## 4 PLANNING FOR COMPLETENESS, PLANNING FOR THE FUTURE – ENGINEERS AND FINANCE ALIGNING

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### ABSTRACT

The completeness and collection of data is a key, fundamental issue faced by entities throughout South Africa. Data is the key driver for accurate and appropriate decision making and planning, in particular for budget and valuation purposes.

Data collection is typically the largest workload portion of an asset management programme, accounting for 80-95% of initial costs. Procedures and processes were developed for the Mangaung Metropolitan Municipality to enhance the completeness of data sourced - starting with the information from completed projects, as part of the capitalisation process, obtaining data more cost efficient from the source i.e. from project managers who are actively involved in the projects. Here data confidence is aided by a computerised system, capturing payment details, and correlating this with the financial system on a transactional level.

The process of collecting and verifying data from finance and engineering, merges "two worlds" and allows the Mangaung Municipality to produce monthly financial and technical registers. The added benefit of the systematic processes and systems is that the entire audit process and trail of information (from source to sign-off) is transparent and auditable, evidenced by a more seamless and less strenuous audit period.

This paper will presents a case study of activities, processes and systems/tools developed and implemented in the Mangaung Metropolitan Municipality. The tool (a software application known as SAM – SMEC Asset Manager), with its modules (Financial, Projects and Mobile) encapsulates agreed processes and 'gates' allowing users, custodians and decision-makers to more reliably plan for future needs which are based on the data collected and deemed to be complete by the custodians themselves.

### INTRODUCTION

Data and collection thereof is a key driver for reporting and in the case of most Municipal entities, for compliance too. It is with this in mind that we present this case study of the processes and procedures, as well as the tools adopted by the Mangaung Metropolitan Municipality (MMM) to ensure a better and more accurate data collection process is adopted.

This paper particularly focusses on the collation of the data from Work-In-Progress, or more commonly referred to as WIP and the capitalisation of such projects under construction into the asset register of the entity.

The procedures adopted and agreed are not new, but we the authors feel the achievements made collectively and tools developed, to now assist the municipality are state-of-art and allow for a more accurate and complete asset register, minimising effort on the state and providing more transparent and auditable information.

As we know turning data into information is a timeous activity and therefore a costly one. Data collection is typically the largest workload portion of an asset management programme, accounting for 80-95% of initial costs. We are as a society and entities alike, are inundated with data. Once we turn data into information we are better able to determine the needs of the entity; in this case maintenance budget needs.

The tools we have developed and implemented have been proven to be useful and successful and ultimately benefitted MMM in a cost reduction and minimised effort in the collection of asset data. Additionally, we have seen less/reduced effort during the audit period.

This paper explores some of the techniques and approaches we as a team adopted and learned from over a period of 3 years. The Municipality is now in the fortunate position of being able to produce monthly asset registers with fully supportable financial information sets (similar to those produced annually) as well as seamlessly produce journals for the updating and correlation of the Municipalities' trial balances. This is not without effort and the need for the engineers to be involved, but the workload on the technical departments have been reduced and benefit the entity as a whole – we see this as a major win for the team and allow engineers and finance managers to align and come together more regularly.

### BACKGROUND

In mid-2014 the Mangaung Metro appointed an engineering firm to provide infrastructure asset management support, including data uploading, by way of the computerised fixed asset management system, known as SAM.

The software tool was selected through an open tender process where both technical and financial departments within the Municipality, collaborated to develop an inclusive terms of reference. This is a key milestone and is an imperative, we feel, in the development of a tool for assets that is so cross-cutting. Infrastructure Asset Management deals with aspects from both the financial and engineering / technical spheres.

As such the Municipality chose to drive the management of assets from a technical approach first, with financials as a secondary 'by-product' if you will. That is not to say to play second fiddle, but with the technical departments driving the asset attribute and location information, the financials can be more easily linked. After all, we as engineers manage these assets and for the larger tax-paying public you don't see communities rioting for a good financial statement, they are emotive due to service delivery and we as engineers, are to manage these assets for that purpose – to deliver a service to our communities – this information is our responsibility.

Based on the Municipalities' prior year audit outcomes, it was evident that a challenge existed to ensure that the "completeness and existence" accuracy of the assets data was of a high / reliable standard – one of the key aspects of this, which is explored in this paper – was the Work In Progress (WIP).

### DATA PROCESSES

**Defining the Objective**
The Asset Management Team took to addressing the above challenge by first identifying the extent of the challenge and a review of the existing processes, with a view to improving such processes. One of the key drivers and objectives for the first year of the project was to ensure that the WIP was cleared as far as possible. The objective was set, based on the review of the information from the prior year as well as current year (in-progress) projects records - that the team would endeavour to capitalise 80% of the value of the register. This would amount to a minimum of 33 projects and a total value of works of R1.05bn of a possible R1.34bn would be added to the register for the current financial year.

**Overall Processes and Responsibilities**
A review of the processes to be adopted within the Municipality to achieve the objective set was agreed with all stakeholders. Processes were
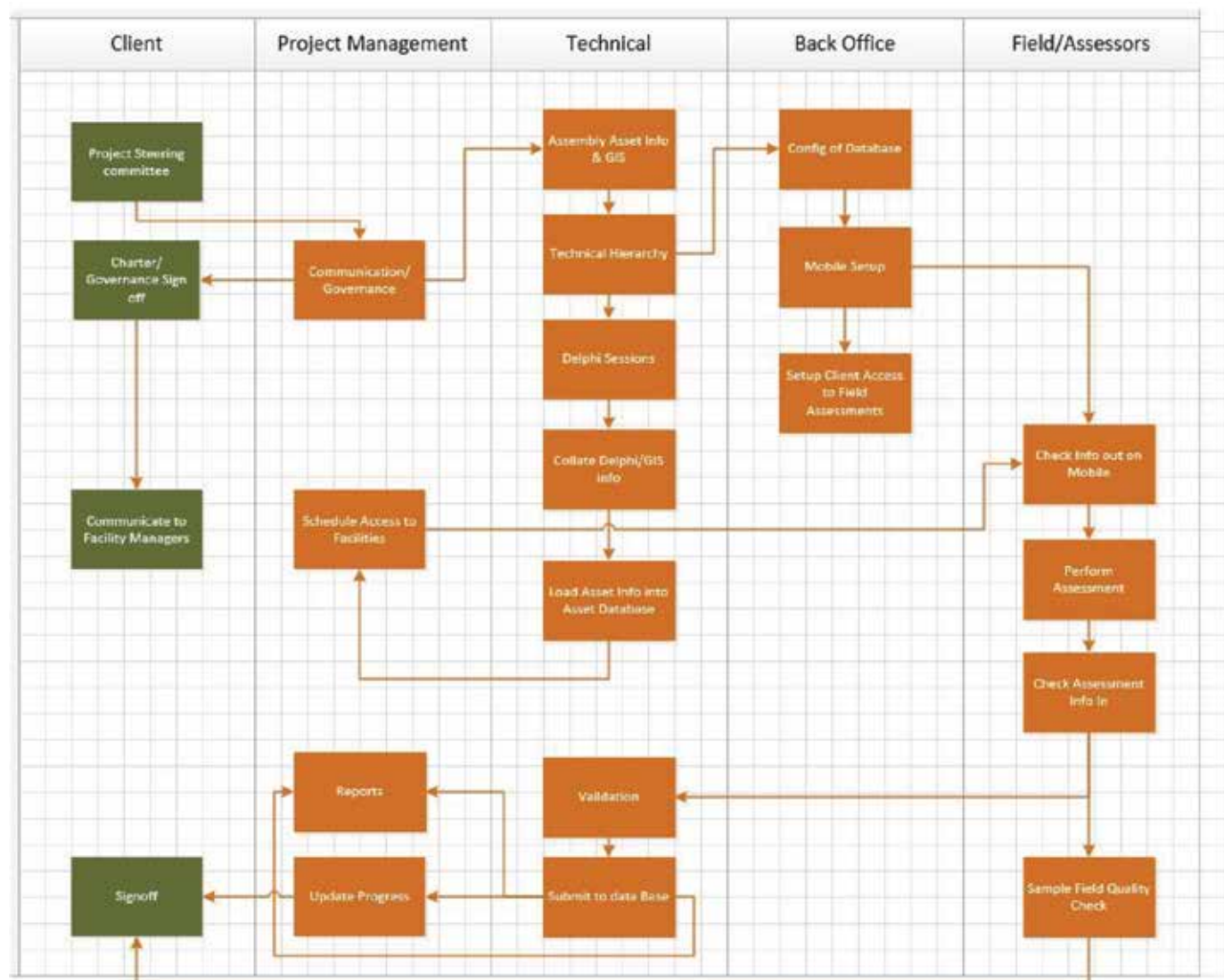
**FIGURE 1:** Overall Processes and Responsibilities

discussed and agreed at regular meetings and presented to the Project Steering Committee for sign-off. The overall process and responsibilities are shown in figure 1 below.

It is evident from the above figure that a multi-disciplinary team was required to ensure all tasks were executed successfully, with regular feedback sessions.

Again, we would highlight the importance (and involvement) of the Technical Department as highlighted in the third swim lane in Figure 1 above.

## GAP Analysis

The team set out to determine the status quo of the data and completeness thereof. As such the team embarked on an interview session with each of the Municipalities' line departments. This would serve to accomplish several objectives, which included:

1. Introduction of the AMS Team;
2. Collaboration with the Technical, Financial and Project Management Teams;
3. Gather / collate all sources of information; and
4. Gain a better understanding of challenges (data, people, processes or system challenges).

Form the above the team were able to produce a gap review document which was developed into a plan of execution. It was this plan, in conjunction with the above processes that would guide the team during execution of the project.

One of the key outcomes of the plan, which is to be highlighted, is the agreement that classes of assets would be addressed based on the priority of the Municipal engineers. This meant that some asset classes, although minimal in our case, would be carried over to the following financial year. This in itself presents a challenge – motivation from within the Municipality and to the external auditors to ensure that all stakeholders understand this principle and can collectively defend the position from a rational perspective.

From this initial stage it was clear that spatial information, from the Geographic Information Systems (GIS) would be absolutely key. We as a team, set another key objective to – ensure that all assets have a spatial location, ensuring a one-on-one relationship between the two. The GIS was to become one of the key measures for completeness and progress as a whole.

## GIS Sub-Processes

A GIS improvement sub-process was agreed and adopted within all Technical Departments. This process is shown in figure 2.

**FIGURE 2:** GIS Improvement Processes

The above allowed the team to develop a key document – the GIS Content and Template Guidelines. This document, which was agreed and signed-off by all stakeholder departments, with buy-in from the Corporate GIS Directorate most importantly, would provide details for:

1. Definition of types, from Facility to Component (see figure 3 for a typical example);
2. Asset geometry type per class of asset (being either point, line or polygon features); and
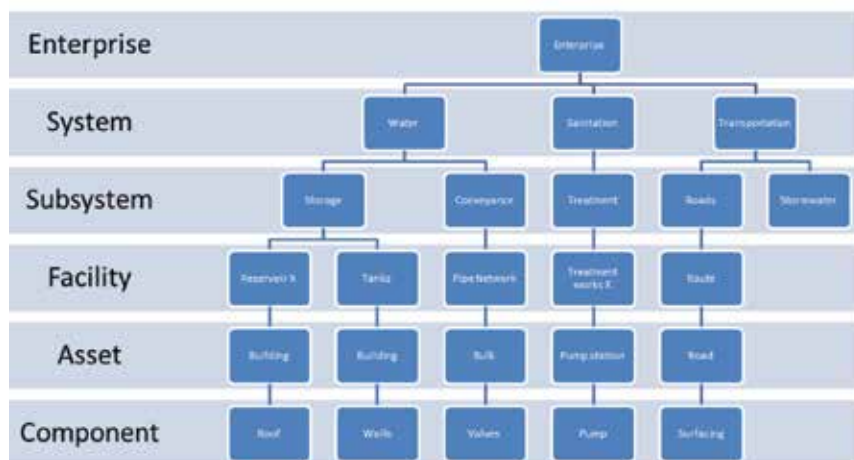3. Templates for implementation on-site using SAM Mobile.



**FIGURE 3:** Typical Municipal Asset Hierarchy



**FIGURE 4:** Geometry Type Guidelines per Type

### Data Collection Sub-Process

In conjunction with the above GIS sub-process and guideline document, the AMS team agreed on the engineering / technical attributes to be collected per asset type. This would be appended to the overall schema documentation and implemented through the Computerised Asset Management System (CAMS), known as **SAM**. This allowed the inspectors and technical staff alike to unbundle assets into their constituent components, with GIS types aligned one-to-one.

This template-based approach and early adoption of the guidelines allowed the team an important step ahead – to be able to carry out both asset verifications and WIP captilisation verification, from a completed project.

## WIP PROCESS ADOPTION

The initial WIP data processing procedures are summarised in the figure below and was adopted at an early stage due to the volume of projects to capitalise and the overall object set by the Team.

Key objectives defined from adopting this process were found to be:

1. Agreement from stakeholders allowed for greater collaboration – singular focus;
2. Definition of data handling sub-process determined/ agreed (see figure below)
3. Processes could be driven by senior management in the interview / workshop sessions with Project Managers themselves, who are key to the data and information for projects and the status thereof;
4. Agreement on minimum standards of data collections, to ensure information is complete;
5. Adoption of a Capitalisation Certificate, from prior years with agreement with the Auditor General, made the process easier in the situation where information was simply non-existent; and
6. Adoption of the overall objective, being to minimise the value of the WIP register and maximise the value of assets on the Municipalities' books, was at the back of everyone's minds.

### Capitalisation Process

All capital expenditure of an entity such as the Mangaung Municipality, should result in an asset that is used directly or indirectly, to the benefit of the community of the Municipality.

The capitalisation process is used to take projects completed in the financial year from WIP into the Asset register of the Municipality, through a policy driven, audit compliant process. The timely completion of this process is critical as it influences the management of the assets through it's expected lifecycle thereby driving the operating and maintenance support for it, which also drives operational budgeting and expenditure planning.

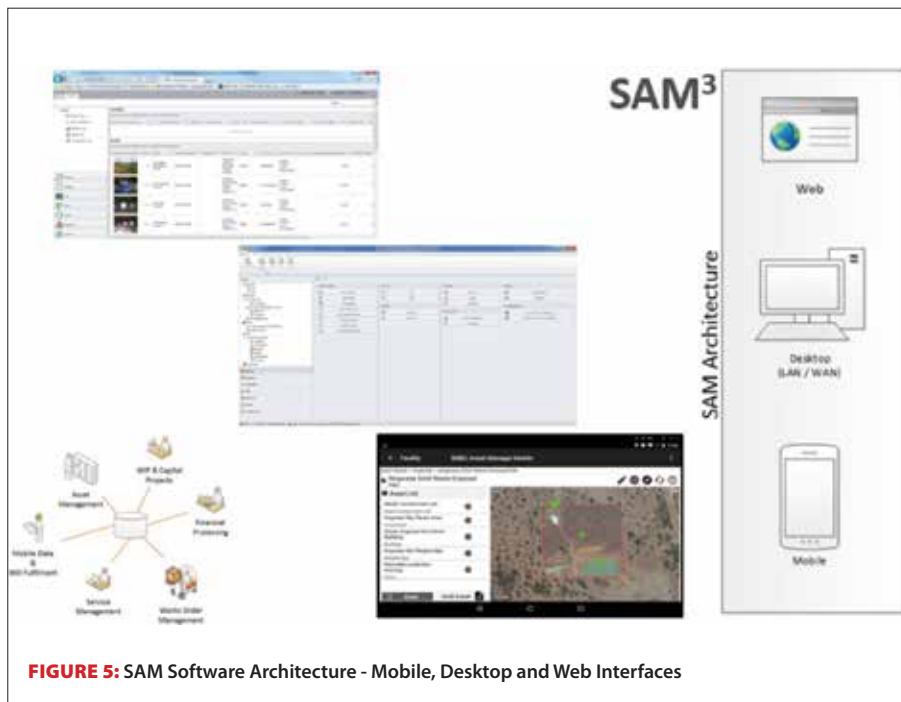The capitalisation process was completed per project, driven by a structured and phased approach, effected

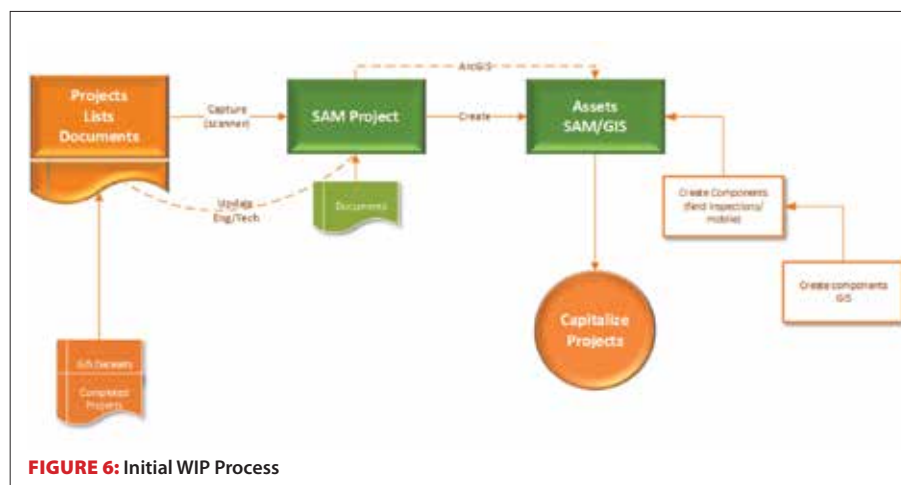**FIGURE 5:** SAM Software Architecture - Mobile, Desktop and Web Interfaces
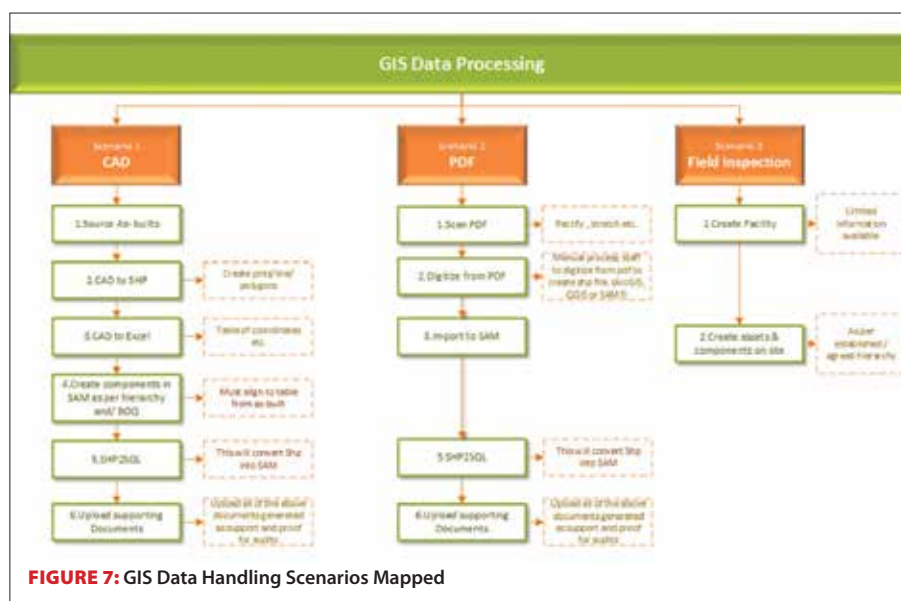


**FIGURE 6:** Initial WIP Process



**FIGURE 7:** GIS Data Handling Scenarios Mapped

through a collaborative effort, with gentle persistence in some instances. The steps the Team adopted included the following:

1. Interviewing each project manager from the sub-directorates' line department;
2. Determine status of each project and supporting documents, thereby creating project file/s where possible and highlighting issues;
3. Using a hosted datasheet system for a single source of data and additionally providing a collaboration tool for the Team (in the case of issues);
4. Received all documents IF completed OR complete MMM capitalisation certificate;
5. Verify minimum requirements for capitalisation
6. Recon with General Ledger with finance Department
7. Physically inspect and load into SAM through SAM Mobile (at component level);
8. Capitalise the project within SAM;
9. Pass journal entries to eVenus/SOLAR from SAM; and
10. Process / Update WIP register (task 3 above) and MFS (Monthly Financial Statements) accordingly.

It is important to note that the provision or collection of project documents (completion certificates, as-built drawings and bills of quantities), whether it be from Project Managers within the Municipality, Contractors or Consultants proves to be a challenging task at the best of times. We have found that documents are not provided timeously or simply not handed over to the Municipality. There are several reasons for such cases – contracting parties not being paid for particular reasons, consultants asking for additional fees to provide such information to simply not being handed over or in a very poor / inadequate state.

It is with this in mind that we have agreed to certain procedural changes within the Municipality, which included:

1. The adoption of a single projects control office with a presiding controlling officer;
2. Introduction of the identified minimum criteria into the MMM Policy, with legal and contractual obligations clearly set on both parties;
3. Adoption of software / tool (SAM PROJECTS and PROJECT PORTAL) to:
4. 'Patrol' and monitor projects through all stages of the design process, with configurable gates and enforcement of the above minimum requirements.
5. Produce a Payment Certificate (PC) with a globally unique and universal Identifier
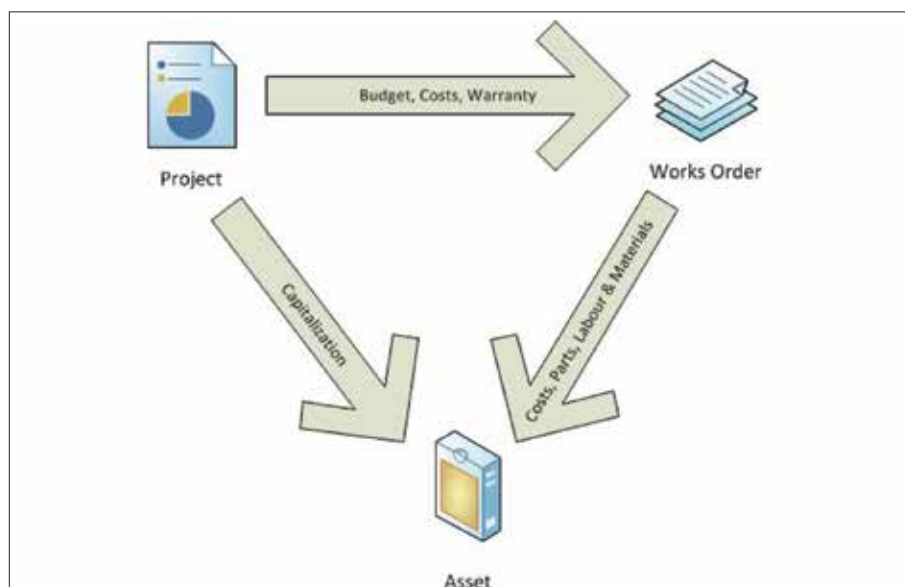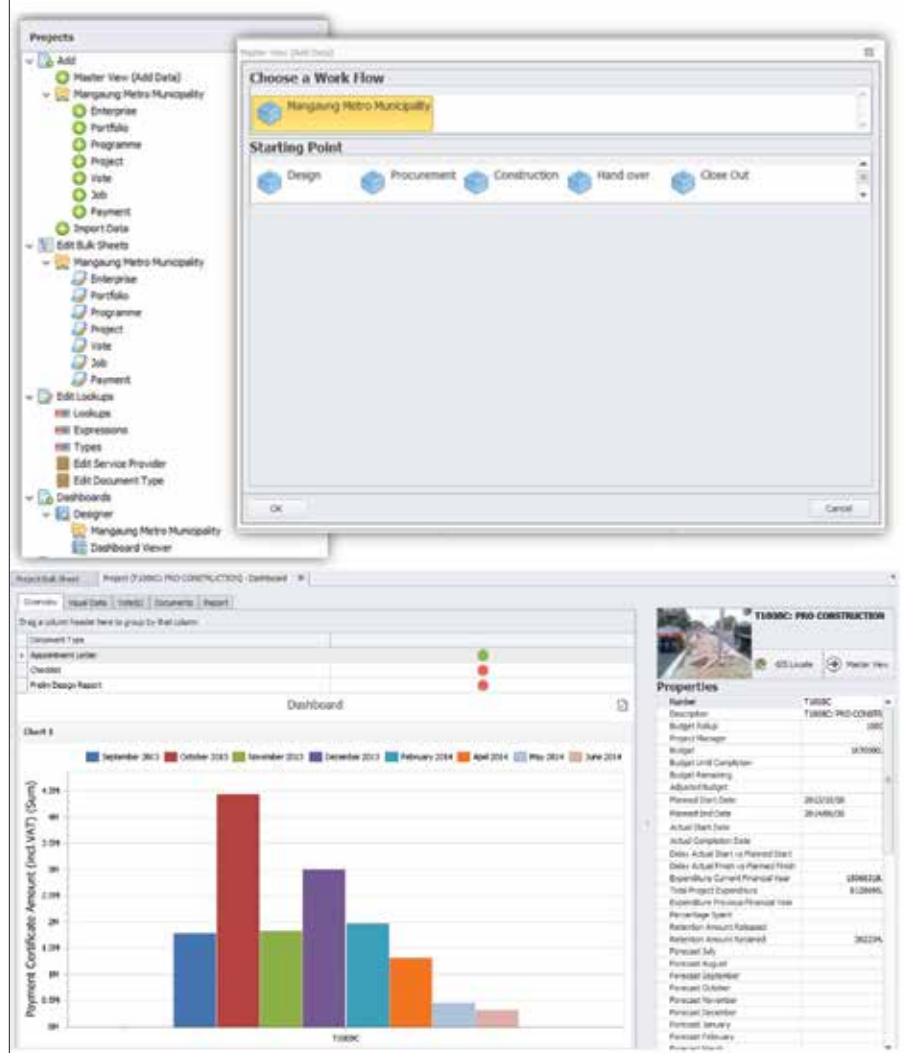
**FIGURE 8:** Relationship built into the System - Projects to Assets



(GUID), minimising the possibility of "off-the-book" PC's being generated.

6. Project Managers have the tool to be able to track progress themselves

7. Service providers have a means to upload / send documents to the Client entity, through a single website, which is available with 99% uptime on the cloud and fully auditable i.e. no

documents or the trail thereof going missing, rectifying "finder pointing" between the Municipality and PSP;

8. Project Managers and the Finance Department officials now have a view of the financial status of a project in-progress, tracking actual expenditure versus budget; and

9. The adoption of SAM PROJECTS and the processes therein has resulted in significant gains within the Mangaung Metro. The system itself has been developed as a tool for any Municipal entity and allows the users to setup and customise the processes adopted within for capitalisation to suite. The system is IDMS compliant and is able to track projects through the entire lifecycle, with the aim of tracking and controlling budget and documents. The system tool has the added advantage that the entity can define its own attributes which it deems necessary as well as setup relationships between these generic 'entities' and establish mathematical relationships between them to roll-up / down information. The figures below provide an indication of some of the features and functionality of the tool.

## CONCLUSIONS

Over the three-year span involving this case study, it has been seen that the implementation and adoption of specific processes and procedures have resulted in a more streamlined and successful capitalisation process. This process has been adopted by the Mangaung Metro with positive results.

The ongoing reduction in unresolved WIP balances at year-end has been the biggest benefit realisation for the Mangaung Municipality as this is a key focus point for annual external audits. A further advantage gained has been the new recurring monthly processing and capitalisation of projects which is in place and which is resulting in a financially and technically complete asset register. Further there is immediate reconciliation to the financial system within the Municipality right down to journal level, proving successful integration between the detailed engineering information and that collected over the lifecycle (Planning – Procurement – Design - Works – Handover and Closeout) of the Municipalities' assets.

The programmatic approach in taking on assets with all their various attributes, being technical or financial, has made the mSCOA (Municipal Standard Charts of Accounts) adoption a lot less challenging, as the data is already available and linked at the lowest level.

Ultimately, the initially adopted WIP Process
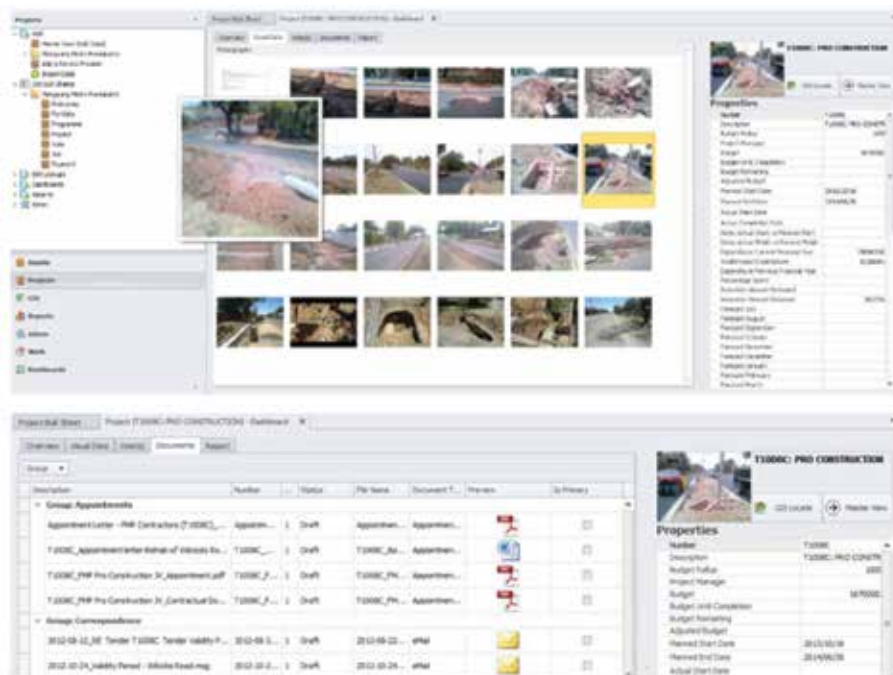
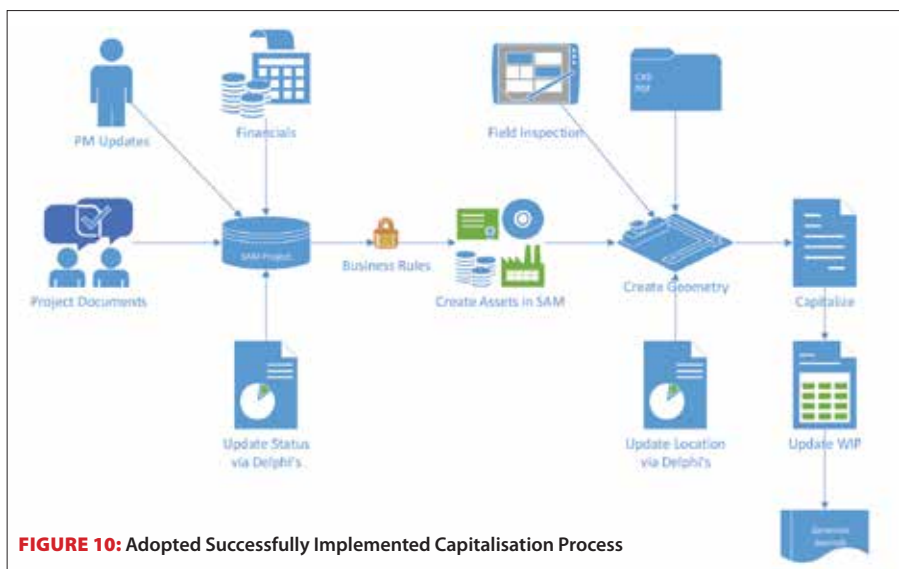**FIGURE 9:** Asset Management System Tool



**FIGURE 10:** Adopted Successfully Implemented Capitalisation Process



(Figure 6) has evolved into that presented in Figure 10 below which provides an integrated approach to the collation and processing of data. We believe that the benefits can be summed up in a single view (Figure 11) - those managing the assets and the greater public, now have a more complete and accountable asset register that bridges the gap between the financial and engineering managers on one side, while being visible from a single interface and to the benefit of better decision making.

## RECOMMENDATIONS

From the experience gained with this and similar projects, it can be recommended that a few key decisions and processes needs to be in place to ensure a smooth transition from construction, through completion to capitalisation and finally asset take-on:

1. An integrated approach is needed where the engineering teams (specifically project managers and contractors / vendors) work closely with the finance division (specifically asset management) to ensure transition and hand over of complete and accurate data and information relating to projects completed and assets delivered;

2. The process used must be structured, approved at the highest possible level and driven in an ongoing manner to ensure timely completion given that all entities have fixed financial year-end deadline to comply with;

3. Ideally, a central point of control over the flow of information / documentation is needed to ensure tracking of outstanding information and to play a quality assurance role over the information delivered; and

4. All assets must be linked to a facility as minimum and critical to achieving this is GIS linkage from source through into the AM system.

## REFERENCES

Generally Recognised Accounting Practice (GRAP) 17 – Property, Plant and Equipment, Accounting Standards Board, South Africa.

Municipal Finance Management Act, no 56 of 2003, National Treasury, South Africa.

Public Finance Management Act, no1 of 1999 (With Amendments), National Treasury, South Africa.

International Infrastructure Management Manual 2015, Institute of Public Works Engineering Australia.

**FIGURE 11:** Final Benefit - Completeness; Engineering and Technical Information