.5	Information Systems.....	3-5
3.6	Organisational Tactics.....	3-6
<b>4</b>	<b>AM Practices Enhancements .....</b>	<b>4-8</b>
4.1	Indicative Budget .....	4-9
<b>5</b>	<b>Data Confidence Grading .....</b>	<b>5-1</b>
<b>6</b>	<b>Conclusion.....</b>	<b>6-1</b>
<b>7</b>	<b>Annexure A - AM Practices Enhancement Results .....</b>	<b>7-2</b>

## LIST OF FIGURES

---

Figure 1-1: Project Scope	1-4
Figure 1-2: Asset Management Practices	1-5
Figure 1-3: Scope of infrastructure asset management practice assessment	1-6
Figure 3-1: Overview of practice assessment results	3-1
Figure 3-2: Existing Asset Knowledge practice - assessment results	3-2
Figure 3-3: Existing Strategic Planning Practice - assessment results	3-3
Figure 3-4: Existing Capital and Maintenance Management practice - assessment results	3-4
Figure 3-5: Existing Asset Management Planning practice - assessment results	3-5
Figure 3-6: Existing Information Systems practice - assessment results	3-6
Figure 3-7: Existing Organisational Tactics practice - assessment results	3-7
Figure 4-1: Overview of the proposed improvement in AM Practice	4-9
Figure 7-1: Asset Knowledge proposed improvement	7-2
Figure 7-2: Strategic Planning proposed improvement	7-2
Figure 7-3: Capital and Maintenance Management proposed improvement	7-3
Figure 7-4: Asset Management Planning proposed improvement	7-3
Figure 7-5: Information Systems proposed improvement	7-4
Figure 7-6: Organisational Tactics proposed improvement	7-4



## LIST OF TABLES

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Table 1-1: Scoring Framework	1-7
Table 4-1: Work Breakdown Structure	4-1
Table 5-1: Data accuracy grading framework	5-1
Table 5-2: Data confidence grade per category	5-1

# 1 INTRODUCTION AND APPROACH TO THE ASSESSMENT

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## 1.1 PROJECT INTRODUCTION AND BACKGROUND

This report is the Close-Out Report for the contract to deliver the following documentation - Portion A: asset management plans & Portion B: scoping study for an asset management system for iLembe District and KwaDukuza, Mandeni Local Municipalities as set out in the Scope of Work (SoW).

The project forms part of the Vuthela LED Programme which was officially launched on 29 November 2017 by the iLembe District Municipality, together with the Switzerland State Secretariat for Economic Affairs (SECO) and the KwaZulu-Natal Department of Economic Development, Tourism and Environmental Affairs (KZN DETEA).

The Vuthela iLembe LED Programme footprint comprises the iLembe District Municipality (IDM) and its local municipalities of KwaDukuza (KDM), Mandeni (MLM), Ndwedwe and Maphumulo. The primary purpose of the programme is improvement of the economic future of the iLembe District residents through sustainable economic growth of the local economy and the creation of higher, better and more inclusive employment and income generating opportunities. The programme comprises five components, namely:

- Public Financial Management Component.
- Municipal Infrastructure Component.
- Private Sector Development Component.
- Building Inclusive Growth Component.
- Partnership and Coordination Component.

This contract falls under the Municipal Infrastructure Component (MIC). The MIC focuses on the improvement and development of municipal infrastructure and services and has three sub-components:

- Reduced infrastructure constraints (improved scope and quality of basic infrastructure services);
- Increased planning capacity and financing strategies for an integrated and systematic expansion of (urban) infrastructure, as a basis for sustainable development of regional centres; and
- Enhanced planning and management of key infrastructure sectors.

The initial project was conducted as part of the Inception Phase of the Vuthela LED Programme, which focussed on the scoping, preparation and assessment of implementation-readiness for support projects during the Implementation Phase.

## PROJECT CONSULTANT AND SUB-CONSULTANTS / CONTRACTORS

The project consultant was IMQS Software (Pty) Ltd and the Sub-Contractor was Amaqhawe Asset Management Solution. The workshare percentage split was 90/10 respectively.

## OBJECTIVES OF THE ASSIGNMENT AS PER THE TOR

The appointment is for two particular assignments, consisting of Portion A for the development of asset management plans and Portion B for the scoping of an asset management system. Both assignments relate to the particular infrastructure functions of the IDM, KDM and MLM.

## **Objectives of the Asset Management Plan (AMP)**

The Asset Management Plan (AMP) should enable the municipality to have an overview of its infrastructure assets' worth, condition and suitability to meet current and future service requirements based on the assets' life cycle. The AMP should enable the development of a strategy to support the optimal, functional management of existing assets whilst considering the financial and technical decision-making aspects for future service requirements.

The AMP should assist in project identification and selection, thereby integrating planning and development needs to ensure efficient and effective budgeting and implementation of projects. It should aid project prioritisation when considering available budget, service levels and required service levels.

The AMP should further be aligned to the available budget and revenue of the municipality and the development objectives of the municipality.

## **Objectives of the Asset Management System**

References in this document to an Asset Management System (AMS), are considered as reference to each participating municipality's AMS. It was assumed at the time of writing the scope of work for this assignment, that there will be separate, but similar systems planned, designed and implemented in each municipality. Cognisance should however be given to the potential of information sharing, across platforms and between municipalities.

The AMS should enable the municipality to have access to detailed information on infrastructure assets' worth, condition and suitability to meet current and future service requirements based on the assets' life cycle. This means the incorporation or maintenance of the asset register, for financial and technical compliance and planning.

The AMS should enable the development of an Asset Management Plan (AMP) and strategy to support the optimal, functional management of existing assets whilst considering the financial and technical decision-making items for future services.

The AMS, through the AMP, should assist with project identification and prioritisation when considering available budget, existing service levels and required service levels. The AMS should further allow for integration with the financial management and planning of the municipality.

## **MAIN PROJECT COMPONENTS OR DELIVERABLES**

The main deliverables as extracted on the tender document page 30 are as follows:

### **C.1.1.8 Deliverables and Outputs**

The following is a summary of the list of the deliverables; refer to the prior sections for more detail.

1. Inception Report.
2. iLembe District Municipality AMP, three hard copies, one electronic copy.
3. KwaDukuza Local Municipality AMP, three hard copies, one electronic copy.
4. Mandeni Local Municipality AMP, three hard copies, one electronic copy.
5. Workshop per municipality, to discuss the financial plan and prioritisation, for inclusion in the municipal budget.
6. Workshop per municipality (IDM, KDM, MLM) to present and discuss the final AMP & results of the Scoping for an asset management system.
7. Scoping report, for the design and implementation of an Asset Management System (applies to three municipalities).
8. Attendance of tri-weekly progress meetings and provision of meeting notes.
9. Submission of weekly progress reports.
10. Close-out report.
11. Presentation to the Municipal Infrastructure Forum.
12. Presentation to the Vuthela Programme PSC.

## **CONTRACTUAL DATES**

IMQS Software (Pty) Ltd was officially appointed on the 08<sup>th</sup> August 2018. Project duration was for 5 months.

## **1.2 PURPOSE**

This report indicates the outcomes of an assessment of infrastructure asset management practices conducted as part of the Vuthela-Ilembe LED Programme. An overview is provided of the process followed, the assessment results that evaluate the nature and level of maturity of the current management practices, and the proposed improvement plan.

## **1.3 BACKGROUND**

The programme has three beneficiary municipalities: Mandeni Local Municipality (MLM), KwaDukuza Local Municipality (KDM), and iLembe District Municipality (IDM).

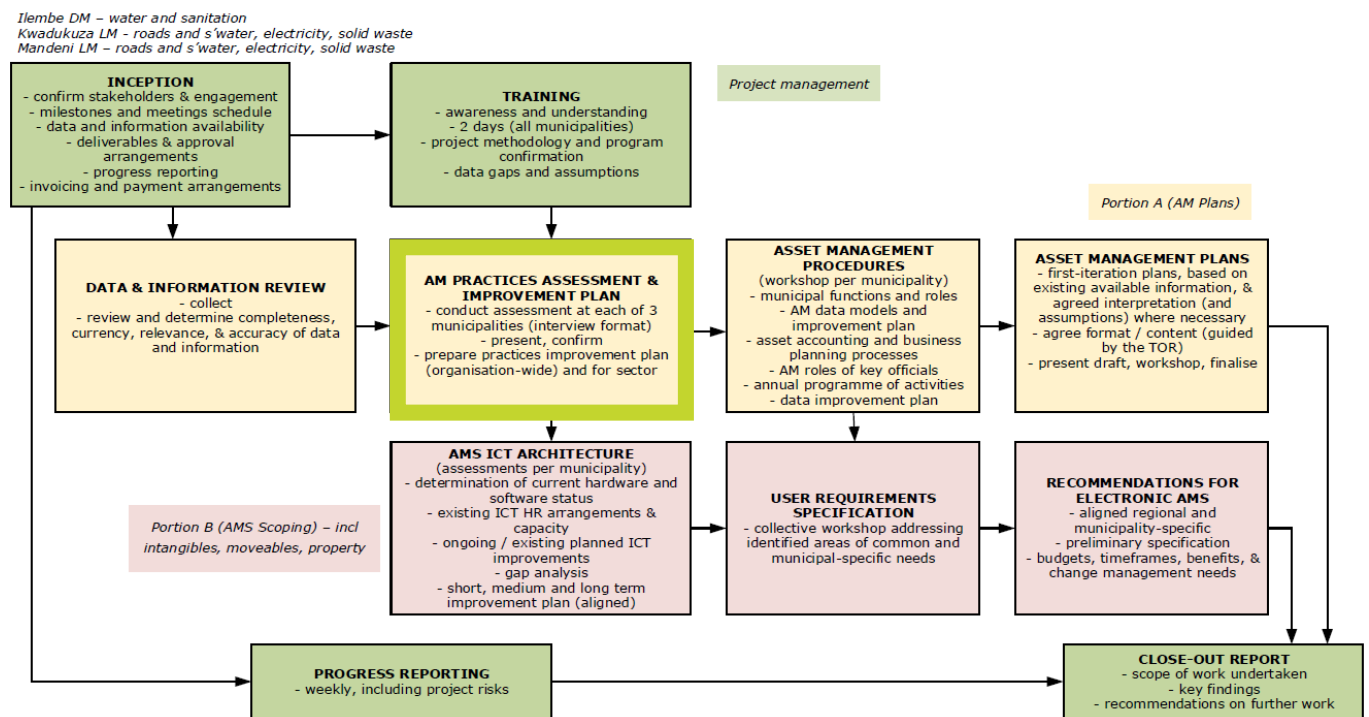
Whilst the scope includes financial asset management (AM) practice (such as that contemplated in Generally Recognised Accounting Standards – GRAP), the total ambit of internationally recognised practice focusses more dominantly on physical asset management. In the case of municipalities, this relates to the management of infrastructure that supports one of its most fundamental mandates - service delivery.

IMQS was appointed on the Vuthela iLembe LED Programme (VILP/I/010) to develop asset Management Plans and conduct System Scoping for iLembe District Municipality, Mandeni Local Municipality, and KwaDukuza Local Municipality. The full scope

can be seen in **Figure 1-1**. The scope item covered in this document is highlighted in green. The portion of the scope addressed in this document is the development of *AM Practices Assessment & Improvement Plan*. In preparing the initial findings, it became evident that existing practice maturity was similar across the participating municipalities, and the technical sectors (electricity, roads and storm-water, and water and sanitation). It was decided therefore to prepare a combined assessment, flagging, where appropriate, any significant differences. Initial findings were presented and confirmed with representatives of the participating municipalities during the workshop held at the Ocean Reef Hotel in Zinkwazi on 28 February 2019.

One of the stated programme objectives was that the practices, moving forward, should be aligned and standardised as much as possible. In line with this and noting the substantially common level of current maturity across the municipalities, a proposed AM practices improvement plan was presented and supported on 1 March 2019, the second day of the workshop.

**Figure 1-1: Project Scope**

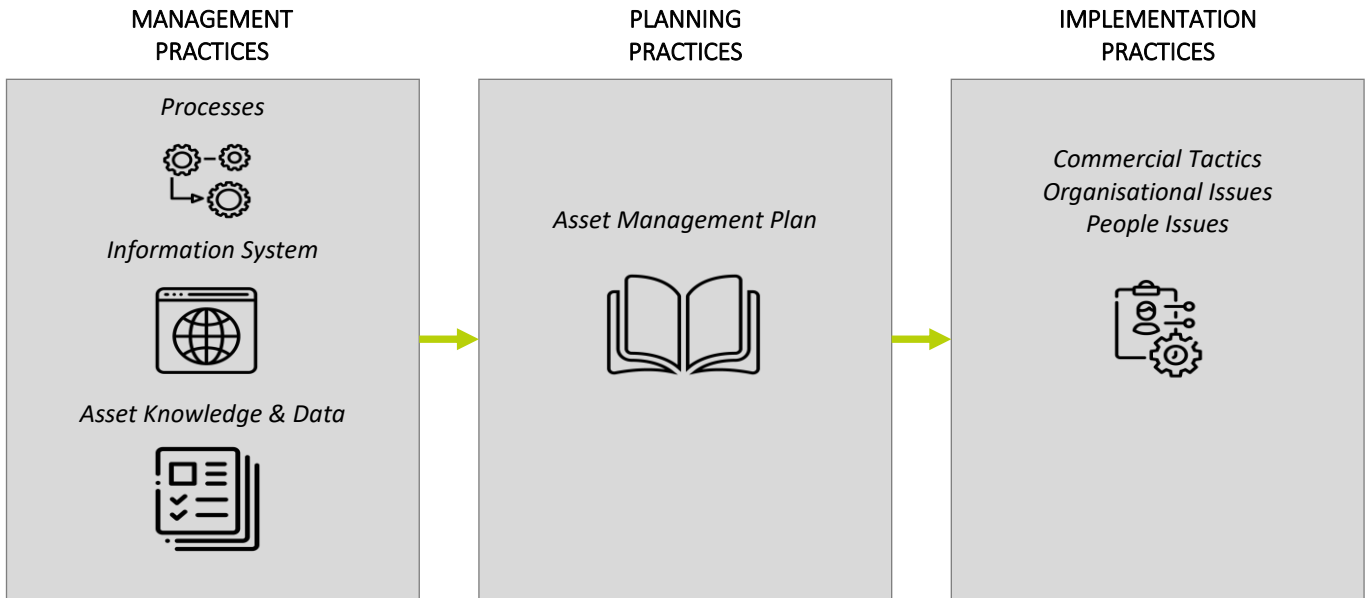


**1.4 APPROACH**

The key elements of life-cycle asset management practice are indicated in **Figure 1-2**, and can be summarised as follows:

- **business processes** used in the implementation of AM activities (including strategic planning, data collection, asset operations and maintenance and capital work practices);
- **information systems** to support (and often replicate) AM processes and store/ manipulate data;
- **asset data and knowledge**, its appropriateness, reliability and accessibility; and
- **implementation strategies** including contractual, organisational, and people issues.

Figure 1-2: Asset Management Practices



The assessment of immovable asset management practices is aimed at identifying non-existent or less than optimal practices that require establishment, and/or improvement to meet legislative requirements and good management practice, appropriate to the asset management objectives and operational environment.

The assessment was done by conducting an assessment at each of 3 municipalities and their respective technical departments through review of documentation provided and interviews. A score was given to each of the 210 criteria based on the scoring framework shown in **Figure 1-3**.

Six recognized categories and sub-categories of asset management were assessed, as indicated in **Figure 1-3**. The criteria were developed based on the International Infrastructure Maintenance Manual (IIMM), supplemented with additional aspects from ISO 55001 (requirements for AM systems).

**Figure 1-3: Scope of infrastructure asset management practice assessment**



Based on ISO 55000 the following benefits can be expected when implementing improved asset management practices:

- Improved financial performance
- Managed risk
- Improved services and outputs
- Demonstrated social responsibility
- Demonstrated compliance
- Enhanced reputation
- Improved organisational sustainability
- Improved organisational efficiency and effectiveness

## 1.5 SCORING

A consistent scoring framework is adopted across all categories as indicated in Table 1-1. Each score is weighted according to the relative importance of the criterion. The target practice for each criterion is also determined.

**Table 1-1: Scoring Framework**

Rating	Description	Score	Process	Information systems	Asset knowledge (Data & plans)
1	Innocence	0	No process exists, but never do this	No system exists	No results are seen. No confidence in the information. Planning based on very large unsupported assumptions.
2	Awareness	25	Minimal documentation. Ad hoc procedures. Occasionally do this.	The manual system exists or plans for automated systems are in place. Some very basic user needs are met.	Minimal results, long way to go. Very low data confidence.
3	Systematic approach	45	Semi-formal process. Completed on an as-needed basis for critical programs and activities.	The automated system exists. The basic user needs to be met.	Some results, still below expectations. Low data confidence.
4	Competence	70	A formal process exists and documented but still evolving. Often do this on many programs.	A good system in place. Widely available. All key user needs to be met.	Good results, getting there. Reasonable data confidence.
5	Excellence	85	The formal documented process, well tested and followed. Usually, do this, deviated from only in exceptional circumstances.	The strong system in place. Nearly all user needs to be met.	Excellent results, still some room for improvement. Good level of data confidence.
6	Best possible	100	Strictly formal process. Always do this: it's a standard operating procedure. Process heavily emphasized, not deviated from.	State of the art system in place. All user needs to be met.	Unparalleled results, a total success. Very high level of confidence.



## 2 INDUSTRY STATUS

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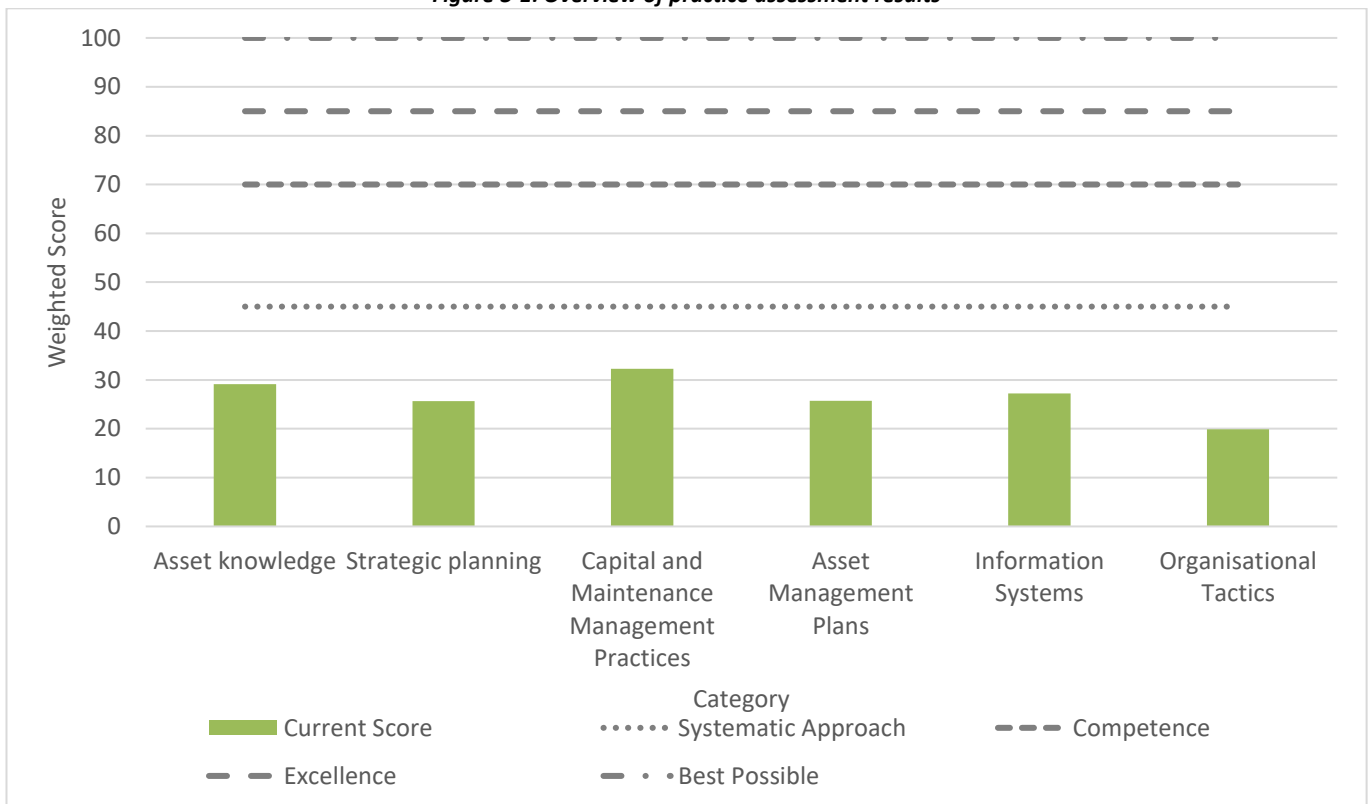
Municipalities in South Africa municipalities are generally emerging from a relatively low level of asset management practice maturity, especially in the field of *physical* asset management, though there are some pockets of excellence. Strong leadership is an essential ingredient, and given the scope of improvements required, it needs to be sustained not just in the short-term, but over the medium to long term for tangible benefits and a turnaround in performance to be achieved. Improved integration between different functions and management levels within a municipality is typically another key need - breaking down the organizational silos. Solutions are often centered on providing systems, reporting improved and relevant information, though people issues such as clarification of roles and responsibilities, and developing competency, capacity and organizational culture generally also need significant strengthening.

### 3 CURRENT INFRASTRUCTURE MANAGEMENT PRACTICE

This is the first assessment done for each of the participating municipalities. No significant differences were identified between the three municipalities. As a result, the same findings are relevant to all three municipalities.

**Figure 3-1** shows the results for achieved for each of the practice assessment categories. In three of the six categories (strategic planning, AM Plans, and organisational tactics) the municipalities scored a weighted average equal or below “awareness”. In the remaining three categories (asset knowledge, systems, and capital projects and maintenance management the municipalities scored a weighted average between “aware” and having a “systematic approach”. Improvement needs are across the board, and significant.

**Figure 3-1: Overview of practice assessment results**

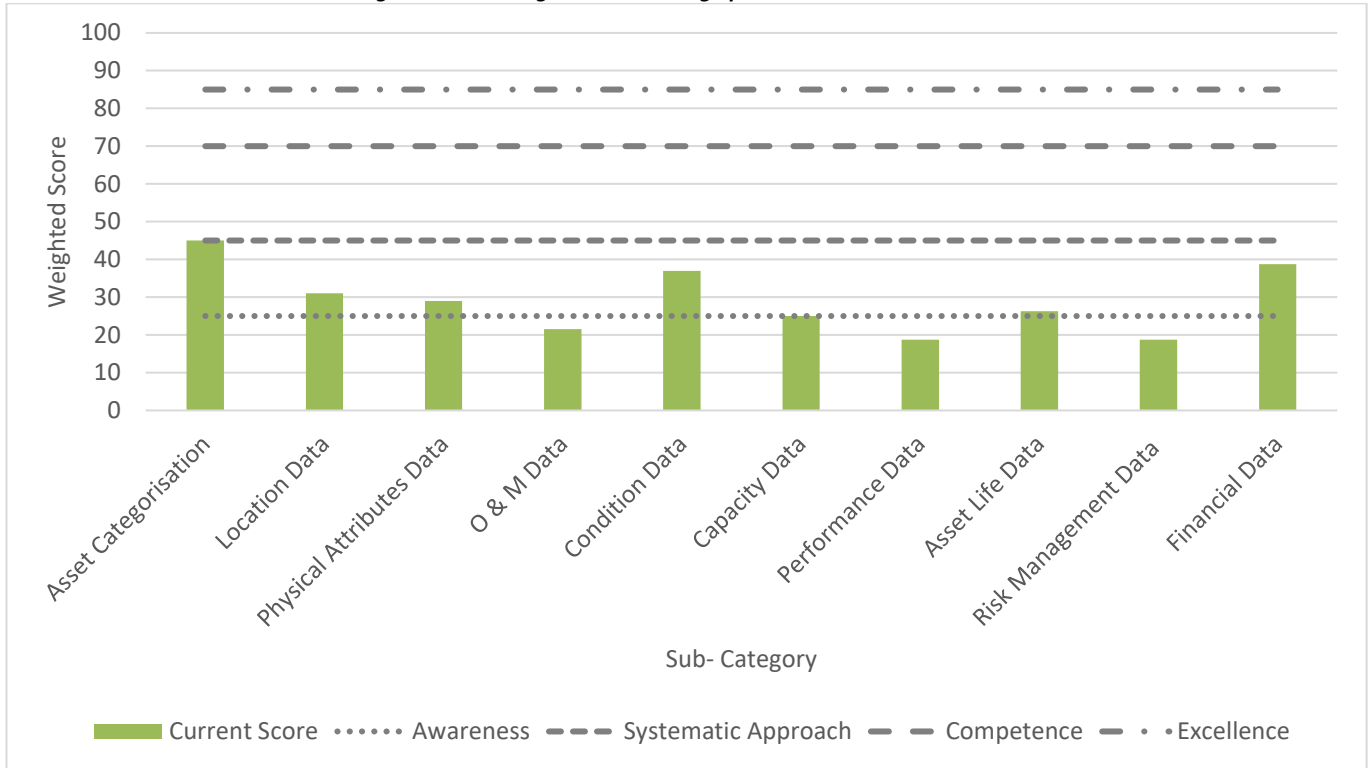


The relative strengths and weaknesses are discussed in the sections below. Current “Strengths” are identified as criteria that have a rating of 3 (45%) or more. This is equivalent to the systematic approach score category (though this is below the minimum competence grade of 4). “Weaknesses” were identified as criteria where the municipalities received a rating below 3.

#### 3.1 ASSET KNOWLEDGE

The Asset Knowledge category of practice assesses how well an organisation understands and has access to relevant asset attribute data and information to support asset management processes. The evaluation includes an assessment of the extent to which the required practice has been documented and the extent to which it is normally used in the organisation. It also includes an assessment of the quality of data relating to asset categorisation and hierarchy, location, physical attributes, operations and maintenance data, condition data, performance, capacity and use data, as well as summary data generated on lifecycle needs, asset age and expected life.

Figure 3-2: Existing Asset Knowledge practice - assessment results



As noted above, the municipalities’ existing practice with respect to the overall category of Asset Knowledge is low. Three of the subcategories, Asset Categorisation, Condition Data and Financial Data are approaching strong. Performance, risk and O&M management data were ranked the lowest.

The following strengths were identified:

- Recording of the creation date
- Cost data at asset creation

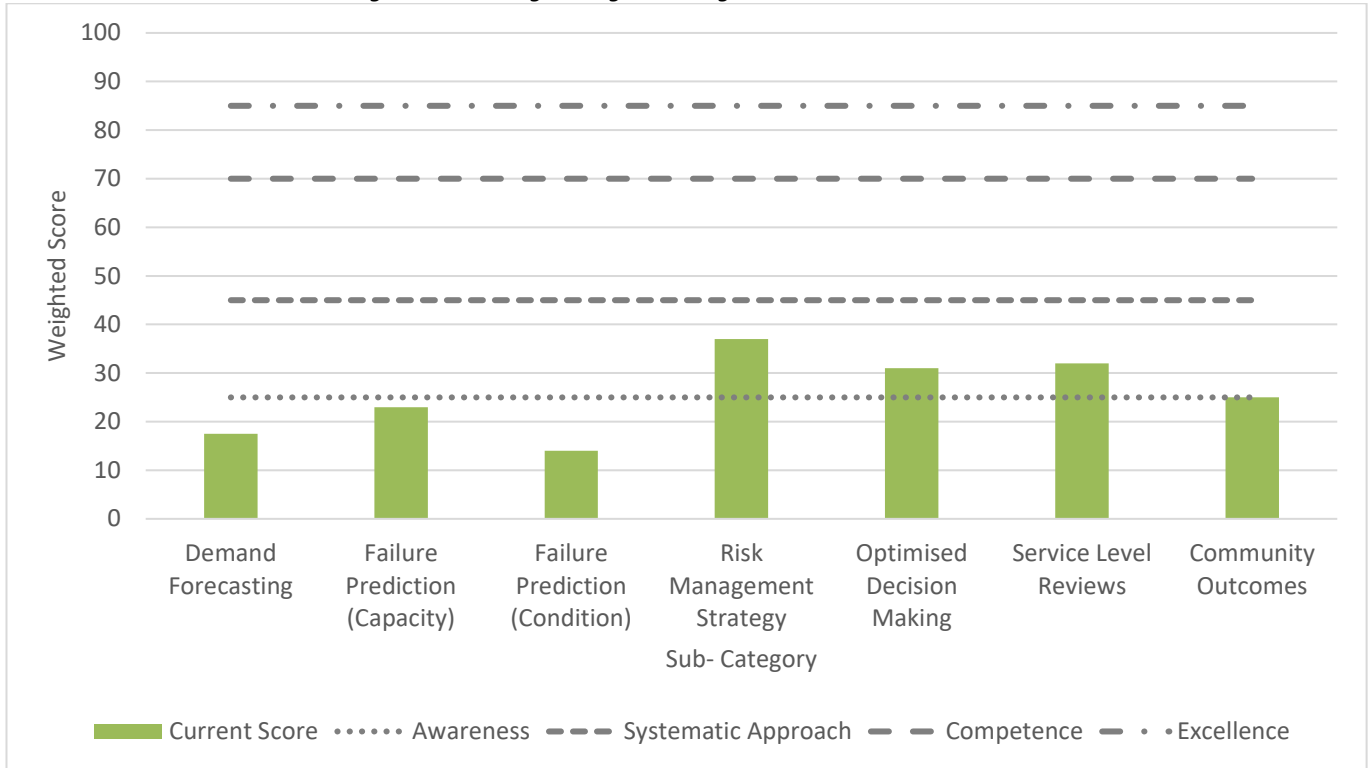
The following gaps were identified:

- Recording O&M activities logged against assets
- Documentation of asset performance measures
- The physical life of assets estimated based on condition, capacity and performance information
- Identification of critical assets

### 3.2 STRATEGIC PLANNING

The practice category of Strategic Planning relates to the municipalities’ practice in the preparation of long-term, high-level strategies as a context for the preparation of tactical and operational plans. It assesses the knowledge fields included in the planning process, how well the topics have been documented, and how broadly and consistently these are applied in normal management operations. The following sub-categories are assessed: failure prediction, risk management, optimised decision making, service level reviews, long term CAPEX evaluation and long-term financial planning.

Figure 3-3: Existing Strategic Planning Practice - assessment results



The municipalities’ overall practice in Strategic Planning was assessed to be low. Risk management Strategy practice scored the highest but was still not considered a strength. Failure Prediction based on condition had the lowest score.

The following pockets of relative strength were identified:

- Evaluation of asset capacity versus demand
- Comparison of asset performance against target standards
- The utilisation of the current asset condition data to predict future
- Availability of a corporate risk policy
- Reviews of levels of service

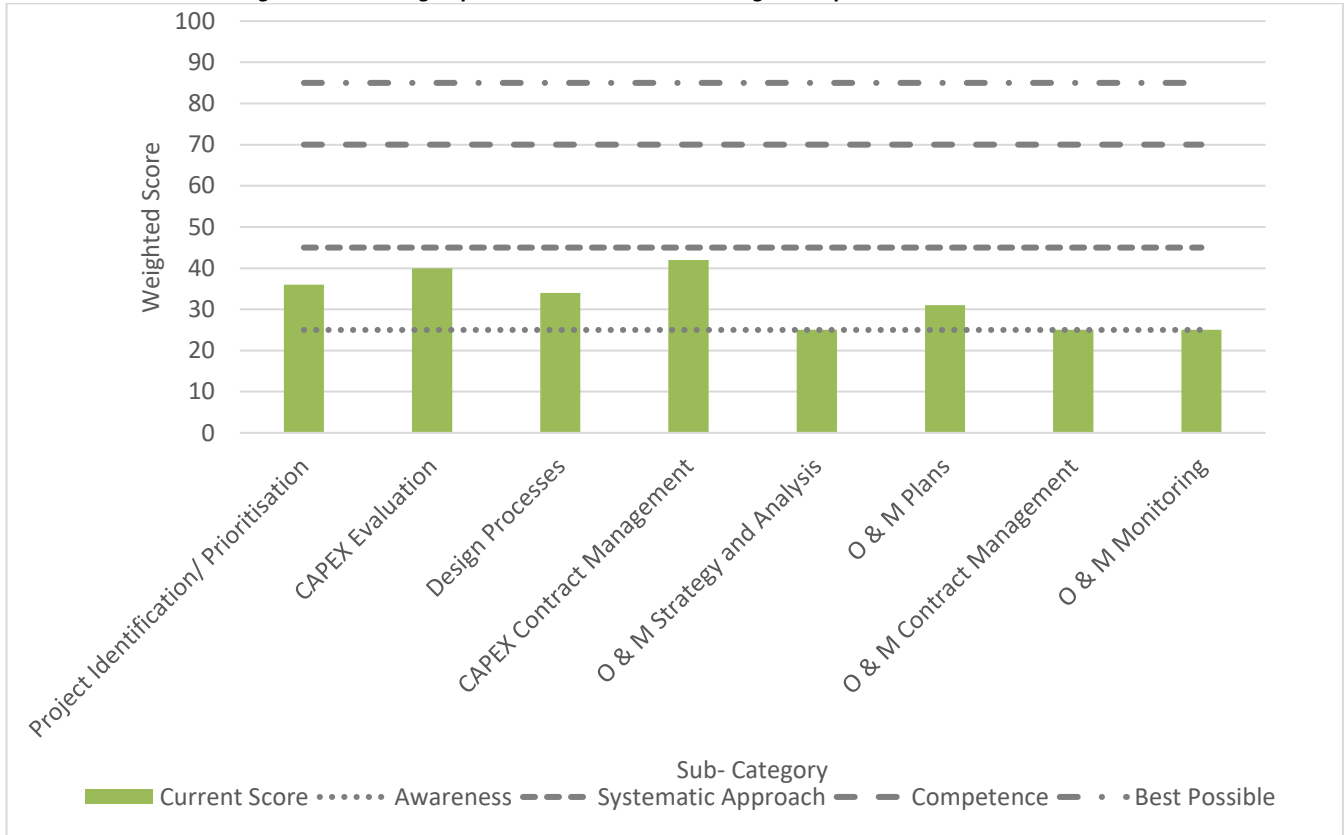
The most significant gaps were identified as follows:

- Compilation of various demand forecast scenarios and identification of the risks associated with each scenario
- Conducting customer surveys
- Compilation of failure predations based on asset condition

### 3.3 CAPITAL AND MAINTENANCE MANAGEMENT

The Capital and Maintenance Management category include the evaluation of the organisations’ processes (and documentation thereof) of all activities involved in the acquisition, project implementation, operations and maintenance of assets. The evaluation includes the existence and quality of documentation and how extensively it is used in normal operations. It includes assessment of the following sub-categories: project identification, contract monitoring and control, design and construction standards, asset handover, asset rationalisation, maintenance strategies, operation and maintenance manuals and emergency response plans.

Figure 3-4: Existing Capital and Maintenance Management practice - assessment results



CAPEX Evaluation and CAPEX Contract Management scored the highest in this category, though neither, overall, could be considered strong. The balance of the municipalities’ practice in this category was weak.

The following pockets of relatively strong practice were identified:

- Project identification process
- Proposed projects aligned with LOS requirements
- CAPEX evaluation quantification of the impact on community outcomes
- Management of contract works
- Handover processes

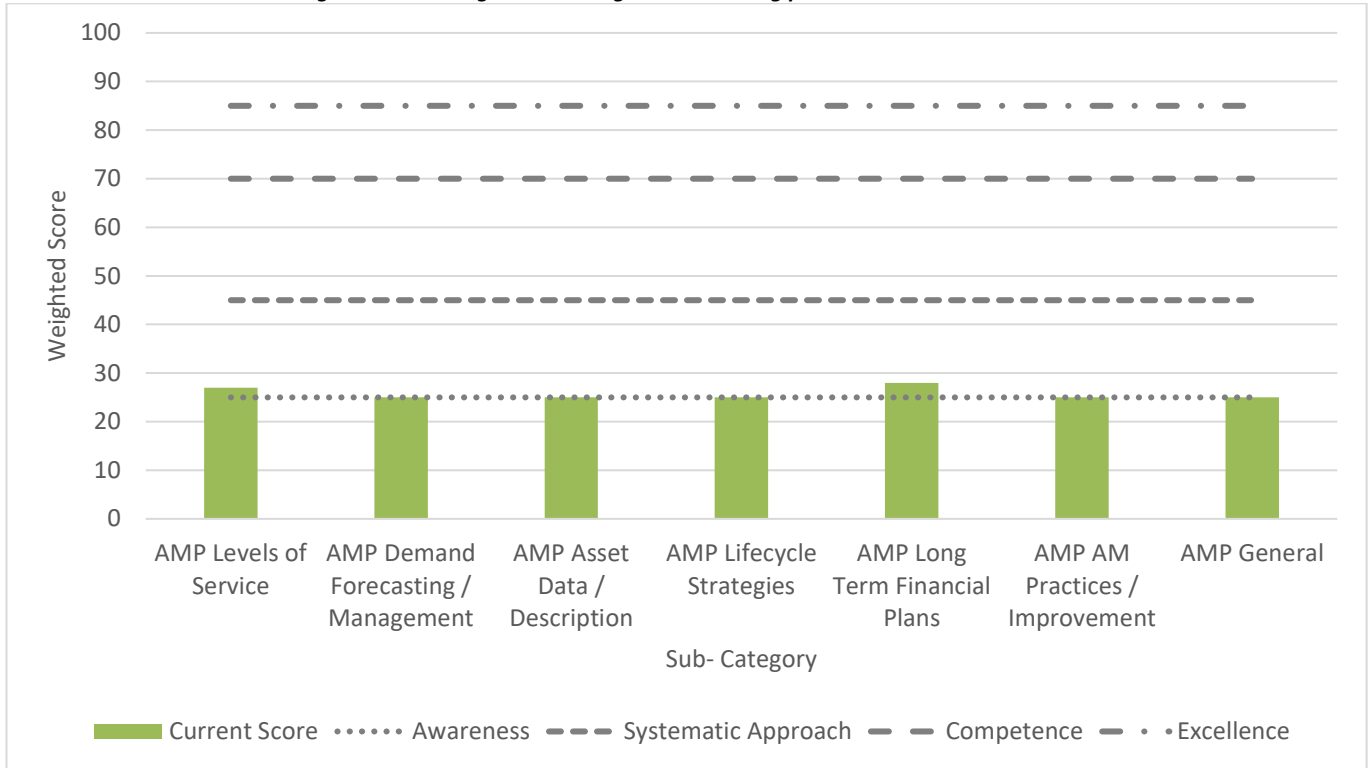
The following gaps were identified:

- Development of O & M Plans
- Development of an O & M Strategy
- O & M monitoring and reporting
- Use of a predefined standardised design process

### 3.4 ASSET MANAGEMENT PLANNING

The assessment of practice relating to the preparation of Asset Management Plans includes the evaluation of the extent of knowledge fields included in the planning process and how they are applied. It includes an assessment of how well the topics have been documented and how broadly and consistently the practices are adopted in normal operations. This includes assessment of practice relating to the review of levels of service, demand forecasting and management, asset performance and risk data summaries, life cycle strategies and optimised responses, financial forecasts, and practice assessment and improvement plans.

Figure 3-5: Existing Asset Management Planning practice - assessment results



The municipalities achieved a low score of practice for all sub-categories.

The following pockets of strength were identified:

- Stakeholder consultation process
- Financial forecasts categorised into operational/ capital

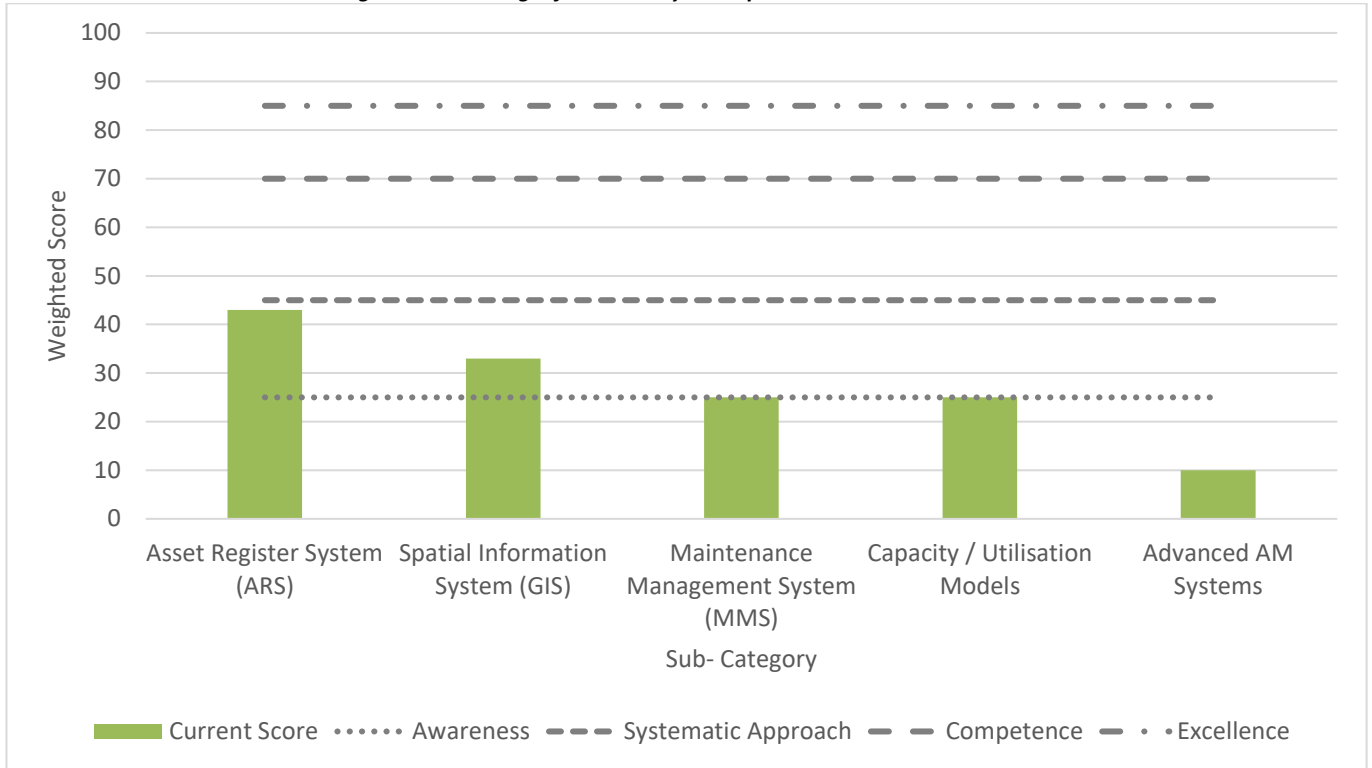
In line with the fact that the municipalities have not prepared AM Plans previously, the following weaknesses were identified:

- Levels of Service
- Demand Forecasting / Management
- Asset Data / Description
- Lifecycle Strategies
- Long Term Financial Plans
- AM Practices / Improvement

### 3.5 INFORMATION SYSTEMS

The Information Systems’ assessment determines the extent to which the organisations’ existing information systems are effective in facilitating integrated AM processes. The evaluation includes an assessment of how well the various elements of good practice have been documented and how broadly the systems are used in normal operations. This includes the use of the following sub-categories of information systems: asset register, plans and records, maintenance management, capacity, utilisation models, GIS, advanced modelling and analysis, project management and integration.

Figure 3-6: Existing Information Systems practice - assessment results



The municipalities came close to achieving a systematic approach for their implementation of the Asset Register System. A very low score was achieved in the sub-category for the implementation of Advanced AM Systems. All other systems received an “awareness” score.

The following strengths were identified:

- AR data exists
- GIS data exists

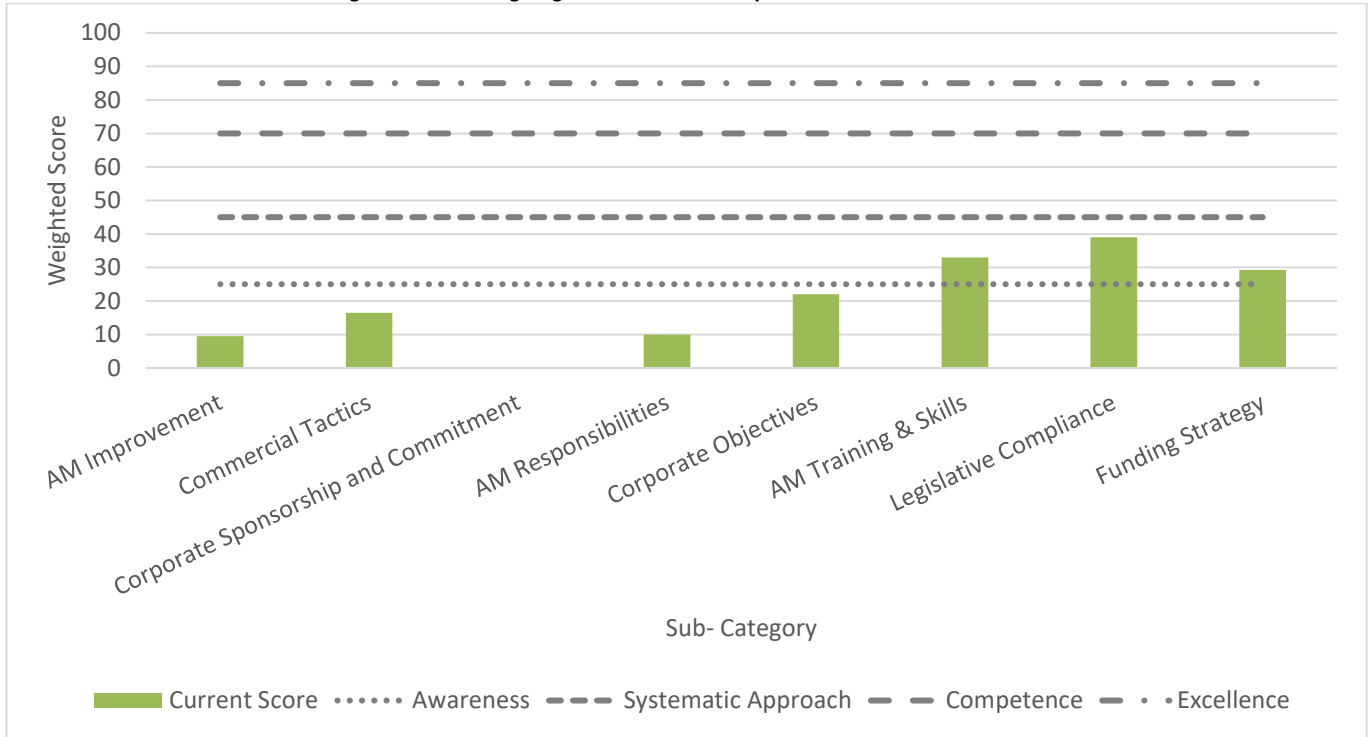
The following gaps were identified:

- Limited AR functionality
- AR is focused on financial data
- The manual link between GIS and AR
- No link between GIS, AR and maintenance
- No formal MM system
- No MM reporting
- The utilisation of risk ratings
- Performance reporting
- No advance systems: scenarios, performance, optimisation

### 3.6 ORGANISATIONAL TACTICS

The assessment of Organisational Tactics is an evaluation of the organisations’ corporate management framework for infrastructure asset management - it’s quality, the extent to which it is documented, and how consistently and broadly it is applied in normal operations. This includes an assessment of practice relating to IAM practice reviews and improvement, communication tactics, corporate commitment, AM roles and responsibilities, skills, teams and training.

Figure 3-7: Existing Organisational Tactics practice - assessment results



Very low scores (below “awareness” levels) were achieved for AM Improvement Practice, Corporate Sponsorship and Commitment, Commercial Tactics and AM Improvement, and AM Responsibilities. Their subcategories scored above the threshold for “awareness”, AM Skills and Training, Legislative Compliance and Funding Strategies.

The following relative strengths were identified:

- Alignment of KPIs to the IDP and AMP
- Legislative compliance

The following gaps were identified:

- AM improvement Plans
- Commercial Tactics
- Corporate Sponsorship and Commitment
- AM Responsibilities



## 4 AM PRACTICES ENHANCEMENTS

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The proposed practices' improvement plan is phased over three years. Enhancing the maintenance management process is prioritised to be addressed first as this will have the most tangible benefits for members of the community. This will foster support for further improvements. The second highest priority item to be addressed is in enhancing the asset register as this is crucial for cross-department integration, vertical alignment (linking operational activities to the strategic objective), more effective life-cycle planning and reporting. This will be addressed in the second year. The final year entails the enhancement of the management processes associated with projects and a review of the preliminary AMPs being prepared in this initial phase (then with improved data and models).

### Year 1:

- Maintenance management efficiency and effectiveness improvement
  - Procure a Computerised Maintenance Management System (CMMS)
    - Automate, regulate, standardise and record maintenance activities
    - A platform for operational efficiency improvement
    - A platform for review of maintenance management strategies and tactics to improve effectiveness (and resourcing strategy)
    - Spatially enabled
  - Prepare a maintenance management improvement strategy (multi-term)
    - Prepare a first annual maintenance plan and schedules
    - Asset management process review and improvement plan
- Asset management process improvement
  - Conduct a business process review
  - Implement priority process improvements
  - Define asset management roles and establish AM Steering Committee

### Year 2:

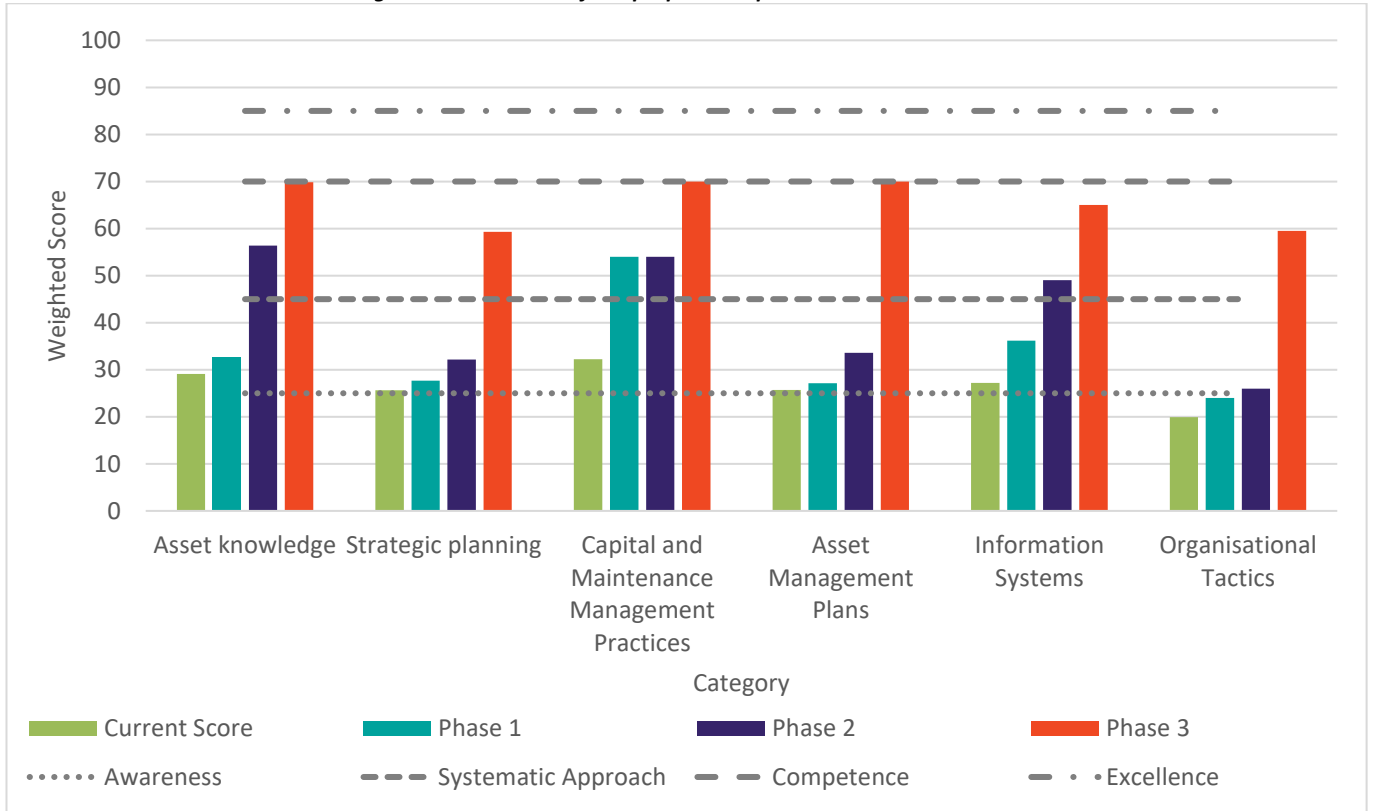
- Enhance, standardise and structure the asset register for strategic (physical) and tactical life cycle management improvement
  - Align and enhance asset register data to support all asset life decisions
    - The structure should support infrastructure finance, engineering and planning activities
    - Ensure the relevant level of detail required of asset maintenance and rolled up reporting
  - Upgrade and integrate electronic, central and spatially enabled asset register system
  - Enhance the maintenance management system to ensure seamless integration with the enhanced asset register system
  - Link to expert/ specialist systems (eg PMS data)
- Asset Management training
  - Arrange awareness and basic asset management training for all employees associated with aspects of the asset life cycle

### Year 3:

- Enhance, standardise project management practices
  - Upgrade and integrate a spatially enabled electronic system for Project Management
  - Ensure all contractors provide the required, standardised information on project completion
  - Enhance the maintenance management and asset register system to ensure seamless integration with the enhanced project management system
- Review and update Asset Management Plans (AMPs) and a Strategic Asset Management Plan (SAMP) for all immovable assets
- Risk management
  - Develop a Risk Management Strategy focused on infrastructure

The expected improvement per category is indicated in Figure 4-1. The expected improvement per subcategory can be viewed in Figure 7-1 to Figure 7-6.

Figure 4-1: Overview of the proposed improvement in AM Practice



#### 4.1 INDICATIVE BUDGET

Table 4-1 shows the work break down structure (WBS) and indicative budgets for each outcome of the WBS.

Table 4-1: Work Breakdown Structure

NO	ACTIVITY	TASKS	OUTCOMES	TOTAL PER ACTIVITY MLM	TOTAL PER ACTIVITY KDM	TOTAL PER ACTIVITY IDM	TOTAL SHARED COST PER ACTIVITY	TOTAL PER ACTIVITY
				(Fees including disbursement, software, vat, total)	(Fees including disbursement, software, vat, total)	(Fees including disbursement, software, vat, total)	(Fees including disbursement, software, vat, total)	(Fees including disbursement, software, vat, total)
1	Maintenance management efficiency and effectiveness improvement	Procure and implement a Computerised Maintenance Management System (CMMS)	Improved O&M data and reporting capabilities that allow for decision making	2 828 325	4 713 875	3 771 100		11 313 300
		Prepare a maintenance management improvement strategy	Improvement to the management procedures for O&M actives	516 128	516 128	516 128		1 548 384
		Review and clearly define asset management roles and establish corporate AM oversight structure	A defined list of asset management roles in line with a corporate AM oversight structure	311 912	311 912	311 912		935 736
2	Enhance, standardise and structure the asset register for strategic (physical) and tactical life cycle management improvement	Align and enhance asset register data to support all asset life decisions	Asset register data collected and recorded at the appropriate level	4 551 680	4 551 680	4 551 680		13 655 040
		Upgrade and integrate electronic, central and spatially enabled asset register system	Improved MSCOA compliant asset register data and reporting capabilities that allow for decision making	3 121 793	5 435 397	4 627 208		13 184 399
		Enhance the maintenance management system to ensure seamless integration with the enhanced asset register system	Seamless integration between the CMMS and asset register systems					
		Link to expert/ specialist systems (e.g. PMS data)	Seamless integration between specialist, CMMS and asset register systems	1 774 249	2 957 082	2 630 031		7 361 362
3	Enhance, standardise project management practices	Upgrade and integrate a spatially enabled electronic system for Project Management	Improved project management data and reporting capabilities that allow for decision making. Seamless integration with Asset Register and CMMS systems.	2 330 537	3 884 229	3 107 383		9 322 149
		Enhance the maintenance management and asset register system to ensure seamless integration with the enhanced project management system	Seamless integration between the project control system, maintenance and asset register systems.					
		Ensure all contractors provide the required, standardised information on project completion	A standard that contractors need to adhere to on project close out.				831 850	831 850

**Table 4-1: Work Breakdown Structure (Continued)**

4	<b>Review and update Asset Management Plans (AMPs) and a Strategic Asset Management Plan (SAMP) for all immovable assets</b>	Review and update water Asset Management Plans (AMPs)	Review the AMPs that were initially developed in 2019.			929 640		<b>929 640</b>
		Review and update roads Asset Management Plans (AMPs)	Review the AMPs that were initially developed in 2019.	716 280	716 280			<b>1 432 560</b>
		Review and update electricity Asset Management Plans (AMPs)	Review the AMPs that were initially developed in 2019.	830 580	830 580			<b>1 661 160</b>
		Review and update solid waste Asset Management Plans (AMPs)	Review the AMPs that were initially developed in 2019.	553 720	553 720			<b>1 107 440</b>
5	<b>Risk Management Strategy</b>	Develop a Risk Management Strategy focused on infrastructure	Established a Risk Management Strategy focused on infrastructure				469 392	<b>469 392</b>
<b>Total</b>				<b>17 535 205</b>	<b>24 470 883</b>	<b>20 445 082</b>	<b>1 301 242</b>	<b>63 752 411</b>

## 5 DATA CONFIDENCE GRADING

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The data confidence of the assessment is acceptable. The grading used to evaluate the data confidence is based on the grading proposed in CIDMS and has been adapted to suit practices assessments, Table 5-1. The result of the confidence grading is shown in Table 5-2.

**Table 5-1: Data accuracy grading framework**

Grade	Description	Accuracy	Example
1	Accurate	95%	Reliable documented practices and corroborated in interviews.
2	Minor inaccuracies	90%	Documented practices and partially corroborated in interviews.
3	Some estimation	75%	Practices information only received through documentation or interview, not both.
4	Significant data estimated	60%	Practices information that is mentioned in interviews for which the details are not available.
5	All data estimated	45%	Cursory interview feedback only.

**Table 5-2: Data confidence grade per category**

Category #	Category	Confidence Grading
1	Asset Knowledge	3
2	Strategic Planning	3
3	Capital and Maintenance Management Practices	3
4	Asset Management Plans	1
5	Information Systems	3
6	Organisational Tactics	3

## 6 CONCLUSION

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The assessments of AM practice maturity were based on interviews with members from the different departments at the respective municipalities and confirmed in a workshop. There were no significant differences between the three municipalities -all are coming off a low base. Whilst competence across the full range of practice may be the ultimate objective, it will be necessary to elevate the practice iteratively across the various categories (and sub-categories) of practice, giving priority to the aspects that will have the greatest benefit in relation to the cost. Accordingly, a three-year practices improvement plan, consistent across the three municipalities was proposed. This was workshopped and supported by the respective municipalities.

## 7 ANNEXURE A - AM PRACTICES ENHANCEMENT RESULTS

Figure 7-1: Asset Knowledge proposed improvement

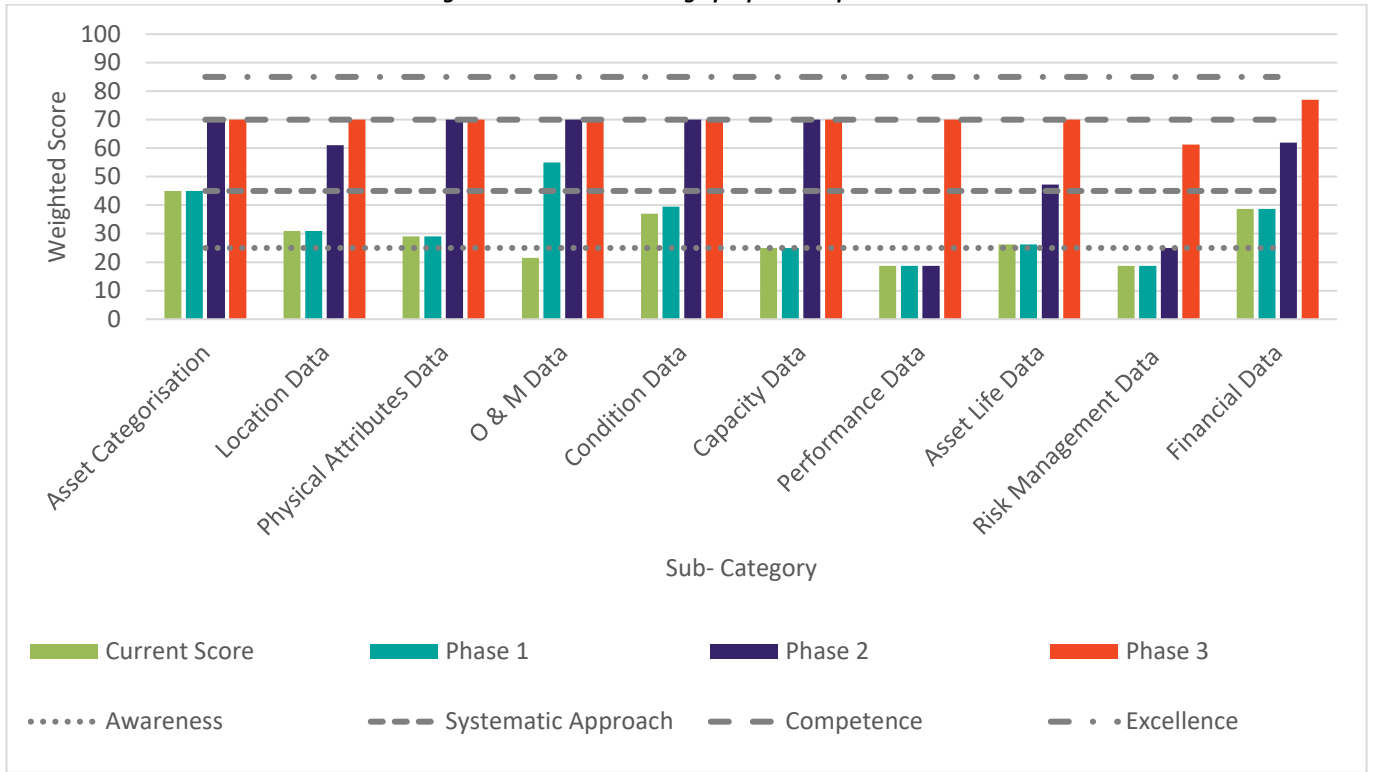


Figure 7-2: Strategic Planning proposed improvement

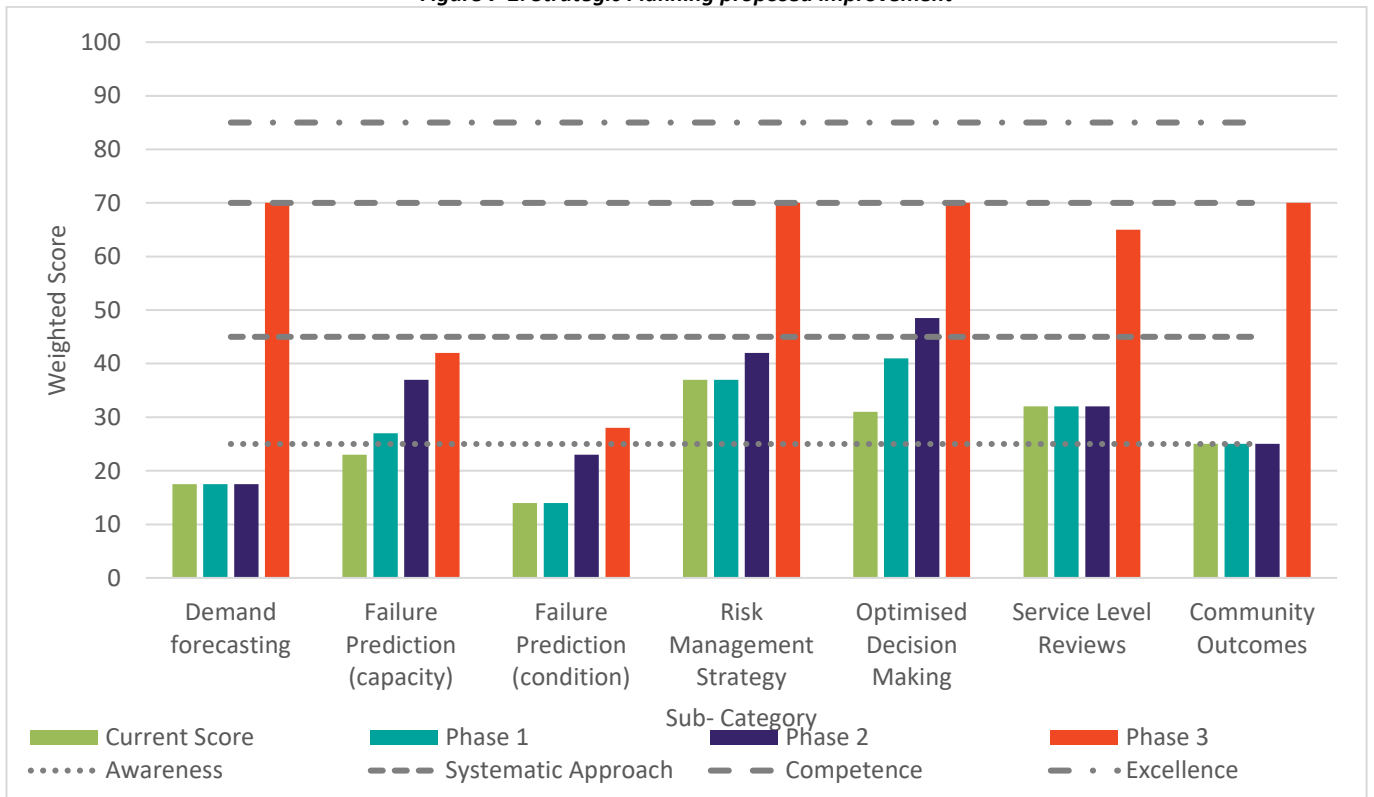


Figure 7-3: Capital and Maintenance Management proposed improvement

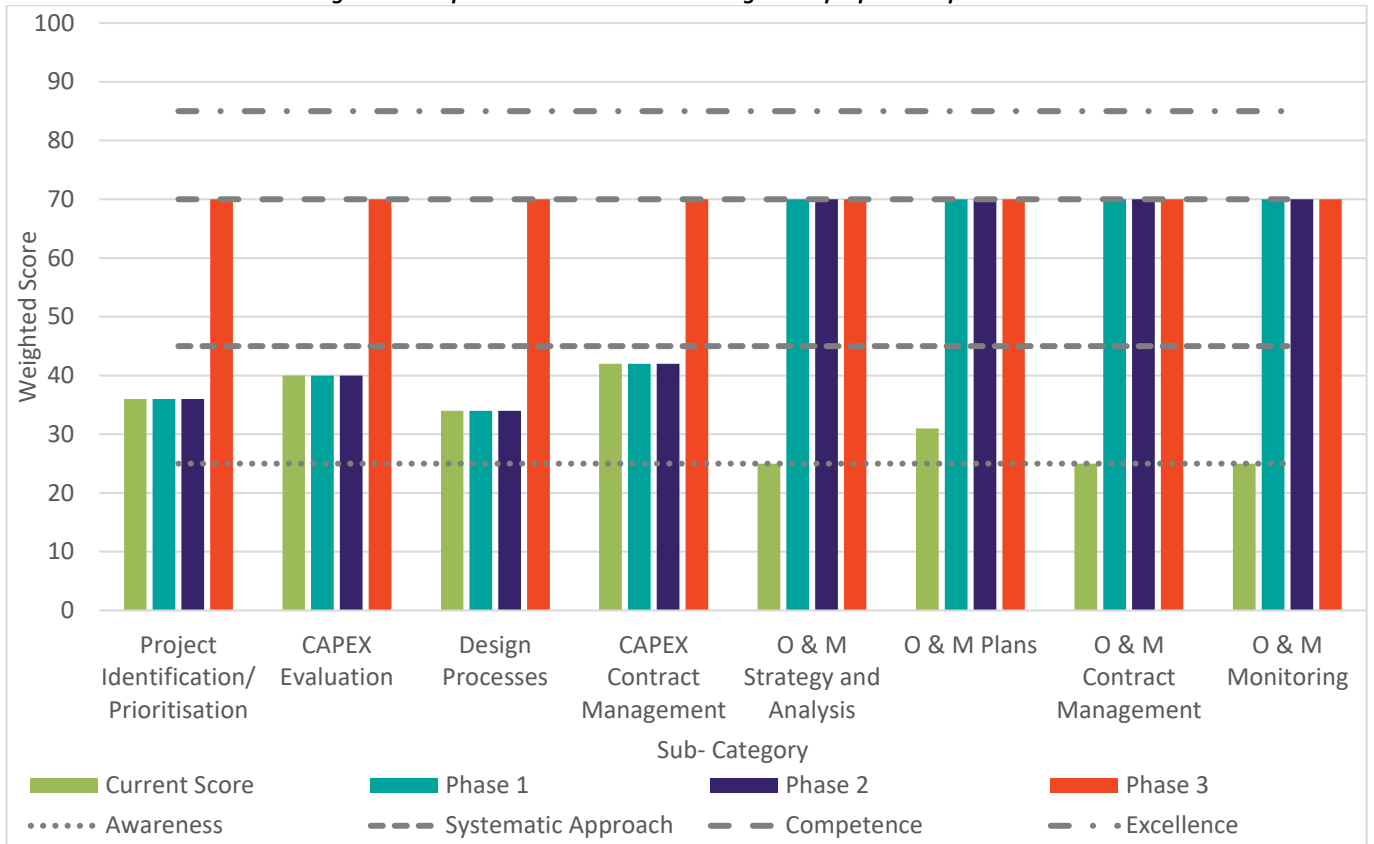


Figure 7-4: Asset Management Planning proposed improvement

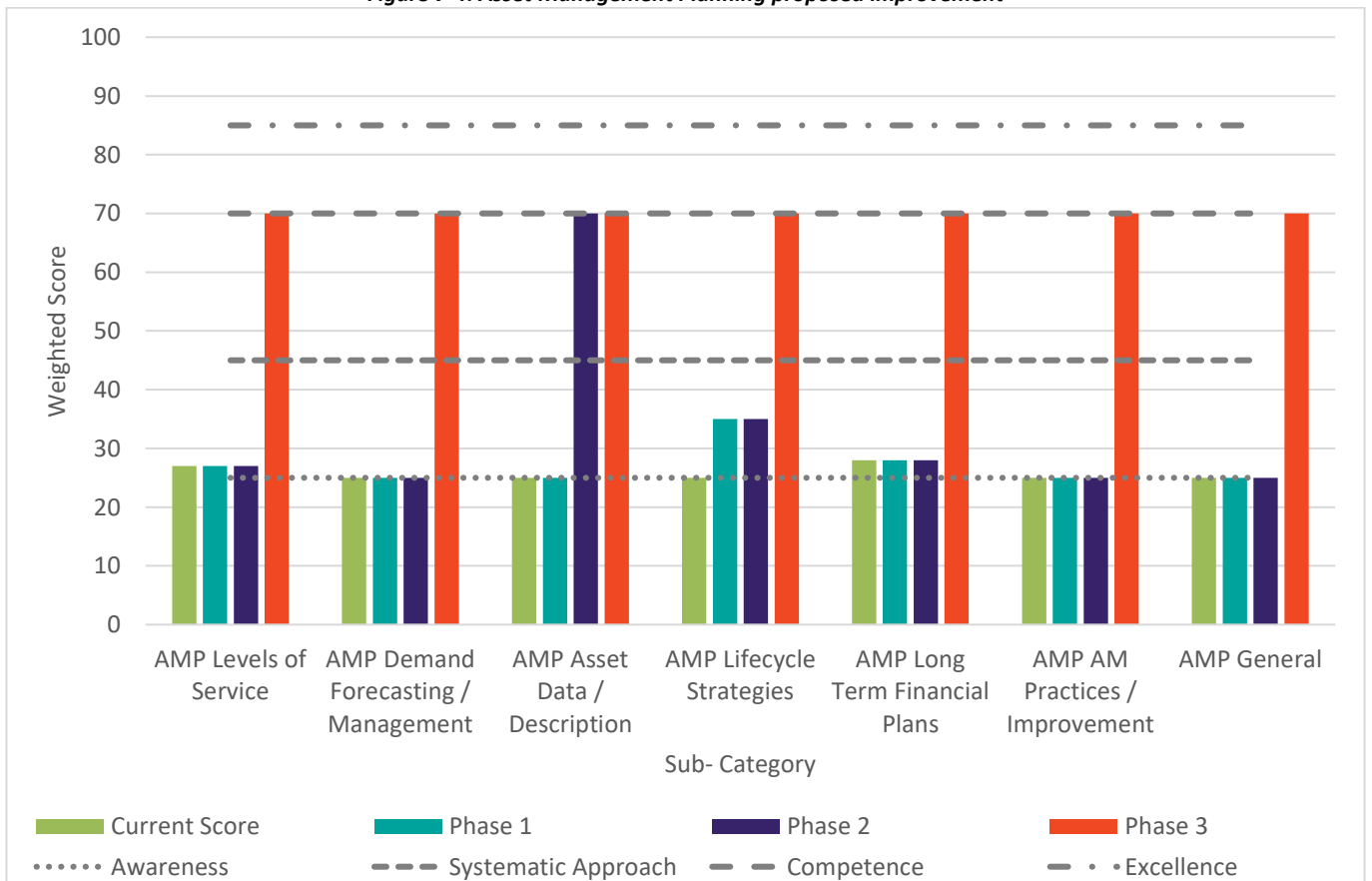


Figure 7-5: Information Systems proposed improvement

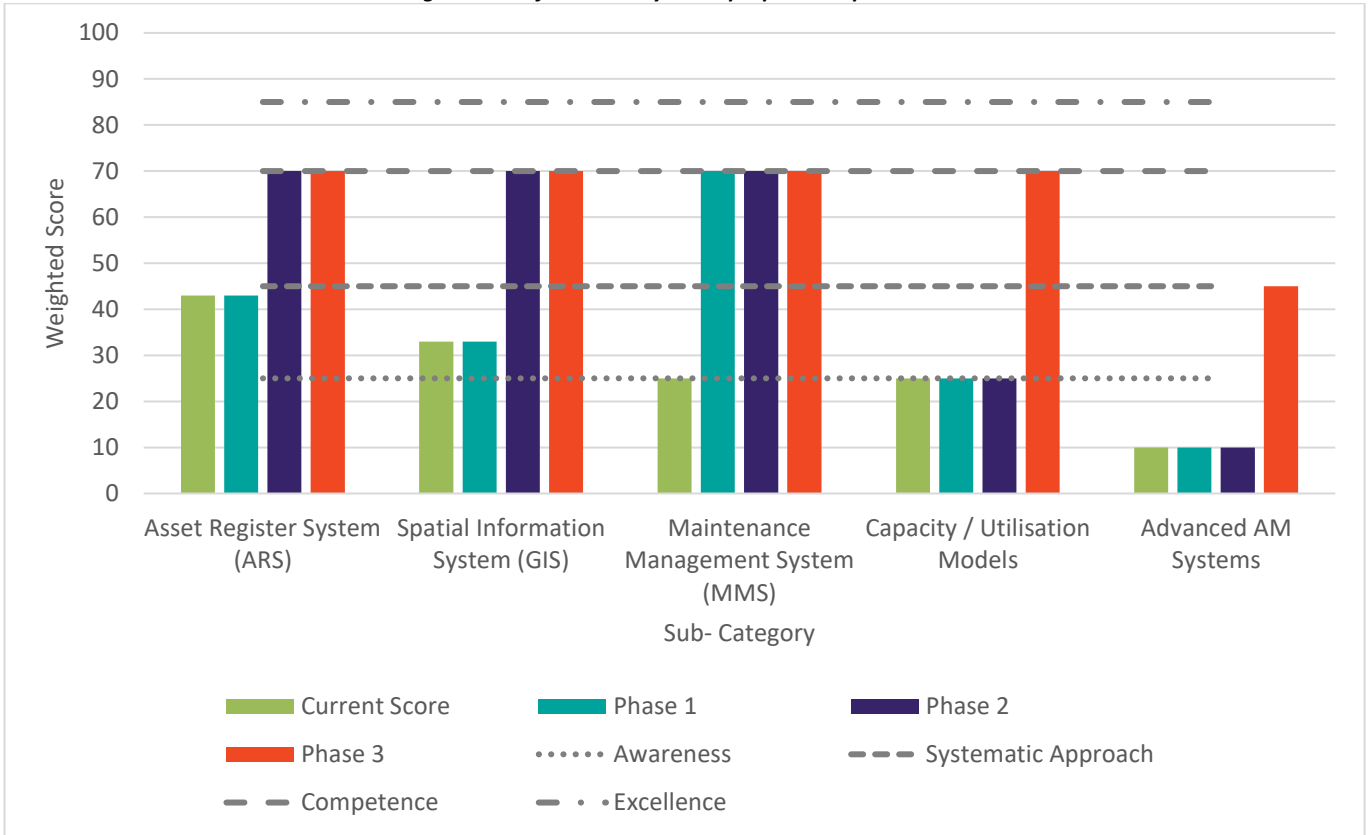


Figure 7-6: Organisational Tactics proposed improvement

