

Strategic Spatial Planning's Role in Guiding Infrastructure Delivery in a Metropolitan Municipality Context: The Case of Johannesburg

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Synopsis: Strategic spatial plans have been used with limited success to guide infrastructure provision. The paper reviews the example of the City of Johannesburg where processes and mechanisms have been implemented to this effect, highlighting tensions between future visions and the reality of existing infrastructure networks and municipal financing systems.

1. Introduction

Within the practice of town planning, strategic spatial plans are recognised internationally as a tool to guide and locate development outcomes within a given jurisdiction, particularly local government. A significant consideration of strategic spatial plans is public infrastructure (e.g. roads, water, electricity, waste removal, transport, and community facilities). Consequently an academic debate has considered the role of spatial plans in ensuring infrastructure provision (Healey et al. 2003) (Morphet J. 2011). This paper seeks to understand how strategic spatial planning has been used to provide public infrastructure and the success of the endeavour in the context of the City of Johannesburg.

The global experience of using spatial planning to guide public infrastructure provision through the academic debate has been generally negative (Matteringley M, Winarso H.2000) (Baker M, Hincks S. 2009) (Dodson J. 2009). A common challenge being acknowledged is the lack of implementation of infrastructure projects defined by a spatial plan.

The paper reviews an example where strategic spatial plans have been successfully used at the City of Johannesburg over the past ten years to guide infrastructure development and refurbishment. Central to the success of this endeavour has been the acceptance by a range of service providers of the need to prioritise spending given limited finances and to commit to an extensive process of negotiation to finalise the City's capital budget. The tool used to catalogue and prioritise projects based on the spatial planning priorities of the City is known as the Capital Investment Management System (CIMS). The paper highlights the fragility of the approach undertaken by the City of Johannesburg. A key tension is between infrastructure asset management plans which assess capital need based on the condition of existing infrastructure, and strategic spatial plans that use a City wide future based template to define this need. The second tension is the difficulty experienced in monitoring expenditure and the material success in directing capital funding.

Strategic spatial plans are meant to be about creating visions of the future, but they cannot be divorced from the existing material and institutional realities. This is particularly true in relation to applying strategic spatial plans to guide infrastructure development.

2. Strategic Spatial Planning

Strategic spatial plans and associated planning process is a means of taking selective decisions on future actions based on defined existing geographical areas for a defined population, often under the jurisdiction of a government administration (Morphet. 2011). It is essentially an American and European planning concept which has been extensively researched (Healey. 2006) (Albrechts.1992) (Faludi.2009) (van den Broeck.2008).

There is no common agreement of what defines the content of a strategic spatial plan. A view is that it is a plan focused on promoting the future economic development of a jurisdiction (UNHABITAT 2009). Another, is that the plans are there to promote sustainable development through identifying drivers for change' in complex economic, social, political and environment systems (Healey et al 2003). Alternatively, strategic spatial plans are perceived as a future vision for the urban form used to guide land use management decisions (ibid).

There is however agreement on what the process of strategic spatial planning entails. Simplified, it involves the definition of priorities and subsequent outcomes; the drafting of the strategic plan displayed geographically; the implementation of the plan; and the monitoring of the outcomes of the plan (Sartorio. 2005).

Methodologies for undertaking such processes vary and include: visionary incrementalism, objective setting; public participation; the use of a package of instruments or concepts; overcoming specific economic, social or environmental barrier approaches; or a combination of these methodologies (Ko et al. 2000). A common modus operandi is integration. Morphet (2009) argues that the integration of a strategic spatial plan must also occur within government in a horizontal fashion between sectors, but also vertically between other policy objectives of the administration.

3. Strategic Spatial Planning and Infrastructure Provision

Projects identified in strategic spatial plans as outcomes or 'drivers of change' are often service infrastructure related, aiming to meet the needs of the population in question. Morphet (2009) perceives service provision as the primary role of strategic spatial plans,

"the role of spatial planning is to deliver infrastructure within a local governance wide framework which comprises of a vision, objectives and shorter-term delivery plans" (Morphet.2009).

Yet despite this affirmation of the role of strategic spatial plans in service infrastructure provision the experience in the past ten to twenty years is that plans are not guiding infrastructure delivery (Morphet. 2011)(Wong and Watkins.2009)

The relationship between strategic spatial plans and infrastructure provision has been researched in a number of contexts. Studies reviewed included experiences in the United Kingdom (Baker M, Hincks S. 2009), Australia (Dodson J. 2009) and Indonesia (Mattingley M, Winarso H.2000). The outcomes of the reviews are sobering. The three case studies viewed

linking strategic spatial plans to projects as an important initiative to provide direction to development in a jurisdiction. The challenge arose in reconciling the outcomes of the spatial plan to the projects that were, or were not, implemented. The reasons provided for this disjunction included: lack of administrative coordination between planners, budget officials and project implementers (e.g. United Kingdom and Australia); contradictory policies (United Kingdom and Indonesia); political interference and the prioritization of either the cheapest and easiest projects (Indonesia); resistance from town planners who are used to land use management planning and not strategic spatial planning (United Kingdom). Even in Australia, a role-model for integrating strategic spatial plans with infrastructure provision, there are concerns that the broader integrative outcomes of the plans are being overshadowed by a single minded emphasis on public infrastructure provision (Dodson J. 2009). There is a sense from the literature that despite outcome monitoring occurring that the success of such plans cannot be measured by infrastructure projects completed, or the quality of the work. Success requires the commitment of all parties to accept a plan for an area in question and implement infrastructure interventions stipulated within the plan within agreed timeframes and standards.

There are key components, or aspects, of a strategic spatial planning that need to be considered, in order to ensure that there is coordination between the plan and provision of infrastructure. These components include:

1. The existing and future **population** that needs to be planned for. This Information is critical for modelling the appropriate infrastructure intervention.
2. The **location** of the infrastructure project must be defined accurately.
3. **Existing infrastructure capacity** – Without an understanding the condition of existing infrastructure one will not be able to know whether the existing population is adequately provided for.
4. The **nature of the infrastructure project (Project Type)** – A strategic spatial plan's outcomes may require service delivery to be done differently in the future in order to meet changing expectations (e.g. achieving environmental sustainability).
5. The **implementing agent** needs to take responsibility for executing a planned and budgeted for project
6. **Coordination of infrastructure delivery** between implementers of different infrastructure types is critical.
7. A **capital budget**
8. The **Sources of funding** used in paying for infrastructure.
9. **Implementation and Monitoring** (Wong and Watkins.2009)

In order for the above components to be used successfully certain tools and methodologies have been used to bridge the gap between planning and implementation of infrastructure

interventions. Examples of tools used, have been used or proposed in the South African context. The tools include:

1. **Infrastructure cost model** that considers population, population density projection, infrastructure demand, location, existing infrastructure capacity and cost (Biermann and Landre. 2002).
2. The **Municipal Infrastructure Investment Framework** (DBSA.2009) identifies infrastructure need based on infrastructure backlogs, infrastructure standards, population projections, an assessment of future requirements and a cost analysis.
3. **Computer based development models** and associated databases that would consider the range of components detailed above, and link these to custom made software to aid decision making in relation to where resources should be directed in relation to infrastructure provision. Multi-variable analysis is combined with Geographical Information Systems, financial management tools and engineering considerations. Examples include the Centre for Scientific and Industrial Research's Urban SIMS (CSIR. 2011), Integrated Infrastructure Management Environments as proposed by Mamoud Halfawy (2010) and the City of Johannesburg's Capital Investment Management System.
4. **Infrastructure Standards** or guidelines are the most common approach to define infrastructure requirements as a base for future development projections. There are numerous examples of this approach such as the South African Human Settlement Guidelines (CSIR.2000).

In the South African context, the strategic spatial plan used by municipalities is the Spatial Development Framework (SDF). With respect to conceptualising infrastructure SDFs typically use a set of common structuring concepts – namely nodes, corridors, open spaces and areas designated to the intensification of land uses. The focus infrastructure provision is generally poor. There is often little connection between proposed interventions in the SDFs and the execution of these interventions. Over the past five years there has been greater interest in linking SDFs to infrastructure implementation in the Country (Todes (2011)). The emphasis in these deliberations has been on the process to implement the infrastructure outcomes of the SDF and the plan itself.

4. The City of Johannesburg's Experience

The City of Johannesburg (CoJ) is located in the Province of Gauteng, South Africa. The City is located within the urban conurbation of Mogale City, Tshwane Metropolitan Municipality and Ekurhuleni Metropolitan Municipality and the less urban municipalities of Mid-vaal and Randfontein. It is one of the most populous cities in South Africa (COJ 2011) with an estimated

population of 3.8 million people within a broader provincial population of 10.5 million (CoJ 2011a)

The City of Johannesburg's planning regime is determined by the Municipal Systems Act of 2000 (DPLG.2000). It includes a 30 year strategic plan, the Growth and Development Strategy 2040; a 5 year medium term strategic plan, the Integrated Development Plan and three year operational and capital budgets.

5. *Spatial Development Frameworks*

The strategic spatial plan for the City, the Spatial Development Framework, is a component of the Integrated Development Plan. The Spatial Development Framework includes a hierarchy of local level plans namely: regional spatial development frameworks, urban development frameworks and precinct plans.

The key component of the Spatial Development Framework for prioritising infrastructure projects is the Growth Management Strategy. This strategy identifies those areas where, and when, the municipality should direct infrastructure investment. Priority areas include: marginalised areas (former black townships), transit orientated development corridors (as defined by the City's bus rapid transit system and rail network). Other areas in the City are given lower priority for future development and by extension, capital investment. The 'investment footprint' of the Growth Management Strategy is combined with an infrastructure coordination process that negotiates the three year capital budget for the City with technical departments. The computer based multi-variable tool used in this process to store and prioritise capital project information in the City is the Capital Investment Management System (CIMS).

Infrastructure in the City is provided by local government departments and government owned companies known as Municipal Owned Entities. For simplicity's sake these divisions will be referred to as departments.

6. *The Spatial Planning/ Infrastructure coordination process*

The Infrastructure Coordination process has been in operation since the formation of the City of Johannesburg in 2001.

The system was piloted at the Midrand Transitional Local Council in the late 1990s (Herman Pienaar 2011). The City Manager required a means of prioritising Ivory Park, a black township, for infrastructure delivery. The town planning department engaged with technical departments and determined the municipality's infrastructure need. A list of infrastructure projects for Midrand was determined. Subsequently the draft project list was prioritised based on the spatial imperatives.

When the Midrand Transitional Council was consolidated into the City of Johannesburg the concept of linking strategic spatial plans to infrastructure requirements was applied the City. During 2002/3 a Software/Civil Engineering collaborative was appointed by the City to develop a tool to facilitate this process. The operated by the Development Planning Department was the Capital Investment Management System (CIMS) (Herman Pienaar 2011). The function of the system was to facilitate the capture and prioritisation of infrastructure projects and reflect this as a capital budget.

Identification, prioritisation and finalisation of capital projects occur within the broader annual budgeting process of the City. The relationship is portrayed in Figure 1.

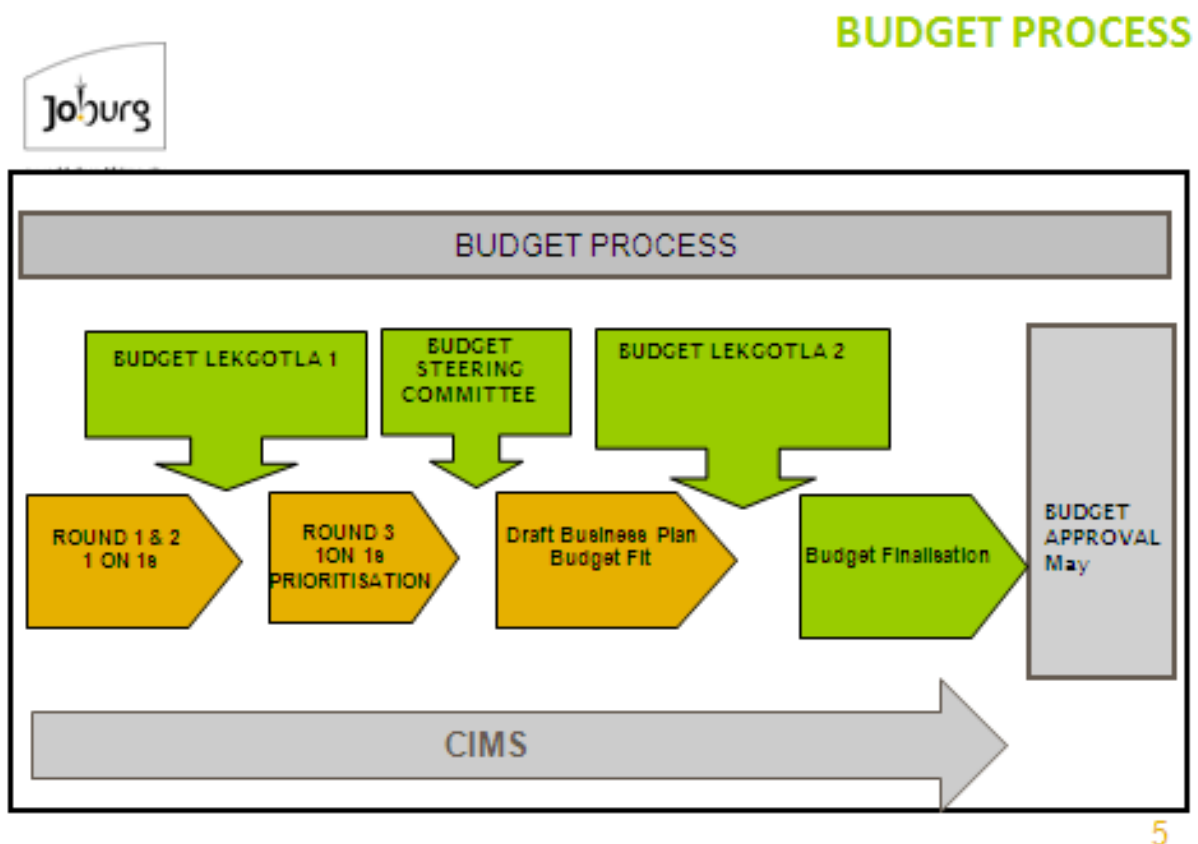


Figure 1: Diagram indicating capital budgeting process within the City of Johannesburg

Central to finalising project lists are sets of one on one meetings that the Directorate: Development Planning and Facilitation has with departments. These meetings are undertaken in order to ensure that departments are capturing their projects on CIMS correctly. The meetings also discuss the strategic prioritised list of projects against the Departments' own

priorities. The discussion attempts to balance the strategic intent of the City against the realities of infrastructure provision in the City.

Financial oversight of the capital budgeting process occurs through the Budget Steering Committee where a panel hears motivations from departments for capital funding in future financial years.

Political input into the capital budgeting process occurs at meetings, known as Lekgotlas. There are generally two Lekgotlas. At the first Lekgotla the broad principles for expenditure are determined. At the second Lekgotla the draft budget for the City is reviewed and inputs made.

The benefits of the CIMS and the capital budgeting process have been:

1. The provision of an annual process within the City whereby all departments' projects are represented on the same platform.
2. The provision of a single capital budget that is recognised across the administration.
3. The ability to link the strategic outcomes of the City as captured in the Growth and Development Strategy and Spatial Development Framework to specific projects
4. For engineering officials CIMS provides a platform on which the technical need can be assessed.
5. A means of directing a higher percentage of capital funding to marginalised and public transport areas for infrastructure service delivery where the funding will benefit the poor.
6. A means to achieve a consolidated overview of the sources of funding required by the City to fund new, refurbishment or operational capital projects.
7. Improved transparency for the public.

The challenges in implementing the CIMS system include:

1. The project list is only as good as the information captured on CIMS by the Departments. If this information is not correctly captured, this is the information that appears in the budget.
2. There is a tendency for departments and MOEs to redirect funding from projects in the budget that are located in strategic areas to other projects during the budget adjustment period. This is in the absence of effective administrative oversight during the adjustment budget process.
3. There is no means of verifying whether the CAPEX spend was spent on what was budgeted, and whether the infrastructure provided was of sufficient quality. The lack of an effective monitoring system is a major concern.
4. The prioritisation model used on CIMS is complex. This makes it difficult to communicate to departments and MOEs why one project is prioritised over another.

The capital budgeting process and the attendant CIMS system have been relatively successful over the past ten in guiding capital expenditure as a means of coordinating capital expenditure. The extent to which it has impacted on achieving the spatial outcomes of the City set out in the Spatial Development Framework is difficult to gauge in the absence of a comprehensive monitoring system. From a subjective perspective, certain areas, such as Soweto and the Inner City, have clearly benefitted from ten years of intensive capital investment. Other priority areas have not benefitted to the same extent.

The future of the capital planning process is closely bound to infrastructure procedures and to the financial processes within the City. Changes to these systems have significant ramifications for whether or not strategic spatial plans will continue to be linked to infrastructure budgeting.

7. Spatial Plans and Infrastructure Asset Management Plans (IAMPS)

The impetus for IAMPs to be undertaken in the City of Johannesburg was a raft of national policy that was introduced by the Department of Cooperative Governance and Traditional Affairs (COGTA) in 2007 and 2008 and was initiated by the Draft Municipal Infrastructure Support Strategy (COGTA.2007).

IAMP is a methodology by which existing assets are identified and monitored so that the condition of the assets of a given department can be ascertained, and that necessary interventions can be undertaken in order to maximize the asset's expected lifespan.

Similarly, Consolidated Infrastructure Plans (CIPS), in the context of a South African Municipality, consolidate the findings of all IAMPs to determine the overall conditions of the capital assets in question, and as a means to understand the infrastructure backlogs of the institution (Manqoba Soni 2011).

Infrastructure backlog in this circumstance is defined as:

1. The Apartheid backlog that resulted in a lack of service infrastructure in areas formerly reserved for Blacks, Coloureds and Indians.
2. The housing backlog which entails ensuring that all South African citizens have access to housing of an approved standard.
3. The maintenance backlog, which concerns the inadequate maintenance history of a municipality's assets. The backlog includes economic and population growth demands considerations in relation to infrastructure provision (SACN 2007).

The need for a standardized tool that assists in the on-going monitoring of the state of existing infrastructure cannot be questioned given the scale of municipal backlogs.

However, the policy does not consider how to integrate strategic spatial policy, in the form of the Spatial Development Framework, with the IAMPs or for the CIP. This was an acknowledged shortcoming by COGTA (Santhurie Naidoo 2011). The IAMP/CIP policy sees the strategic policy link between the CIP and municipal policy as the IDP and specifically the sector plans in the IDP (COGTA.2007b.p9) and not the SDF. This is problematic if strategic spatial planning is to have a future in guiding infrastructure delivery. The nature of IDPs varies from municipality to municipality, as does the level of detail in these plans. Whether the CIP can be 'linked' to the IDP in such a generic manner is questionable. If the current strategic objectives of the IDP is to be altered and driven by the contents of the CIP, the question arises as to whether service infrastructure need should be the only factor to drive infrastructure delivery outcomes?

Service delivery through the provision and maintenance of public infrastructure must be primary intention of a municipality. It is what a municipality are envisaged to do in terms of the Constitution (See 152b and Schedule 4 Part B of the Constitution (RSA, 1996)). However, achieving this intention means undertaking service delivery in a manner that achieves the other desirable outcomes that constitute 'developmental local government' (see 152 c-e of the Constitution (ibid)).

The constraint with IAMPs and CIPs is that the methodologies do not have the means to prioritise projects based on the other desirable factors. Neither does IAMPs/CIP have population projections for the municipality in question, nor a conceptualization of what the densities for a given area will be in the future. Nor do the IAMPs provide a spatial perspective. What IAMPs do provide is critical threshold information regarding infrastructure capacity and design. IAMPs also provide current and historical information relating to infrastructure costing.

What is required is a strategic spatial plan, in the form of an SDF that provides the outstanding information, draws on the IAMPs and CIP for information in relation to infrastructure provision, and prioritizing where new refurbishment and renewal projects are to take place based on priority areas identified in the plan.

8. Spatial Plans and Financial Procedure

The Municipal Finance Management Act's (no.56 of 2003) (Treasury.2003) intention is

"To secure sound and sustainable management of the financial affairs of municipalities and other institutions in the local sphere of government; to establish treasury norms and standards for the local sphere of government; and to provide for matters connected therewith."

The intention of the act is not to enhance service delivery or promote 'developmental Local Government' as per the Constitution (RSA.1996). Service delivery is not the primary outcome of the MFMA, financial prudence is (see also SACN.2007p68). This is not in and of itself a criticism of the MFMA. Sound financial management at municipalities is critical. But when commentators

criticize slow service delivery at the municipal level they need to realize that officials in municipalities work within a financial framework that is not geared to this outcome. Due to the effectiveness of National Treasury's implementation of the legislation the broad financial philosophy has become entrenched in South African Municipalities.

In relation to the City of Johannesburg there are two sections of the Act that influence planning for service infrastructure. The first relates to the municipal budgets set out in chapter 4 of the Act (Treasury. 2003). The second, relates to the acquisition of those goods and services in terms of Chapter 11 of the Act.

In relation to planning and budgeting it is the MFMA that legislates that:

1. IDPs provide the strategic framework for budgeting
2. Expenditure be linked to outcomes and goals as part of the budgeting process
3. That the project name detail be reduced and be standardized
4. Greater public participation be undertaken with residents and with other spheres of government in the finalization of budgets
5. A draft budget be finalised four months before the beginning of the financial year.
6. That formal adjustment budgets be tabled and that these occur once or year or under exceptional circumstances (SACN. 2007. p70).

From the above it may appear that the link between strategic plans and the budget would suffice to link financial sustainability and developmental local government. However, it is in the realm of the procurement of service infrastructure that the City of Johannesburg is feeling the burden of the MFMA's managerial emphasis. In this regard the establishment of tender committees (bid specification, bid evaluation and bid adjudication committees) depending on the complexity and the value of the tender concerned, have negatively impacted on Departments and MOEs ability to spend capital budgets (Manqoba Soni 2011).

The MFMA has become central legislation in defining how strategic spatial plans are linked to infrastructure provision within the City. Yet the linking of budgets to strategic outcomes is being negated in the City of Johannesburg because the budgets for capital projects are not being linked to actual expenditure, and that the procurement procedure is hindering the completion of capital projects in budget and on time.

9. Assessment

The City of Johannesburg has implemented a formal process by which strategic spatial plans have been used to direct infrastructure spending for over ten years. The use of defined and agreed to capital budgeting process has done much to mitigate against arbitrary political interference in the budget, and has provided a platform on which technical and strategic

considerations can be weighed. The process has also gained support for strategic spatial planning from technical departments.

The Capital Investment Management System has been a useful tool in providing a strategic spatial plan's budget that in turn provides the basis for discussions with technical departments and politicians

The capital planning process has also made a contribution to ensuring that capital is directed towards those areas in the City where infrastructure is needed most – marginalised areas, public transportation areas and priority areas requiring refurbishment.

However, it is in the monitoring and determination of the actual impact of the City's process to link its strategic spatial plans to infrastructure where the System has failed. While the CIMS system can indicate what is budgeted for in a given financial year, it does not provide what the actual expenditure was on a given project. This makes assessing the spatial impact of policy very difficult. It also opens up the capital budgeting process to challenges from other existing processes within the City Administration.

Two of these existing processes relating to Infrastructure Asset Management Plans and Financial Systems were discussed in detail. The challenge is to continually re-negotiate policy interventions where responsibilities of departments in relation to strategic spatial planning, budgeting and infrastructure provision intersect. As such the role strategic spatial plans play in guiding infrastructure delivery is far from secure, and shifts in relation to new policy interventions and changing staff compliments.

10. Conclusion

Unlike other cities, Johannesburg has had relative success in coordinating strategic spatial plans with infrastructure delivery over the past ten years. The success has been due to an intensive well defined capital budgeting process in conjunction with an internet database, CIMS, that prioritises projects based on the developmental outcomes of the strategic spatial plan. In addition, on-going support from technical departments and politicians has been critical to this success.

However existing policies relating to infrastructure and financial management mean that the strategic spatial planning's role has to be constantly re-negotiated especially in a circumstance where the impact of the capital budget planning process cannot be fully understood in the absence of detailed and consistent information relating to expenditure on previous annual budgets.

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