

INFRASTRUCTURE PROJECT CHALLENGES: THE CASE OF DR KENNETH KAUNDA DISTRICT MUNICIPALITY

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ABSTRACT

Project management as an application is utilised increasingly by municipalities in South Africa to render services on time, within budget, and according to quality and performance specifications. But the translation of integrated development planning (IDP), top-layer service delivery and budget implementation plans (SDBIPs) into successful projects often do not yield the desired results. This is especially true for capital-intensive infrastructure projects. Typical municipal infrastructure projects entail the construction of roads, pavements and bridges and storm water systems. It also include the provision of electricity (generation, transmission and reticulation e.g. street lighting), water (e.g. dams, reservoirs, and water purification), and sanitation (e.g. reticulation and sewerage purification). This article reports on empirical findings of research conducted at the Dr Kenneth Kaunda District Municipality (henceforth referred to as Dr KKDM), North-West Province, which include four local (category B) municipalities, namely Maquassi Hills, Matlosana, Tlokwe, and Ventersdorp local municipalities. The aim of the study was to explore practices and challenges associated with the design and execution of infrastructure (capital) projects and to uncover best practice for innovative project governance. Case study methodology was utilised in the research.

Keywords: capital projects, Dr Kenneth Kaunda District Municipality, development, infrastructure, project management

1. INTRODUCTION

In a system of co-operative and integrated governance the developmental role of the 278 municipalities holds the key to address the significant backlog of infrastructure in South Africa. The institution of developmental local government actively promotes social and economic development, shapes local spaces in a more equitable and efficient manner, and plays a strong strategic role in the state. Furthermore, developmental local government allows for effective service delivery, greater community participation, and has the interest of the lower socio-economic sector at the core of its mandate.

As towns and cities expand, municipal services often do not satisfy the basic needs of urban residents, especially the urban citizens in the lower socio-economic range. Services such as infrastructure development are often plagued by insufficient planning, limited operating capacity, corruption, inadequate maintenance, and negative environmental consequences.

Innovative management applications and techniques such as project management are required to improve municipal service delivery. The application of project management, however, should square with the environmental, socio-political, economical, and institutional realities of particular municipalities. Increasingly municipalities in South Africa utilise project management as a management application to render services on time, within budget, and according to quality and performance specifications. This process, however, is frustrated by the fact that integrated development planning (IDP), top-layer service delivery and budget implementation plans (SDBIPs) are not operationalised successfully into delivery of infrastructure projects.

Construction plays a vital role in South Africa's economic and social development. It provides the physical infrastructure and the backbone for economic activity. The construction sector is also a large-scale provider of employment. The purpose of this article is to report on empirical findings flowing from research conducted at Dr Kenneth Kaunda District Municipality (henceforth referred to as Dr KKDM), North-West Province. The aim is to investigate the challenges associated with infrastructure (capital) projects, in order to uncover potential best practice, and to make recommendations on how to meet the challenges that are identified. Lessons learned from such case studies provide a sound foundation for the development of theory and the identification of innovative best practices. Such best practice guidelines should eventually lead to standard operating procedures for infrastructure development in municipalities.

2. THE STATE OF INFRASTRUCTURE DEVELOPMENT IN SOUTH AFRICAN MUNICIPALITIES

Currently in South Africa there are significant infrastructure service delivery backlogs to deal with. This situation is due to historical, socio-political realities and current demographic trends, including the processes of rapid urbanisation and rising poverty levels. This is true particularly for low-capacity local and district municipalities that are situated in rural areas.

One of the ten strategic priorities and programmes outlined in the Medium-Term Strategic Framework for 2012/2013 is a programme to build economic and social infrastructure (The Presidency, 2009: 11). Government's Infrastructure Investment Programme (IIP) is aimed at expanding and improving social and economic infrastructure, as well as transport and energy. This also includes basic amenities such as water, sanitation, as well as information and communications infrastructure. The aim of this Programme is to increase access, quality and reliability of public services and to support economic activities, whilst considering environmental sustainability and pursuing maximum employment. Based on an integrated infrastructure development strategy, infrastructure projects are to be spatially referenced and planned for in an integrated manner.

An analysis of the state of infrastructure development in South African municipalities is complicated due to a number of factors. The first factor is that considerable disparities exist between different types of infrastructure (e.g. housing, electricity, water provisioning) as well as the quantity and quality of these services (e.g. service levels) in municipalities. A particular municipality, for example, may excel in areas of sewerage processing, but fail dismally in their performance regarding road maintenance. Considering municipal infrastructure backlogs, it should be noted that the severity or significance of "backlogs" depends on the definition of the particular service level.

For example, contrasting a “below basic” pit latrine with a “basic” ventilated improved pit latrine, as well as with a “full” services level of water-borne sanitation, determines significantly how backlogs are identified. The Municipal Infrastructure Investment Framework (DBSA, 2011: 59) defines a “backlog” in terms of “a service level less than that needed to ensure a household’s health and safety”, which in itself is also a rather unquantifiable and subjectively inferred performance indicator.

A second factor that clouds analysis is that infrastructure development in different categories of municipalities (local, district and metropolitan) show vast dissimilarities. Census 2011, for example, differentiates between “urban formal”, “urban informal”, “rural formal” (commercial farms) and “tribal areas” (“communal areas in former homelands”). This classification of areas does not fit neatly within either municipal boundaries or the A, B and C categories of municipalities. Furthermore, due to a more substantial tax basis and staff capacities, asymmetry exists between metropolitan municipalities, which are generally in a more advantageous position than local municipalities, which may find themselves in economically-stagnant “urban informal” (rural) areas.

Based on the 2011 Census, services backlogs are shown to be considerably larger in communal areas and urban informal settlements than in urban formal areas and commercial farm areas. For example, 54% of households in communal areas and 38% of households in urban informal areas have no access to basic water amenities. As a further example, 77% of households in communal areas and 69% of households in urban informal areas lack access to basic sanitation. An analysis of the state of infrastructure development should thus recognise the significantly different circumstances that exist in municipalities across the country and the related differences in the financial viability of these local governments. This matter is complicated further by the seven sub-categories of municipalities that the Department of Cooperative Governance and Traditional Affairs (CoGTA), National Treasury, and the Municipal Infrastructure Investment Framework (MIIF) utilise for purposes of service level modelling, namely:

- A: metropolitan (currently 6 in total);
- B1: secondary cities: (21 local municipalities with the largest budgets);
- B2: municipalities with a large town as core (29);
- B3: municipalities with relatively small populations and a significant proportion of urban population but with no large town as core (111);
- B4: municipalities which are mainly rural with, at most, one or two small towns in its area (70);
- C1: district municipalities that are not water service providers; and
- C2: district municipalities that are water service providers.

A third factor is the different geo-spatial patterns that are evident in municipal performance. The recent State of the Cities Report (2011), for example, revealed that in more political stable regions the municipalities generally perform on higher levels than in areas which are characterised by so-called “factionalism” in the ruling political party, poor political and administrative leadership and low capacity.

A fourth factor that compounds an analysis of the status of infrastructure development is that reliable data sets and accurate statistics are largely unavailable. There is general consensus, based on recent StatsSA census data (2011), that municipalities face a daunting task to eradicate backlogs.

Nevertheless it is not clear what the current state of affairs is on the specifics of the status of municipal infrastructure development. The Institution of Municipal Engineering of Southern Africa (IMESA) undertook for example in 2002, a survey of infrastructure maintenance among South African municipalities to determine their appreciation for and application of infrastructure maintenance. On the positive side the findings of the survey that stood out were that municipalities generally have adequate infrastructure maintenance practices in place. These practices mostly include asset registers, demand analysis, asset utilisation, maintenance and disposal. However, the survey also revealed poor financial planning for the improvement of existing infrastructure, and the lack of best practice regarding asset accounting. Generally Recognised Accounting Practices (GRAP) and the former Generally Accepted Municipal Accounting Practice (GAMAP) require municipalities to depreciate assets. Generally, however, municipalities do not apply a depreciation model that will determine the funding to be put aside each financial year to meet future liabilities for the renewal of infrastructure.

The survey concluded that municipalities generally have low capability levels of infrastructure maintenance. It was also found that municipalities generally struggle to adhere to statutory obligations, such as the compilation of Integrated Development Plans (IDPs) and Water Services Development Plans (WSDPs). Furthermore, an audit conducted by the Council for Scientific and Industrial Research (CSIR) in conjunction with the Construction Industry Development Board (CIDB) in 2007 concluded that no record could be found of any formal broad-based audits or studies of the state of municipal infrastructure in South Africa. The Infrastructure Barometer of the Development Bank of Southern Africa (DBSA, 2006) provides an overview of the state of infrastructure in the key sectors of water and sanitation, energy, ICT and transport. This Barometer also identifies backlogs and the challenges and constraints in the provision of these services. The Barometer (2006, and subsequently in 2012) focussed primarily on municipal infrastructure services and noted with concern the serious lack of information on infrastructure assets in many municipalities (DBSA, 2006:179; 2012: 103).

Various agencies, such as the South African Local Government Association (SALGA), National Treasury, the Department of Co-operative Governance and Traditional Affairs (CoGTA), as well as individual municipalities, perform audits of their own infrastructure. Nevertheless there seems to be no reliable data about the state and performance of municipal infrastructure and its maintenance. Data available from the South African Cities Network's "State of the Cities Report (2011)", "State of Cities Finance Report (2013)", and the "South African Informal City Book (2013)", reflect that in especially low-capacity municipalities statistics on the extent and capacity of infrastructure assets can be highly unreliable. The CSIR/CIDB audit report (2007) concluded that many municipalities do not conform to the requirements of the following: Municipal Finance Management Act 56 of 2003, the Local Government: Municipal Systems Act 32 of 2000 (MSA), and the Free Basic Services Policy, (which entitles all households to an agreed level of free basic services), as well as other legislation that requires local authorities to ensure that adequate provision is made for the long-term maintenance of their infrastructure assets. The audit report concluded that there are "gross shortcomings in maintenance policies and practice".

A final factor which hampers analysis is the different budgeting and spending patterns of municipalities. According to the National Treasury (2011), local and district municipalities spend more of their budgets (24,9%) on capital projects than the metros do (15,6%), but less on operations. In other words, local and district municipalities budget relatively more (than the metros do) to acquire infrastructure than they do for operating and managing it.

Furthermore, the range of dependency on national transfers varies widely - from the lower level of dependency found in some of the metros, through to the extremely high levels of dependency found in mostly rural municipalities. More and more new infrastructure is being constructed without addressing the condition of the existing infrastructure, in the attempt to address imbalances in access to services. However, this has the unintended consequence of widening the gap among municipalities in their maintenance of infrastructure. Generally the poorest municipalities have acquired the most infrastructure relative to their ability to look after it, but lack the resources to maintain the new and existing infrastructure adequately. Furthermore, a study conducted as far back as 2004 by Gibson revealed that over 75% of the non-capital income for infrastructure development in local and district municipalities is contributed by national grants and subsidies, compared to 11% averaged by metropolitan municipalities.

From the above it is evident that municipalities face serious challenges with respect to backlogs. Municipalities are expected to collaborate with the Department of Public Works through the Expanded Public Works Programme to deal with poverty and unemployment. It is therefore noted with concern that the Department of Public Works misspent R3.65 billion since 2009 (Cronin, 2013). Municipalities should also partner with the Department of Human Settlement to provide decent housing for the destitute. South Africa still has a large number of informal settlements (“shacks”), which has serious consequences since these areas are generally poorly located, do not have access to (legal) electricity, and are prone to fires, health hazards, and other risks.

Progress in addressing infrastructure backlogs shows some positive and also negative trends. According to Minister Baloyi (Budget Vote, 2013), only 54% of the country’s population has access to all four basic services of water, sanitation, electricity, and refuse removal. This ranges from 88% of the people in the Western Cape to 15% in Limpopo. An audit report presented by the Department of Performance Monitoring and Evaluation (2013) to the Portfolio Committee in Parliament states that currently 94.5% of households have access to clean water. However, due to a lack of maintenance, 21% of the households with access to running water do not always get the water from it. There are also signs that the rate of delivery of water infrastructure is slowing down, due to a lack of bulk infrastructure and a shortage of engineering expertise for maintenance and operation. Access to sanitation increased from 77% in 2009 to 82% in 2011, but is not on target for 100% in 2014. Again 26% of households are affected by sanitation services and facilities that are not fully functional. Access to electricity improved from 81% in 2009 to 84% in 2011, but is also not on target for 100% in 2014. This is due to limited generation capacity, as well as the lack of bulk infrastructure and distribution networks. According to the Local Government Revenue and Expenditure: Third Quarter Local Government Section 71 Report released in June 2013 by the South African Local Government Association (SALGA), municipalities achieved a revenue collection rate of 94.6% in the year to date. However, in spite of improved revenue collection, the same report revealed that only 73% of municipalities pay suppliers within the 30 days mandated by Cabinet.

2.1 *Municipal capacity required to deliver infrastructure projects*

As stated earlier, asymmetry exists between the capacity of various types and categories of municipalities in South Africa. However, it is evident that municipalities generally experience significant challenges in adhering to its Constitutional mandate of turning “developmental” and to deliver services on an acceptable level.

The MSA requires municipalities to prepare Integrated Development Plans (IDP) in cooperation with their communities so that inclusive future development requirements can be projected. The process of developing IDPs has highlighted serious institutional, capacity and capability constraints which municipalities face in their servicing of marginal communities. This problem is compounded by the revised mandate introduced through the National Department of Housing's amended policy, "Breaking New Ground". This policy requires "accredited municipalities" to prepare "Housing and Municipal Integrated Development Plans" as part of the process of gaining access to housing programme funding. Furthermore, most district and local municipalities have an extremely limited capacity to function as authorities and to be providers of energy, water, sanitation, transport and other municipal services. The 2003 Municipal Demarcation Board's capacity assessment of district and local municipalities revealed a range of institutional capacity challenges which confront most district and local municipalities. These challenges revolve mainly around municipalities' capacity to render basic services with its equitable share and grant allocations, limited tax base and poor revenue and debt collection practices. Due to these limitations municipalities generally find it extremely difficult to provide free basic services as expected. Such free basic services are defined as:

- water: 6 kilolitres per household per month;
- electricity: 50 kWh per household per month;
- waste removal: access to a refuse dump in rural areas, a communal refuse dump that is well-managed by the community, and collection at least weekly in urban areas.

This challenge thus concerns the poor linkage between marginal communities and the institutional and financial capacity of municipalities. According to the Auditor General's 2011/12 consolidated report, released in August 2013, only 5% (17 out of 278) of municipalities in South Africa received a clean audit. The Auditor General (at that time), Terence Nombembe, questioned the level of leadership, accountability, and commitment of municipalities to improve this unsatisfactory state of affairs. The South African Institute of Chartered Accountants also expressed concern over the slow progress made by municipalities to achieve clean audits. The Institute singled out the diminished capacity of human resources in municipalities as an underlying cause of poor audit reports.

A further challenge is the causal relationship between the delivery of basic services and housing. This dependency correlation implies that infrastructure projects cannot be executed if housing is not delivered. The lack of integrated and coordinated planning by municipalities leads to a situation where infrastructure projects, such as electricity supply, sewerage, and water pipelines, only take form after the construction of houses. To connect electricity, water pipes, and sewerage after a house is already constructed, is highly problematic and costly. Municipalities generally lack the capacity to plan infrastructure projects in a coordinated way and to plot milestone dependencies on Gantt-charts.

Due to political and other dynamics, municipalities generally experience a high turn-over of senior administrative and political leaders. This generally leads to a situation in which some senior managers are not cooperative and may still pay allegiance to a suspended manager or councillor. Where there is tension between offices and factions a divisive atmosphere is created within the organisation. A lack of cooperation and coordination between the various departments and directorates generally also leads to insufficient planning for infrastructure projects.

3. MUNICIPAL INFRASTRUCTURE DEVELOPMENT: SUPPORT FRAMEWORK AND STRUCTURES

Since democratisation in 1994, the South African local sphere of government experienced (and is still experiencing) major restructuring exercises, and is exposed to political dynamics, and different strategic orientations. A positive outcome of this fluidity was the establishment of a comprehensive statutory and regulatory framework, which helped to identify, design, and execute infrastructure development projects in municipalities. Based on this framework, support structures were established to facilitate infrastructure projects.

In terms of the Constitution of the Republic of South Africa, 1996 (Section 152) municipalities are obliged to ensure that municipal services, as provided for in Part B of Schedule 4 and Part B of Schedule 5, are delivered in a sustainable way. The White Paper on Local Government (1998) also recommends that municipalities establish innovative ways of providing and accelerating the delivery of municipal services. Further impetus to the establishment of a framework for infrastructure projects was provided by the White Paper on Municipal Service Partnerships (2004), which established municipal service partnerships (MSP) as a core mechanism to render basic municipal services. The MSP aims to provide a framework within which to optimally utilise limited resources of municipalities. The MSP has been derived from the principles of Batho Pele (White Paper on Public Service Delivery, 1997), by means of integrated development planning (IDP) processes and through participation of the community in helping to determine service priorities. The MSP policy encourages universal access to basic municipal services, the progressive improvement in service standards and openness and transparency in the processes used for selecting service providers.

To support municipalities in their obligations to develop infrastructure, the South African government established extensive legislative, strategic and financial support frameworks and structures. On a national sphere these include the President's State of the Nation Address (SONA); the Government's Programme of Action (GPoA) in which so-called "apex" priorities for Government are specified; the National Development Plan: Vision 2030 that specifies the parameters and context of infrastructure development; the Medium-Term Strategic Framework, as well as the Medium-Term Expenditure Framework. The Infrastructure Development Cluster comprises all infrastructure sector departments and is tasked with oversight and the integration of infrastructure planning and implementation.

The Presidency has two departments that are tasked with integrated planning of infrastructure. Firstly, the National Planning Commission (NPC) develops long-term integrated development plans for all sectors, including infrastructure. Secondly, the Department of Performance Monitoring and Evaluation (DPME) has a dedicated economic infrastructure outcome that is monitored and reported to Cabinet periodically. Furthermore, the Presidential Infrastructure Coordination Commission (PICC), headed by the President, is tasked with coordinating and overseeing the implementation of strategic infrastructure projects. The National Treasury is responsible for providing the budget for national infrastructure. Infrastructure-related departments are responsible for medium- to long-term planning of specific infrastructure sectors, programmes and projects.

Further structures and frameworks include the Expanded Public Works Programme (EPWP), the Municipal Infrastructure Investment Framework (MIIF), the Urban Development Framework, the Integrated Rural Development Strategy, the Urban Renewal Strategy, the National Spatial Development Perspective, and the Consolidated Municipal Infrastructure Programme (CMIP). The Municipal Infrastructure Grant (MIG) and the Equitable Share Grant were created for financial support.

For management support, Planning and Implementation Management Support Centres (PIMS-Centres) were established at district council level to assist local municipalities with the execution of their IDP processes.

Given the 2013/14 financial year budget of R56.12 billion, it is the task of the Ministry of Cooperative Governance and Traditional Affairs (CoGTA) to facilitate support to municipalities and to coordinate governance among the three spheres of Government. In this regard R1.6 billion has been allocated to the Community Works Programme to minimise the impact of poverty due to unemployment. According to SALGA (2013), spending of the Municipal Infrastructure Grant was at 79% for 2012/13. On the other hand, expenditure by municipalities of the Urban Settlements Development Grant, which assists municipalities to upgrade informal settlements, improved over the 90% spending level of 2011/12. Municipalities receiving direct conditional grants reported an average expenditure of 88.4%. This is a significant improvement from the 2011/12 underperformance, when an average expenditure of 48.7% was reported for 155 of the 278 municipalities that complied with the National Treasury's process to verify expenditure.

The National Strategic Framework for Comprehensive Municipal Infrastructure Management (2010) was developed by the former Department of Provincial and Local Government (currently CoGTA) as a strategy for a comprehensive plan to manage infrastructure and thereby ensure sustainable service delivery. The development of a Comprehensive Infrastructure Plan (CIP) should serve as a business model to provide strategic focal inputs to municipalities' integrated development plans (IDPs). The CIP provides an enabling framework for the implementation of the IDP by focusing the efforts of government programmes in a consolidated manner towards sustainable service delivery.

A further support mechanism is the development of the Industry Guide 2007 (as revised in 2009/10) by CoGTA in conjunction with stakeholders such as professional bodies. This Guide, officially known as "An Industry Guide – Infrastructure Service Delivery Levels and Unit Costs 2009/10", has the following aims:

- Reflect the broad stakeholder inputs and adoption of unit standards and costs for infrastructure.
- Address regional/provincial and sectoral/industry-related cost values, as well as to allow for national impacts such as variance in labour rates, fuel and transport costs, materials, and other related factors.
- Align the associated costs of infrastructure construction within the changed market conditions to reflect the escalation since the 2007.
- Ensure that infrastructure types such as sport facilities are incorporated into the revised Guide document.

The overall objective is therefore to develop a practical, contemporary and relevant nation-wide system of guidance for municipalities. The focus will be on providing cost values for infrastructure, planning estimates and assessment guidelines that are value for money. The Industry Guide should be used in conjunction with related mechanisms, such as the Municipal Services Financial Model (MSFM) and the Municipal Infrastructure Investment Model MIIF), to corroborate cost estimates for planning of infrastructure.

A further significant initiative taken by Government to establish a framework conducive for infrastructure development was the establishment of the Municipal Infrastructure Grant (MIG).

MIG is a conditional grant to municipalities and it complements the equitable share grant for local government (DPLG MIG, 2006: 14). This grant is provided on a conditional basis to municipalities and is allocated to specific municipalities on the basis of a formula. The MIG programme aims to provide only basic infrastructure service (DPLG MIG, 2006: 3). Through the MIG programme the Government helps municipalities to develop the capacity of their capital project management. This is facilitated mainly through establishing project management units (PMUs) within municipalities. The PMUs are accountable to the council and management structure of the municipality (DPLG MIG, 2006:16). The national MIG unit and the provincial programme management units fulfil a support role to PMUs. The MIG programme further promotes the devolution of the project management function, which implies the establishment of a project management function within a municipality. The Municipal Infrastructure Investment Framework (MIIF), for example, covers the maintenance of roads (DPLG MIG, 2005:4). This framework for the delivery of municipal infrastructure is based on Chapter 3, section 41(i) of the Constitution (1996).

A further initiative taken by Government was the establishment of the Construction Industry Development Board (CIDB). The CIDB was created to provide leadership to stakeholders and to stimulate sustainable growth, reform and improvement of the construction sector. The objective is effective delivery and the industry's enhanced role in the country's economy. The CIDB designed a "Toolkit for Infrastructure Delivery Management" (2006) to improve the design and execution of infrastructure projects. The CIDB further published its "Standard for Developing Skills through Infrastructure Contracts" and the "Standard for Contractor Performance Reports for use on Construction Works Contracts" (Grades 2 to 9) in August 2013.

Based on the Local Government Turn-Around Strategy (2011) and the fact that municipalities failed to spend approximately 14% of their R9.9 billion MIG budget, CoGTA established the Municipal Infrastructure Support Agency (MISA). MISA's main purpose is to address capacity challenges. This is accomplished by supporting municipalities with planning, management and other technical expertise to roll-out infrastructure more efficiently and effectively. MISA builds on some of the key initiatives which are relevant here, including:

- Project Consolidate;
- The Five Year Strategic Agenda;
- Siyenza Manje programme (managed by the Development Bank of Southern Africa's Development Fund to deploy technical experts to municipalities); and
- Operation Clean Audit 2014.

Special infrastructure development projects earmarked for MISA's support include water, sanitation, electricity, waste management and the building of access roads. To support MISA in this support role, Government put in place norms and standards for infrastructure delivery as well as adequate monitoring mechanisms to enforce these norms and standards. Government also focuses on accelerating the building of skills and capacity for enhanced infrastructure delivery where it is lacking in municipalities. It is estimated that meeting the infrastructure backlogs in local government would cost at least R495 billion (CoGTA, 2013).

On the provincial level, municipal support for projects to develop infrastructure include the following: Provincial Growth and Development Plan, Provincial Programme Management Units, Project Registers at the Offices of the Premier and Provincial PIMSS forums.

These national and provincial frameworks and structures in turn inform municipal project planning of infrastructure through related mechanisms such as the Integrated Waste Management Plan, the Environmental Management Framework, and its top-layer Service Delivery and Budget Implementation Plans (SDBIPs). In terms of Section 55(1)(a) of the Local Government: Municipal Systems Act 32 of 2000 (MSA), municipalities must provide services in a sustainable and equitable manner. To adhere to this mandate, the Director: Infrastructure must work in close collaboration with Project Management Units (PMUs) to support the design and execution of infrastructure projects. Furthermore, the IDP of the municipality must contain a Capital Investment Programme within the parameters set by the Local Spatial Development Framework (MSA, Section 26(e)).

In terms of section 153(b) of the Constitution, municipalities have a duty to participate in national and provincial development programmes. The municipalities use the Integrated Development Plan (IDP) to fulfil these constitutional obligations. In terms of section 25(1) of the MSA, each municipal council must adopt an IDP. The IDP integrates and co-ordinates plans and takes into account proposals for the development in the municipality. The IDP is a strategic plan for the sustainable development of the municipality (Steytler & De Visser, 2010: 7-4).

From the brief orientation above it is evident that an extensive framework already exists which can support municipalities in designing, executing and maintaining infrastructure projects. The alignment of these various efforts into a coherent and synergistic approach could go a long way towards improving the effectiveness of project planning for better infrastructure in South Africa. In the next section the nature of infrastructure projects will be highlighted to obtain conceptual clarity of the key construct of this article.

4. MUNICIPAL INFRASTRUCTURE PROJECTS: CONCEPTUAL CLARIFICATION

In its most simple form a project probably can be regarded as an endeavour that has a beginning and an end (Turner, 1993: 4; Maylor, 1999: 5). To this definition Wysocki, Beck and Crane (2000: 65), Meredith and Mantel (2003: 9), as well as Turner (2009: 2), add that a project can be regarded as a "...temporary organisation to which resources are assigned to do work, to deliver beneficial change". Kutzen and Blitz (1991: 2) in turn describe a project as a set of principles, methods, tools and techniques for the effective management of objective-oriented work. A project can also be defined by focusing on its managerial dimensions: the optimal utilisation of resources to ensure that the project output is adhered to in terms of time, budget and quality constraints (Kutzen & Blitz, 1991: 2; Kerzner, 2003: 9). Maylor (1999: 3) and Burke (2006: 2-3) elaborate further: this includes planning, organising, directing and controlling activities. As both discipline (theory) and application (praxis), project management is guided by the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBOK). PMI's purpose is to establish best practice standards across industries (Heldman, 2003: 27; Klastorin, 2004: 18). The PMI provides the fundamentals of project management as an international recognised standard (IEEE STD 1490 – 2003). It recognises five process groups or life-cycle phases and ten knowledge areas (PMBOK Guide, 2012).

In a municipal context projects are typically clustered in portfolios within strategic programmes (i.e. IDP, LED and MIG) to render particular services (Van der Walddt, 2009:72). With the MIG programme, CoGTA emphasises the fact that project management is an integral function of any municipality.

The main mechanism for this purpose is the establishment of Project Management Units (PMUs) to oversee the design and execution of infrastructure projects. As an example, the City Council of Matlosana set up a PMU during the 2004/2005 financial year. The PMU structure received an amount of R1.2 billion from the MIG during the 2010/2011 financial year (City of Matlosana, 2009-2010). The PMU must ensure compliance with the scope and budget parameters specified in the IDP. In the development of their IDPs, district councils have to take the following factors into consideration:

- community infrastructure needs in the council areas, by targeting the poorest communities;
- capital expenditure and available funding resources, which include an equitable share from national government, grants from national government for infrastructure projects, the Consolidated Municipal Infrastructure Programme, departmental budgets, and other sources, such as donations from donors or the private sector, loans and public-private partnerships;
- policy options (cost-benefit) available to municipalities;
- community involvement in selecting the most urgent priorities;
- developmental needs and development of infrastructure;
- the vision for the municipality on infrastructure development; and
- on-going maintenance and integration of infrastructure projects.

According to DBSA (2006: 20) municipal infrastructure projects are generally categorised in terms of the following three types:

- physical infrastructure, such as water pipes, roads and storm water drains;
- social infrastructure including houses, clinics, sports grounds and schools; and
- economic infrastructure consisting of the establishment of business districts, transport systems and telecommunication networks.

For the purpose of this article and the empirical investigation conducted at Dr KKDM, “infrastructure projects” only refer to the development and construction of physical capital projects typically undertaken by district municipalities.

5. RESEARCH METHODOLOGY: DR KENNETH KAUNDA DISTRICT MUNICIPALITY AS CASE STUDY

Based on an empirical investigation, this section outlines the practices and challenges associated with infrastructure development projects at Dr Kenneth Kaunda District Municipality (Dr KKDM) as case study.

5.1 Case study methodology

Through a qualitative research design, a case study method was utilised for the present study. A case is a concept in research that refers to the fact that a number of (or single) units of analysis are selected that are highly representative of the particular target population under investigation (Leedy & Ormrod, 2001: 149; Babbie & Mouton, 2002: 280-283).

The instruments used for data collection were semi-structured interviews with key role-players responsible for infrastructure projects, as well as document analyses of financial and performance reports and strategic and technical documents (period March – Augustus 2013).

As a member of the Audit and Risk Committee (ARC) of Dr KKDM, the author/researcher had access to such documentation as well as to senior managers of the respective managers of Departments of Infrastructure (local municipalities) and PMUs. These respondents were targeted (i.e. by purposive and convenience sampling) as units of analysis. In compliance with ethical research guidelines, great care was taken not to reveal sensitive information or the identity of the respondents. The author/researcher further ensured that he did not contravene the confidentiality clauses and code of conduct of the ARC.

Semi-structured interviews enabled the author/researcher to obtain multiple responses to set questions and allowed for detailed responses. It gave the researcher the opportunity to pose questions about specified topics and the respondents had a great deal of leeway to reply (see Struwig & Stead, 2001: 98; Bryman, 2001: 314). The researcher constructed an interview schedule to conduct the interviews in a uniform manner. Some biographical details of the respondents, such as their managerial level, years of experience in infrastructure projects, and their managerial position, were vital for the interpretation of responses. The total number of eighteen respondents was representative of the target population. The aim of the study was to explore practices and challenges associated with the design and execution of infrastructure (capital) projects and to uncover innovative best practice in the governance of infrastructure projects.

5.2 Profile of Dr KKDM

Dr KKDM is situated in the North-West Province, and includes four local (category B) municipalities, namely Maquassi Hills (Wolmaranstad), Matlosana (Klerksdorp), Tlokwe (Potchefstroom), and Ventersdorp local municipalities.

The area covered by the District Municipality appears on the map below (Figure 1).

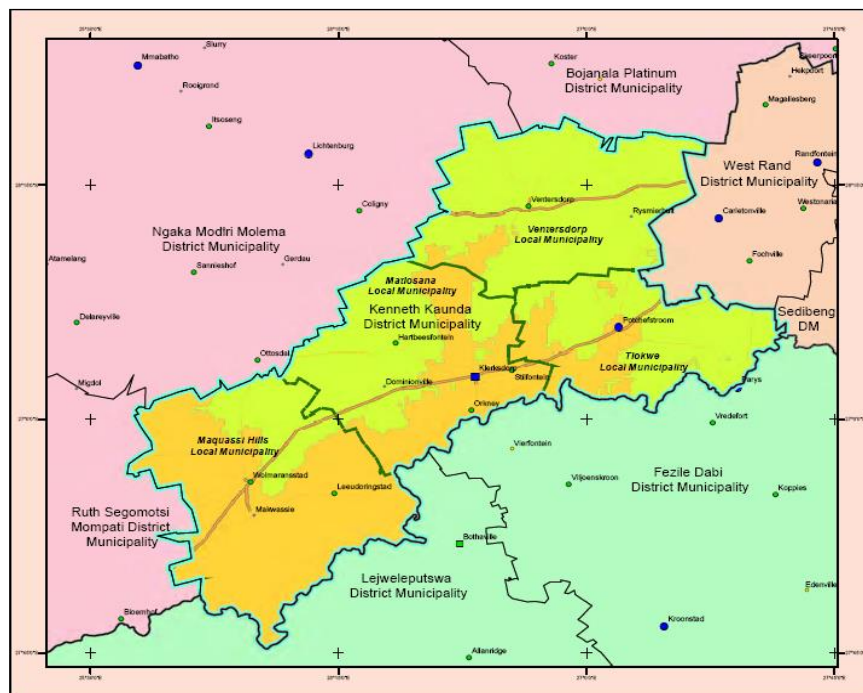


Figure 1: Map of Dr Kenneth Kaunda District Municipality
(Source: Maxim Planning Populations, 2007)

The office of the District Municipality is situated in Orkney, in the Matlosana Local Municipality, and is located approximately 65 km southwest of the Gauteng Province. This District Municipality borders the Gauteng Province to the northeast and the Free State Province to the south. According to Statistics South Africa (StatsSA Community Survey, 2007), the population of the Dr KKDM was 634 134 (Table 1). The population is unevenly distributed among the four local municipalities.

Table 1: Population Composition

Area	Population
Ventersdorp LM	36 532
Tlokwe LM	124 350
City of Matlosana LM	385 784
Maquassi Hills LM	87 468
Dr Kenneth Kaunda DM	634 134

(Source: Statistics South Africa, *Community Survey*, 2007)

The majority of the Dr KKDM population resides within the City of Matlosana LM (60.8%), followed by City of Tlokwe LM (19.6%), Maquassi Hills (13.8%), and Ventersdorp (5.8%). The number of wards per local municipality is: Matlosana (35), Tlokwe (26), Maquassi Hills (11) and Ventersdorp (6) for a total of 78 in the district. The number of households within the DM was estimated at about 287 000 during the StatsSA Community Survey (2007).

The infrastructure competencies of the Directorate: Infrastructure and Utilities include the following functions:

- Support and administration
- Development planning and building control
- Roads and storm water
- Waste landfill sites
- Water
- Sanitation
- Building construction.

6. RESEARCH FINDINGS: INFRASTRUCTURE PROJECT CHALLENGES AND POSSIBLE SOLUTIONS

The findings from this study indicate various challenges associated with infrastructure projects. For purposes of analysis these challenges are categorised broadly into technical/administrative, financial, and political/governance challenges below. It should be noted that these three areas are highly interrelated and interdependent. Some financial challenges, for example, may have political causes and remedies. Where possible, the challenges that are highlighted are reported in descending order, based on the relative significance attached to it by the respondents and inferences made from document analysis (performance reports). In line with the aims of this article, best practice and possible remedies or solutions to address these challenges are reflected next to some of the most significant challenges.

6.1 Technical/administrative challenges and solutions

The most significant challenge highlighted by the respondents (83%) is the limited interaction between the district and local municipalities. Limited interaction causes problems especially for IDP planning and priority-setting of infrastructure projects. The respective Directors: Infrastructure do not adequately plan jointly and there is a general lack of coordination and cooperation. This challenge could be the outcome of politics, but could ironically also be cured by political intervention. A division of responsibilities should be clarified between district and local municipalities in this regard.

Respondents (63%) also indicated a lack of coordination between the district and local municipalities and the provincial and national departments. This results in provincial and national departments implementing infrastructure projects unilaterally and without proper consultation with municipalities. Ultimately the municipalities could be held responsible for the maintenance of these assets within their area of jurisdiction. Sphere-driven infrastructure development should consider the operational capacity and financial implications such forms of development hold for municipalities. The principles of co-operative governance as well as the various mechanisms that are in place to facilitate intergovernmental relations should be utilised to its fullest potential to address this challenge. These mechanisms include Minister-Members of the Executive Committees (MINMECs) and the Mayoral Forums.

A further challenge that was identified (54%) is that risk assessment for the entire project life-cycle is not done adequately. Especially financial and legal liability risks should be factored into project planning for new infrastructure. Coupled with keeping poor records, the practice of risk management deserves special attention. Sensitive documents are not properly safeguarded and often simply get lost. In accordance with the National Archives and Records Services Act 43 of 1996 (as amended by Act 36 of 2001), all municipalities should design and maintain a registry of official documentation.

Another challenge is that the PMUs generally have limited capacity to plan and oversee infrastructure projects successfully. Some local municipalities often utilise MIG-funding for other purposes, even for the payment of salaries. This situation is complicated by insufficient role clarification between municipal project managers from the Department: Infrastructure *vis-a-vis* the role and responsibility of the service provider's project managers (i.e. that of private contractor). Site inspections should be undertaken regularly by the municipality to oversee progress and value-for-money delivery, and to assess the adherence to specifications for tender contracts.

Based on the document analysis it is evident that all local municipalities within the Dr KKDM struggle to recruit and retain skilled personnel. Staff capacity seems to remain a huge concern. In the case of Matlosana Local Municipality the Directorate: Infrastructure and Utilities has 1 040 approved posts, but currently 396 of these are vacant. Municipalities face substantial responsibilities for services delivery with relatively limited capacity and resources. This challenge is compounded by the fact that Dr KKDM has limited human resource policies and development strategies in place. The Human Resource Directorate is currently understaffed. In addition there is a high-staff turnover and a general lack of commitment by senior staff members. This has led to low morale and a lack of motivation among lower staff levels. Practices of supervision, monitoring and control all deserve urgent intervention. Although most department heads had signed performance agreements, all agreements should be reviewed based on the setting of specific performance targets.

6.2 Financial challenges and solutions

Except for road maintenance, respondents generally concurred that the budget allocation for Dr KKDM is adequate for rendering the most pressing infrastructure services. The budget allocation for infrastructure (capital) projects for the 2012/2013 financial year is as follows:

Capital projects	Budget allocation
Roads	R13,2m
Electricity	R8,1m
Water	R30,4m
Waste management and waste disposal	R21,1m

(Source: Dr KKDM Budget 2012/2013)

The most significant challenge that was highlighted (82% of respondents) is that there is a lack of co-operation between the District Municipality (DM) and the Local Municipality (LM) – they do not work in sync. The District Municipality (DM) does plan, fund and implement certain infrastructure projects, such as the construction of high mast lights, and then transfer the asset (project) to a local municipality (LM). The problem, however, is that very often the local municipality did not budget for the operation and maintenance of the project. Furthermore, the DM cannot budget properly for projects due to the fact that LMs provide them only with a list of projects once the budget/IDP cycle has already started. This list also lacks a proper business plan, project specifications, estimates of costs, and scope. The DM must then themselves prioritise the lists of proposed projects they have received from the LMs. The DM's priorities may not be congruent with the relative priority which the IDP of the LM attaches to it. This challenge emphasises the lack of joint planning, as it was also highlighted under technical/administrative challenges above. The DM and the local municipalities should budget for the entire project cycle; not only for the construction costs, but also for its operating costs, maintenance, cessation of service, and removal of assets.

A further major challenge (55%) is the delays in payment that is experienced due to strict Tender and Supply Chain Management processes and procedures. This usually causes an escalation of the project costs. The roll-over of funding (budgets) of projects from one financial year to another is not uncommon, which frustrates auditing and complicates accounting practices. This challenge is further complicated by inadequate screening of potential suppliers in the tender evaluation process. Often the tender is awarded based on the lowest cost, without due consideration of the supplier's track record, capacity, and relevant work experience. Sometimes the contractor obtained many tenders simultaneously and money paid by the municipality is then used to fund other projects. As a result, municipal projects are neglected and the scope and duration of such projects are extended.

Further challenges emerging from the document analysis and interviews include the following:

- Strategies to contain costs are lacking.
- There is a high turn-over of accounting officers, especially of Chief Financial Officers.
- The Indigent Register is not accurate and municipalities experience relative high rates of non-payment of services (municipalities should differentiate between those who cannot pay and those who refuse to pay, and apply sanctions to the latter).
- The Revenue Enhancement Strategy and Debt Collection Strategy are not well designed and are not executed proficiently.

- Relative high levels of corruption take place in the pre-paid electricity system (installation of breached electricity), and general malpractices occur, especially in the unofficial use of municipal vehicles and the mismanagement of overtime.

6.3 Political/governance challenges and solutions

In project governance the most significant challenge that was identified is the lack of alignment between the IDPs of Dr KKDM and its Local Municipalities. This includes the lack of interface between IDPs, Service Delivery and Budget Implementation Plans (SDBIPs) and the Performance Management Systems of the municipality. Such challenges seriously hamper the monitoring of the council and oversight over capital projects.

A significant percentage of respondents (67.4%) indicated that factionalism in the rural party, and especially tension between the offices of the Executive Mayor, Speaker, and Municipal Manager, leads to dysfunctional governance. Senior managers do not feel protected due to the fine line between politics and administration. This issue should be addressed by decisive political leadership and role clarification.

There is general consensus that an adequate governance framework (e.g. policies, strategies, and guidelines) does exist that provides parameters for the design and execution of infrastructure projects. Nevertheless, there is concern that these parameters are often not enforced adequately. One case in point is the requirements according to which water-quality samples from the wastewater treatment works have to be submitted routinely to monitoring authorities. In many cases it seems that these requirements are not complied with and, furthermore, there seems to be little capacity or political will to enforce these monitoring requirements. In this respect the most significant challenge seems to be inadequate financial provision for the long-term maintenance and on-going operation of infrastructure.

In many cases, the provision of municipal infrastructure implies collaboration among the DM, the LMs, the sectoral departments in the province, the National Government, and service providers. The physical provision of bulk electricity, for example, is the responsibility of National Government through Eskom. Another example is the development of water infrastructure, which is a national competence, but municipalities render this service locally to their residents.

7. INNOVATIVE BEST PRACTICE

Regarding innovative best practice, the study revealed interesting initiatives that deserve further investigation. Through such investigations the impact of these initiatives on the successful delivery of infrastructure projects can be measured. Some of these initiatives include the following:

- the implementation of Service Delivery Forums to identify and prioritise infrastructure needs;
- the alignment of MIG with the Financial Management Grant (FMG), and the Municipal Systems Improvement Grant;
- the implementation of a Project Register in the Office of the Premier to prioritise, document and track the progress of sectoral and municipal projects in the province;
- proper infrastructure project oversight by the Audit and Risk Committee and the Municipal Public Accounts Committee; and

- the use of a Project Management Information System (PMIS) and scientific data collection of infrastructure projects through Geographical Information System (GIS) technology, such as GISTEXT (Land Information Web based application), City Map (Intranet Map Services), and ArcGIS Server (GIS web applications).

8. CONCLUSION

This article reported on findings from a study undertaken at Dr KKDM to identify challenges experienced in the implementation of infrastructure projects. The aim was also to uncover potential remedies and best practice that are associated with the design and execution of these projects. It is evident that a comprehensive and integrated framework for infrastructure projects exists in all three spheres of government. The MIG is the most prominent programme to direct the development of municipal infrastructures. The challenges that were identified include significant technical/administrative, financial and political/governance obstacles. Some remedies as potential solutions to these challenges were provided.

It is clear that municipal infrastructure services play an important role in social and economic development. Such services help to create employment opportunities and provide basic services to the urban poor. However, infrastructure projects should be designed properly and executed efficiently if the benefits are to be maximised. More municipal cases should be analysed to uncover obstacles that impede successful infrastructure development and to explore avenues in which to establish innovative strategies of best practice.

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