The DBSA Knowledge Week 2005 Proceedings




Infrastructure for sustainable communities

DBSA
Development Bank of Southern Africa

Vision

To further the progressive realisation of an empowered and integrated region, free of poverty, inequity and dependency.

To be a leading change agent for sustainable socio-economic development in the SADC region, and a strategic partner in Africa south of the Sahara.

Mission

To maximise our contribution to development by mobilising and providing finance and expertise and by establishing partnerships to develop infrastructure to improve the quality of life of the people of Africa.

Goals

To improve the quality of life of the people of the region and accelerate the sustainable reduction of poverty and inequality.

Strategic thrusts

- Broadening and deepening of development impact
- Knowledge management
- Smart partnerships
- Black economic empowerment
- Responsible risk-taking and management
- Innovation and entrepreneurship
- Performance recognition and reward
- Alignment of strategy, structure, culture and processes

The DBSA Knowledge Week

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Preface

Knowledge Week gatherings at the DBSA serve as a powerful means of networking, sharing knowledge, best practices and innovation. Whilst the information revolution may be a phenomenon in many countries globally, it is not the case in many African countries where the knowledge revolution still has to take place. As argued by Dijen Abatha in 1996, the information revolution didn't take place in Africa as the continent was neither a user nor a generator of information technology which propel information and knowledge.

It is argued indeed that much has changed in many African countries since this statement was made ten years ago. However, what remains questionable is if any African country has begun to make the transition towards the status of a knowledge-based economy. This is defined as an economy where knowledge, codified or tested, is created, acquired, and transmitted for greater economic and social development. A knowledge-based economy reflects an:

- Economic and institutional regime that provides incentives for the efficient use of existing knowledge, for the creation of new knowledge, for the dismantling of absolute activities and for the start of efficient new ones;
- An educated and entrepreneurial population that can both create and use new knowledge;
- A dynamic information infrastructure that can facilitate effective communication, dissemination and processing of information; and
- An efficient innovation system comprising firms, science and research centres, universities, think-tanks, consultants and other organisations that can interact and tap into the growing stock of global knowledge, assimilate it, customise it for local needs and use it to generate new knowledge.

Knowledge, especially to the DBSA, if it is applied and used for the global economy, it will continue to increase the opportunity for addressing some of the challenges that we are facing on this continent. It is also believed that if knowledge is properly used and adapted to circumstances in the continent, the knowledge revolution will represent significant opportunities for reducing poverty and promoting sustainable development.

The 2005 DBSA Knowledge Week theme focused on Infrastructure for sustainable communities and this is at the core of addressing issues of infrastructure development, both economic and social. It is supportive of what we normally call the "breaking new ground" for building sustainable communities.

This publication captures all the knowledge sharing during the Knowledge Week which revolved around municipal infrastructure and service delivery, placing emphasis on planning and supporting municipal infrastructure. In particular, knowledge on inter-governmental planning and municipal infrastructure frameworks, free basic services, human development and capacity building in addressing poverty, unemployment, inequity and social exclusion received prominent focus.

To be able to address these development challenges, it is true that knowledge sharing interactions in terms of networking are needed but skills development is also key in addressing these challenges.

I believe that knowledge shared is knowledge doubled. We say knowledge is power but if you don't use it for the intention of addressing the development challenges that we are facing in this country and in the continent, we won't be able to achieve our Millennium Development Goals.

Dr Snowy Khoza
Executive Manager: Knowledge Management Division, DBSA

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Abbreviations

BEE	Black Economic Empowerment
CBO	Community Based Organisation
CDWs	Community Development Workers
CIDB	Construction Industry Development Board
CSRA	Committee of State Road Authorities
CSIR	Council for Scientific and Industrial Research
CTOP	Choice of Termination of Pregnancy
CUTA	Committee of Urban Transport Authorities
DoT	Department of Transport
DPLG	Department of Provincial and Local Government
DWAF	Department of Water Affairs and Forestry
ECD	Early Childhood Development
ECSA	Engineering Council of South Africa
EDI	Electricity Distribution Industry
EDIRC	Electricity Distribution Industry Restructuring Committee
EHO	Environmental Health Officer
EPWP	Expanded Public Works Programme
ERIC	Electricity Restructuring Inter-departmental Committee
ESI	Electricity Supply Industry
FBE	Free Basic Electricity
FBS	Free Basic Services
GAAP	Generally Accepted Accounting Principles
IAM	Infrastructure Asset Management
IDIP	Infrastructure Delivery Improvement Programme
IDP/s	Integrated Development Plan/s
IMESA	Institution of Municipal Engineering of Southern Africa
LED	Local Economic Development
LGRC	Local Government Resource Centre
LGSETA	Local Government SETA
MFMA	Municipal Finance Management Act
MHS	Municipal Health Services
MIG	Municipal Infrastructure Grant
MIIF	Municipal Infrastructure Investment Framework
MSA	Municipal Systems Act
MSPs	Municipal Service Partnerships
MTEF	Medium-Term Expenditure Framework
NER	National Electricity Regulator
NGO	Non-Governmental Organisation
NHFC	National Housing Finance Corporation
NURCHA	National Urban Reconstruction and Housing Agency
PFMA	Public Finance Management Act
PMUs	Project Management Units
PMTCT	Prevention of Maternal to Child Transmission
PPPs	Public- Private Partnerships
REDS	Regional Electricity Distributors
RIFSA	Road Investment Framework for South Africa
SABS	South African Bureau of Standards
SABITA	South African Bitumen Association
SAICE	South African Institute of Civil Engineering
SALGA	South African Local Government Association
SANRAL	South African National Road Agency Limited
SARF	South African Road Federation
SCM	Supply Chain Management
SDA	Service Delivery Agreement
SHS	Sustainable Human Settlements
SLA	Service Level Agreement
VCI	Visual Classification Index
VCT	Voluntary Counselling and Testing
VIP	Ventilated Improved Pit Latrine
WRC	Water Research Commission
WSDP	Water Services Development Plan
WSA	Water Service Authority
WSP	Water Services Providers

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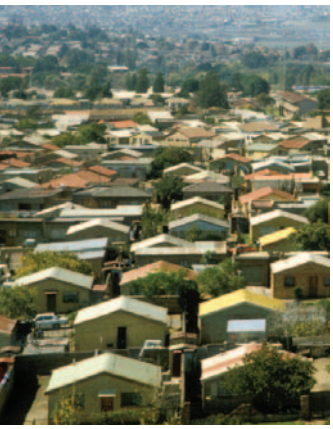


Highlights of the Knowledge Week

The 2005 knowledge sharing event's proceedings were opened by Ms Jeanette Nhlapo, Executive Manager of the Development Fund, who was addressing on behalf of DBSA CE and MD Mandla Gantsho. She welcomed everyone and emphasized the Bank's continuing commitment to sharing knowledge, in addition to financing, as a means of empowering institutions, people and communities to improve the quality of life.

A colloquium on the draft Infrastructure Barometer report was held on the morning of the first day of the Knowledge Week. The colloquium deliberated on further fine-tuning the draft report. The colloquium was divided into four sections, which covered the economic infrastructure sectors of transport, water, energy and information and communications technology (ICT) (The 2006 Infrastructure Barometer was eventually launched in March 2006).

The afternoon session on the first day focused on social infrastructure. Dr Christina Amsterdam of the University of Pretoria talked about strategic perspectives on education infrastructure, followed by Dr Thabo Sibeko of the Department of Health who talked about the government's hospital revitalisation programme. Additional presenters were Dr Mark Napier of CSIR who provided a macro perspective on the first decade of housing delivery and its contribution to sustainable settlements which was followed by a comprehensive plan for creating sustainable human settlements presented by Mr Philip Chauke of the Department of Housing.

Municipal infrastructure, service delivery, human development and capacity building were the focus areas on the second day of the knowledge week. In her opening remarks, Dr Snowy Khoza, the Executive Manager of the Knowledge Management Division re-emphasised the centrality of knowledge sharing for energizing and empowering public and private sector institutions to dramatically reduce the costs of delivering goods and services. She hailed the Knowledge Week as the most powerful means of networking and sharing knowledge, best practices and innovation.

Mr Pregan Pillay of the Department of Provincial and Local Government spoke about how free basic services, the Municipal Infrastructure Investment Framework and the Municipal Infrastructure Grant relate to the vision of creating sustainable communities. He was followed by Mr Yusuf Patel from the same department who spoke about current government thinking around stimulating municipal economies and local economic development. The morning session was completed by Mr Burgert Gildenhuys of BC Gildenhuys & Associates who spoke about municipal infrastructure investment planning.

The municipal infrastructure session included presentations from Mr Peter Copley (DBSA), Ms Phindile Nzimande (Electricity Distribution Industry Holdings) on electricity, Dr Thuthula Balfour (DBSA) and Ms Wilna Moolman (Department of Water Affairs and Forestry). They respectively presented on roads, electricity, water quality and waste disposal site management.

The day was wrapped up by an exciting session on human development and capacity building with Mr Vishal Ramduny (City of Johannesburg Metropolitan Municipality) covering the human development strategy of Johannesburg, while Dr David Himbara (University of the Witwatersrand, Johannesburg), Ms Allyson Lawless (South African Institute of Civil Engineers) and Mr Dennis Thabaneng (DBSA) focused on capacity building. The session raised a lot of interest from the audience.

The final third day dealt with approaches to local service delivery and case studies.

The DBSA Knowledge Week

A macro-perspective on the first decade of South African housing delivery and its contribution towards the formation of sustainable settlements and communities

Mark Napier – CSIR Built Environment
Council for Scientific and Industrial Research,
Pretoria, South Africa

DBSA
Development Bank
of Southern Africa

A macro-perspective on the first decade of South African housing delivery and its contribution towards the formation of sustainable settlements and communities

Mark Napier – CSIR Built Environment Council for Scientific and Industrial Research, Pretoria, South Africa

Abstract

The economic, social and spatial impacts of the national state housing programme in South Africa over the last ten years have been significant. And yet the ability of the programme to produce settlements which can be described as 'sustainable' has been limited. This paper works from a description of some of the key strategic impacts of the programme, towards a vision for the future in which state-sponsored settlements will become more rewarding places to stay.

1. Introduction

When the White Paper [1] on housing was first written, the ultimate aims of the housing programme were articulated using the concepts current at the time. For instance, the word 'sustainable' did not carry the same weight or meaning as it does now, some ten years later. Sustainability referred to the survival of the programme itself (ie, sustained production and capacity growth) and was discussed predominantly in the frame of economic and fiscal programmatic sustainability. Rather than referring to the need to create sustainable human settlements as such, the programme outcomes at the time were to be:

- settlements which were 'human', 'integrated', and 'compact';
- houses which were 'habitable', 'adequate', 'secure', 'safe', 'healthy' and, of course, numerous; and
- households and communities which were 'viable', and 'socially and economically integrated'. [2]

To be fair, what was delivered over the last decade should be measured against the original intentions which are captured in the 1994 White Paper and as further developed in other key documents such as the Housing Act [3] and the Urban Development Framework [4]. However, from now on the performance of the housing programme should be measured against the broader concept of sustainable settlements as framed in new policy statements such as the Department of Housing's "Comprehensive Plan for the Development of Sustainable Human Settlements" [5].

In the period between 1994 and 2004, international attention focused more on the concept of sustainable settlements and housing, which means many things to many people. The focus on the need for sustainable settlements has been such that the departments of Housing and Provincial and Local Government have a local, shared definition of sustainable settlements, and this has become the centre piece of the 2004 Comprehensive Plan for Housing. Sustainable human settlements are conceived of as:

> "well-managed entities in which economic growth and social development are in balance with the carrying capacity of the natural systems on which they depend for their existence and result in sustainable development, wealth creation, poverty alleviation and equity"[6]

The definition is extended into the following description:

> "The present and future inhabitants of sustainable human settlements, located both in urban and rural areas, live in a safe and a secure environment and have adequate access to economic opportunities, a mix of safe and secure housing and tenure types, reliable and affordable basic services, educational, entertainment and cultural activities and health, welfare and police services. Land utilization is well planned, managed and monitored to ensure the development of compact, mixed land-use, diverse, life-enhancing environments with maximum possibilities for pedestrian movement and transit via safe and efficient public transport in cases where motorized means of movement is imperative. Specific attention is paid to ensuring that low-income housing is provided in close proximity to areas of opportunity. Investment in a

> house becomes a crucial injection in the second economy, and a desirable asset that grows in value and acts as a generator and holder of wealth. Sustainable human settlements are supportive of the communities which reside there, thus contributing towards greater social cohesion, social crime prevention, moral regeneration, support for national heritage, recognition and support of indigenous knowledge systems, and the ongoing extension of land rights." [7]

This then is the current broad definition or vision of what the housing, and other government programmes seek to produce through the investment of national resources. In reviewing past performance, the original aims are considered as a fair yardstick but in the redesign of housing delivery instruments for the future, it is necessary to apply the expected outcomes which are framed using the more contemporary concepts.

2. Historical context

The context in 1994 was outlined in the original housing White Paper. It highlighted the following conditions prevailing in the housing sector at the time, with particular focus on the poor. It was estimated that over 28 million people (66%) of South Africa's population was functionally urbanised. This implied that approximately 14.5 million people (34% of the total population) resided in rural areas, many of whom would spend part of their working lives in the urban areas.

Many South Africans did not have adequate security of tenure over their homes or land. Approximately 58% of all households (4.8 million households) had secure tenure (ownership, leasehold or formal rental contracts), whereas an estimated 9% of all households (780,000 households) lived under traditional, informal/ inferior and/or officially unrecognised tenure arrangements in predominantly rural areas. The tenure situation, which is an indication of the patterns of distribution of physical assets, was further characterised by an unequal spread of home ownership according to income, gender and race.

An additional estimated 18% of all households (1.5 million households or 7.4 million people) lived in squatter settlements, backyard shacks or in overcrowded conditions in existing formal housing in urban areas, with no formal tenure rights over their accommodation. This pattern of insecure tenure was undoubtedly one of the salient features of the housing crisis in South Africa in 1994.

After reviewing patterns of poverty and inadequate housing in South Africa, it was estimated that the urban housing backlog in 1994 was approximately 1.5 million units. The consequences of this backlog was physically reflected in overcrowding, squatter settlements and increasing land invasions in urban areas, and generally by the poor access to services in rural areas. Due to the high rates of population growth and low rates of housing provision, it was estimated that the housing backlog was increasing at a rate of around 178,000 units per annum. Hassen demonstrates that although delivery has been impressive in numerical terms, the increase in numbers of households each year has meant that the backlog has only been reducing very slightly each year [8].

To redress the housing situation in which the poorest were housed in the least adequate housing located furthest from economic opportunities, the government embarked on addressing the challenge of "Housing the Nation". The Department of Housing's main aim was to address the needs of households most in need and who were inadequately housed, through progressive access to secure tenure. This meant that the emphasis would be on creating an enabling environment which would allow people to access housing opportunities of various kinds. As Mary Tomlinson has pointed out, the programme was originally based on government acting to create this enabling environment while the private sector drove delivery, a situation which has altered significantly in the intervening time to favour more government-led delivery with a lesser role for larger corporate interests in the private sector [9]. Government is again interested in private sector involvement but with a stronger lead from the State in terms of the type and location of projects to be built [10].

3. Policy and institutional framework

In the face of these challenges, the government housing programme set itself the task of establishing and maintaining,

> "...habitable, stable and sustainable public and private residential environments to ensure viable households and communities in areas allowing convenient access to economic opportunities, and to health, educational and social amenities in which all citizens and

permanent residents of the Republic will, on a progressive basis, have access to:

1. Permanent residential structures with secure tenure, ensuring internal and external privacy and providing adequate protection against the elements; and
2. Portable water, adequate sanitary facilities and domestic energy supply." [11]

Since 1994, housing policy and practice have evolved steadily through large scale delivery, the development of a coherent legislative and regulatory framework, and extensive institution and capacity building. The first few years (1994-1998) of the housing programme were characterised by policy formulation, restructuring of the numerous housing departments into a single department and addressing a range of other issues that had historically limited efficient housing delivery. This restructuring helped to establish a successful development process that facilitated rapid delivery from 1996 onwards. It is only as the successes and limitations of the first dispensation of delivery have become clear that the country has re-entered a policy making period in which delivery instruments are being reshaped to achieve the redefined outcomes.

The 1994 Housing White Paper, which continues to provide the basis for national housing policy, contains the following seven thrusts:

- Stabilising the housing environment;
- Support for a people-driven housing delivery process;
- Mobilising housing credits and savings;
- Providing housing subsidy assistance;
- Rationalising institutional capacities within a sustainable institutional framework;
- Facilitating the speedy release of land; and
- Co-ordinating development by facilitating co-ordinated and integrated action by the public and private sector.

The Housing Act, 1997 (Act 107 of 1997), and further amendments, established a rationalised institutional framework, redefined the roles and functions of the

three spheres of government and repealed all racially based housing legislation as well as creating a single housing fund from which the government could finance its housing assistance programme.

Sectoral interventions were undertaken to mobilise housing credit, such as the establishment of:

- The National Housing Finance Corporation (NHFC) (providing wholesale capital for intermediaries lending to the target group); and
- The National Urban Reconstruction and Housing Agency (NURCHA) providing guarantees for the housing development sector to ensure access to capital.

The Home Loan and Mortgage Disclosure Act and the Office of Disclosure together with the Community Reinvestment Bill published in 2002 (but not approved by Cabinet and then subsumed partly by the voluntary commitments contained in the Financial Sector Services Charter) aimed to promote lending by financial institutions in the low-income housing market.

The following interventions were initiated to stabilise the housing environment:

- The Masakhane Campaign (restoring payment for services);
- The Mortgage Indemnity Fund (guarantees for lending risks for certain rehabilitated areas);
- Servcon Housing solutions (rescheduling for mortgage loans and relocation assistance);
- Thubelisha Homes (providing stock for relocation purposes); and
- The National Home Builder's Registration Council (regulating quality standards in Housing construction).

The housing institutions that were established in support of housing policy and strategy, including the People's Housing Partnership Trust, the Social Housing Foundation and those referred to previously, all to a greater or lesser degree addressed the capacity gap. Many are now going through a process of re-mandating and aligning their activities with the next dispensation. However, there is still great need to build capacity in the public sector, especially at local government level.

The National Housing Subsidy Scheme, introduced in 1994 evolved into a comprehensive programme providing a wide array of housing subsidies to a broad spectrum of eligible beneficiaries. These include project-linked subsidies, individual subsidies, institutional subsidies, consolidation subsidies, rural subsidies (catering to informal land rights) and relocation assistance.

The programme allowed for a range of tenure options on an individual or group basis in urban as well as rural areas and was enhanced to include families in rural areas who only have functional security of tenure in terms of the Interim Protection of Informal Land Rights Act, 1996. More recently additional types have been added such as the emergency housing subsidy and the informal settlement upgrading subsidy.

The housing subsidy programme is used mainly to fund the planning, acquisition and local servicing of land and to build top structures, or houses. It provides for secure tenure, access to provision of basic services and construction of housing units. With the introduction of the scheme in 1994, the maximum subsidy was R15 000. Initially the subsidy amount was not increased annually, but since 2002 it has been increased to try and keep pace with rising building and labour costs. By April 2003, it had increased to R25 580 and by April 2005 to R31 929 [12].

There are a range of possible subsidies depending on income. The maximum subsidy amount is available to the aged, indigent and people with disabilities. For a time households accessing the subsidy were expected to make a contribution of R2 479 or to contribute their sweat equity through the people's housing process support programme. Households earning less than R1 500 are now exempt from the contribution [13].

4. Performance of the programme

Over the last decade the performance of the housing programme has been largely predicated, and is indeed virtually synonymous with the effectiveness of the housing subsidy programme. Although the sectoral interventions through housing institutions mentioned above have significant, if difficult to measure, impacts, the greatest visible impact are the housing subsidies. Indeed much of the expertise of government is oriented towards supporting subsidy disbursement, which means that as the housing programme becomes less focused through subsidies (if this takes place) then other types of capacity will be needed in government. What then has performance and impact been like during the first ten years?

Funding inputs to the programme

Over the past ten years the Housing Vote has, on average, amounted to considerably less than the National Housing Goal of 5% per annum of total

Table 1: Funds allocated by Province, 1994 - 2004

Province	Amount R million
Eastern Cape	R3,815.9
Free State	R2,004.7
Gauteng	R6,781.6
KwaZulu-Natal	R5,679.2
Limpopo	R2,440.5
Mpumalanga	R1,729.5
Northern Cape	R633.8
North West	R2,111.5
Western Cape	R3,265.0
TOTAL	**R28,461.7**

Source: http://www.housing.gov.za. Accessed November 2005

state expenditure which meant that the achievement of the ambitious goal of a million houses completed in five years was realised fairly shortly after the five year target date [14]. The National Housing Subsidy Programme is funded out of the South African Housing Fund. In terms of the Medium Term Expenditure Framework, an amount of R3, 8 billion was allocated to the South African Housing Fund for the 2002/2003 financial year and R4,2 billion allocated for the 2003/04 financial year. There has been some increase in allocation for future years to address the scaling up of the upgrading of informal settlements and the establishment of large pilot projects.

According to a Treasury document in 2004, "To date, the total cost of housing delivery to government is approximately R27,6 billion. Taking into consideration the replacement costs of the publicly funded houses transferred to occupants, it is estimated that property assets worth over R30 billion have been transferred to South African households since 1994" [15]. More recent figures indicate that by March 2004 a total of R28,5 billion had been used directly in the subsidy programme, (see Table 1).

Outputs of the housing programme

The most well publicised and measurable output of the housing programme relates to the construction of over 1.6 million housing units by the end of the 2003/04 financial year [16]. Within this figure are houses being built in projects which are not yet complete, some of which are stalled for fairly lengthy periods for a variety of legal or contractual reasons.

By March 2005, the total number of houses completed was 1 831 860 [17]. This level of housing production which is successfully targeted at the poorer households is internationally recognised as significant [18].

Comparing to 1996 Census figures, the production of 1 502 406 units by 2003 represented an addition of 17% to the total national housing stock . If housing production up until March 2001 is compared to the increase in housing stock in the country according to the 2001 Census, then government-supported low- income housing accounted for more than half of national housing production [19].

It is clear from Table 2 that housing delivery peaked during the 1997/1998 financial year. Since the 1997/98 peak, delivery has stabilised at an average of around 201 400 per annum. Gauteng Province and KwaZulu-Natal delivered the most units, also being the provinces to receive the largest allocation of housing funds, which is calculated according to housing needs and shortages.

Table 2: Houses completed or under construction till March 2004

Province	FINANCIAL YEARS UP TO AND INCLUDING MARCH 2004								TOTAL
	1994/95 - 96/97	1997-98	1998-99	1999-00	2000-01	2001-02	2002-03	2003-04	
Eastern Cape	6,511	32,223	24,659	20,345	34,021	10,816	58,662	27,119	214,356
Free State	13,042	18,001	17,391	7,177	16,088	7,005	9,155	16,746	104,605
Gauteng	56,239	70,924	58,170	45,384	38,547	46,723	24,344	49,034	389,365
KwaZulu-Natal	17,553	78,468	53,105	28,997	28,547	14,379	24,485	33,668	279,202
Limpopo	11,108	15,743	22,899	12,401	20,996	16,667	14,953	15,810	130,577
Mpumalanga	19,884	10,873	16,838	4,808	16,457	14,584	21,649	21,232	126,325
Northern Cape	6,66	4,768	2,387	2,600	4,148	2,588	6,056	3,787	33,000
North West	21,287	20,977	18,367	12,944	14,109	13,885	23,784	10,484	135,837
Western Cape	25,321	43,834	34,575	26,916	17,730	16,634	20,500	12,301	197,811
Total Projects	**17,611**	**295,811**	**248,391**	**161,572**	**190,643**	**143,281**	**203,588**	**190,181**	**1,611,078**

Source: http://www.housing.gov.za Accessed November 2005

By 2003, of the total number of approved subsidies, approximately 76% were project-linked, 11% were consolidation subsidies, 8% supported hostels redevelopment, 3% were institutional, 2% were individual subsidies, and the balance were relocation subsidies (0.2%) and rural subsidies (0.1%).

A steady decline in delivery has been experienced since 1998. The reasons for this include:

- The withdrawal of the so-called large construction groups from the low-income market and the unwillingness of developers to undertake development in rural towns;
- Low profit margins for the private sector in the subsidised sector (*inter alia* due to a mismatch of high standards and insufficient funds);
- Stalled projects as a result of inflation erosion ;
- A slow introduction of emerging contractors to the subsidy market combined with insufficient delivery capacity and technical expertise;
- The inability thus far of the People's Housing Support Programme and the Social Housing Programme to deliver at scale;
- High land costs in advantageous locations;
- High building costs in areas where land is more affordable but geological and topographical conditions are not ideal;
- A general shortage of housing sector capacity and expertise especially (but not exclusively) at municipal level combined with an unwillingness by many municipalities to take on the full management of housing subsidies; and
- An unwillingness by the private (financial) sector to invest in the low-income housing market, including the provision of bridging finance to emerging contractors.

Despite the peak that was reached with housing delivery during 1997/98, particularly the withdrawal of private construction firms from this market segment has left a gap in delivery capacity. This includes skills in relation to project management, financial and administrative expertise as well as construction capacity.

Effectiveness in the targeting of housing

One of the foundational aspects of the subsidy scheme is the targeting of households most in need. The delivery of 1 831 860 houses to households with low incomes means that in the region of 7 million people have benefited (at an average of 3,8 people per household). Since the inception of the Housing Subsidy Scheme in April 1994, 3 726 projects have been approved for people in the income category R0 to R3 500 per month [20].

In terms of the allocation of subsidies to male and female headed households, by 2003 some 49% of subsidies had been allocated to female-headed households [21]. The highest percentages of subsidies were allocated to female-headed households in the provinces of KwaZulu-Natal (55%), Mpumalanga (57%) and and Limpopo (54%). However, the percentage of female-headed households which owned formal housing throughout the country was approximately 30%. The figures therefore imply that significant strides are being made to achieve gender equity in asset ownership through the housing subsidy scheme.

Impacts

There are at least two types of impacts which result from the housing programme. The one relates to direct spin-offs of the programme such as the number of jobs created, and the degree of skills transfer. The other relates to the lasting benefits that are left with beneficiaries of the programme, such as substantive improvements in quality of life which can be linked to secure tenure, structurally sound housing, and access to services such as water, sanitation, and energy supply, social amenities such as health, education, recreation, and economic opportunities. Many of the more general impacts on beneficiaries are not exclusively linked to housing supply, and improvements in quality of life, for example, are often the cumulative result of many programmes of government (which then constitute a social safety net of a kind). This section therefore focuses on a few key issues, also acknowledging the fact that impact is generally not comprehensively nor consistently measured and, in some areas, longer term impacts of policy are not yet evident.

Sectoral impacts

In 2002, it was estimated that R3 billion of government housing investment would generate or sustain about 48 000 direct job opportunities in the building industry and 45 000 indirect job opportunities in the building materials and components industry. The number of direct jobs created varies each year according to the level of subsidy expenditure [22]. This would mean very roughly that with R27.6 billion of investment over ten years, some 441 600 direct jobs and 414 000 indirect job opportunities have been created.

The high level of delivery through the project-linked subsidy mechanism (76% of all subsidies)

indicates a high level of construction sector involvement. As outlined above, with the reduction in the real value of the subsidy during the first seven years, there was a general withdrawal of the large construction companies from the sector which has increased the need to emphasise support for smaller scale construction organisations. The last three years have seen significant emphasis for small contractor support, and more recently government has shown interest in drawing back larger concerns [23].

Low-income housing delivery includes a significant component of emerging contractor participation. Almost 80% of projects sampled in an investigation drew on emerging contractors in sub-contracting roles and 20% used established builders [24].

The level of involvement of the finance sector in housing has not materialised to the degree originally hoped for. The unavailability of end-user finance, especially for low-income households (due to a complicated set of constraints including the lack of appropriate retail lending capacity and the reluctance of formal financial institutions to lend in certain areas and to certain income groups) has impeded the ability of many households to access adequate housing, even though they may have been able to afford it. Financial Sector Services Charter commitments by banks to finance low-income housing will alter this situation if agreement can be reached on risk sharing with government and the commitments are then carried through to implementation.

Socio-economic impacts

Post-occupancy surveys of housing remain fairly rare. However, some comment is possible from the disparate studies which have been done by a range of research organisations.

A direct, and possibly inevitable, social impact of housing policy is that the criteria which are applied to qualification for subsidies tend to influence the structure of households. For example, a subsidy applicant may partner with another individual or with dependents in order to qualify for the subsidy. This impact would not always be permanent, but can lead to the reduction in household sizes as people position themselves to increase their chances of qualifying. This in turn increases the demand for housing assistance from government. The national reduction in household size which became evident in the 2001 census makes this generally true not just of households qualifying or positioning for the housing subsidy, but also for the beneficiaries of state assistance in general.

A wide-ranging study of housing implementation states: "Experience from low-income settlements shows that the process of social segregation is hard to reverse: once an area is classified as low in status, more affluent people move out" [25]. These factors resulted in relatively homogenous profiles of communities in terms of income and other factors such as household composition because of the subsidy criteria. This in turn influences the housing market in an area and often undermines the ability of households to trade their houses at a reasonable market or real value [26].

With the variety of subsidy instruments available, it is possible to achieve a greater mix of profiles but often the shorter term advantages of scale delivery of single subsidy types outweigh the desire to achieve more viable communities in the longer term. Measures to improve the coupling of subsidies with private finance should also address this issue. The broadening of subsidy schemes to include subsidies, loans and savings is crucial [27].

Another impact of the policy was that the bundling together of tenure, infrastructure and top structure into a single household subsidy set up the tensions between collective and individual assets in early projects [28]. This has been partially resolved by the introduction of minimum norms and standards in 1999 which limited the minimum amount of funding which could be spent on the house, or 'top structure', so that participative processes were not lengthened by negotiations of the division of the subsidy amount between the individual house and the shared services. Recent moves to focus all of the subsidy amount into the house and prevail upon the budgets and programmes of other departments to deliver services have been evident in public ministerial pronouncements.

Some reviewers have pointed out that the subsidy was insufficient to provide a freestanding house of proper size and quality in the first place. As such, the subsidy was only intended to start the housing process, but the social impact of the delivery of small houses is gradually being recognised in places where people struggle to extend the house (see discussion of consolidation below). Again, with the introduction of minimum norms and standards in 1999, the issue of the minimum size of houses was addressed and a minimum size of 30m^2 was introduced to align with the National Building Regulations. In people-driven processes, larger house sizes are often achieved [29].

Beneficiary views

A number of studies capture beneficiary views of government housing, and this evidence acts as an important source of information for the performance and impact of the housing programme.

In an early study of beneficiary views of the housing process, it was shown that residents' perceptions on whether they had been consulted during the delivery process were critical in determining whether households were satisfied [30]. Where service levels were high but houses relatively small, expressions of dissatisfaction about the house were common. Where houses were larger but services rudimentary, the situation was reversed. The most commonly expressed reason for beneficiary satisfaction in government sponsored projects was that a new house with freehold tenure granted independence and freedom. This was particularly the case for households moving from freestanding and backyard shacks.

A significant factor that determined levels of satisfaction with services installed was the dependability of those services. Frequent electricity interruptions, or water cuts, led to expressions of dissatisfaction [31].

In certain instances, the housing subsidy accentuated economic disadvantage by locating people too far from transport routes and other urban opportunities on which they had previously constructed their livelihood strategies [32]. It was concluded that housing provision could potentially mitigate some of the effects of poverty but if this were to be properly realised, then there needed to be attention to careful beneficiary targeting to improve affordability, better location relative to economic opportunities, coordinated delivery of social infrastructure with housing, and further empowerment of emerging contractors.

People were well informed about the subsidy mechanism but the size of demand for housing meant that beneficiaries were rarely presented with a realistic choice of settlement, location and house type. However, most beneficiaries felt that they were in a better position than previously, and identified strongly with the new residential areas in which they now lived. It was reported that there was "...an overwhelming sense that home ownership has empowered and dignified many people" [33].

Consolidation and the secondary housing market

The housing policy is based on a subsidy which was intended to enable households to embark on the process of achieving adequate housing, an important indicator of positive impact of the policy is the degree to which households are adding to housing or, alternatively, realising a realistic value for their housing in the secondary market.

Limited numbers of studies have shown that significant consolidation takes place in government subsidised housing areas within the first years after occupation [34]. Other studies which reviewed consolidation levels after longer periods showed that the quality of housing extensions varied significantly from project to project depending on a variety of local factors but that small builders played a significant role in all extension activity [35][36][37].

The impact of house size on levels of crowding is the indicator that needs to be carefully monitored if the impacts of the government housing programme are to be properly understood. More widespread data is required, but a study of consolidation processes in two core housing projects showed that extensions significantly reduced overcrowding [38], which was consistent with findings in other countries [39]. The production of extensions by residents represents the production of additional housing stock, and the level of support or enablement by local authorities for consolidation processes is significant in influencing the quality of this stock. Levels of investment by households in their housing often outstrip the initial investment by government within a few years of occupation.

An alternative to extending a house to meet the needs of a resident household is for households to move house. In many places there is a very limited secondary housing market and households are unable to realise a reasonable price on their properties [40][41]. While an important goal is to improve the value of the housing asset so that housing can be exchanged for market-related values, there is also a responsibility on the part of government to extend some form of protection for beneficiaries against downward raiding where higher income buyers purchase property at lower than production cost thus undermining the goal of the programme to target people living in situations of poverty. However, it is important that trading of houses to improve mobility takes place and there is a need to remove many of the barriers to formal trading (see FinMark Trust recommendations [42]).

5. Settlement Outcomes

The performance of the components of the programme have been discussed, with an emphasis

on the housing subsidy, but what has emerged in terms of settlements? Can what has been produced be seen as successful against the original descriptors of 'human', 'integrated', and 'compact' settlements, and are these settlements supportive of 'viable', and 'socially and economically integrated' households and communities? And what of the economic outcomes? As Hassen says, the original aim of the housing programme was also to stimulate the economy and to "reconstruct localities" [43].

The location of low-cost housing has continued to be on the periphery of urban (and rural) economies (whether spatially, economically, or socially) and an impact of this has been that new settlement development has continued to exacerbate urban inefficiencies both for individuals and for organisations responsible for urban management (examples being the extended transport and service infrastructure systems necessary to serve such settlements).

The rapid delivery of housing was not matched in pace by the coordinated supply of social infrastructure such as schools, clinics, sports and recreation facilities etc. Added to this, the continued growth of informal settlements also largely without concomitant social infrastructure development leaves many communities in settlements in which it is very difficult to sustain their own livelihoods, and therefore where poverty is common [44]. Where social infrastructure is developed, the operational costs associated with managing and providing the services is not as easy to secure.

The ability of local government to facilitate the establishment of sustainable housing environments has been threatened by a lack of capacity to:

- effectively package and align departmental funding streams;
- employ innovative planning principles;
- acquire affordable inner-city land; and
- sustain a dedicated group of housing officials.

Despite scale delivery, the changing nature of demand has meant that the size of demand has increased in the face of the obdurate growth of informal settlements. The overall backlog has hardly been reduced. Even with the achievement of the original full delivery targets the backlog is likely to have remained static. The informal settlement figures demonstrate that the large number of housing units that have been delivered have had the effect of limiting the growth of such settlements. The growth of informal settlements beyond declared urban edges also effectively excludes people from urban investment planning. In addition, informal settlements are often addressed through the predominant approach of relocating communities to new housing areas and in the process coping strategies that have been evolved by the very poor are often disrupted by these formal interventions.

Over the last decade, the demand for housing has changed and the housing market has also changed but the benefits of a buoyant higher end property market have not been felt by the poor. The sale of second hand houses is currently highly profitable for the rich but often constitutes a loss for the poor, particularly those with subsidised housing. Refocusing the housing programme to far upmarket from the current target group to the detriment of the traditional target group, while it may make narro investment sense (more self-funded housing stock and the inclusion of 'bankable' people), will probably exacerbate this situation rather than more equitably distributing benefits. If wealth creation is to be stimulated, then the housing asset needs to have functional value (a usable physical asset to create social and human capital) and exchange value (an ability to create financial capital), and this depends on investment in inner city, township and informal settlements so that the property market works for everyone. Significant public investment and substantial private sector collaboration are called for.

6. The New Housing Vision with Sharper Instruments

A new housing plan (referred to as "the Comprehensive Plan" or "Breaking New Ground") was taken to Cabinet towards the end of 2004 [45]. It seeks to redevelop housing policy and instruments to more effectively deliver sustainable settlements and respond to the housing context as it has changed over the last decade.

The Comprehensive Plan restates the vision of the Department of Housing as being "...to promote the achievement of a non-racial, integrated society through the development of sustainable human settlements and quality housing". Very importantly, it states that the mandate of the department should expand to include the entire residential sector or "residential housing market", meaning that its emphasis on mechanisms which address the needs of low-income (or no income) households will shift to include an added area of activity around

interventions at the higher end of the market. This is captured in its statement of the two key objectives of the plan:

- "Utilising housing as an instrument for the development of sustainable human settlements, in support of spatial restructuring" and
- "Supporting the functioning of the entire single residential property market to reduce duality within the sector by breaking the barriers between the first economy residential property boom and the second economy slump."

The other key objectives are listed as:

- Accelerating the delivery of housing as a key strategy for poverty alleviation;
- Utilising provision of housing as a major job creation strategy;
- Ensuring property can be accessed by all as an asset for wealth creation and empowerment;
- Leveraging growth in the economy;
- Combating crime, promoting social cohesion and improving quality of life for the poor.

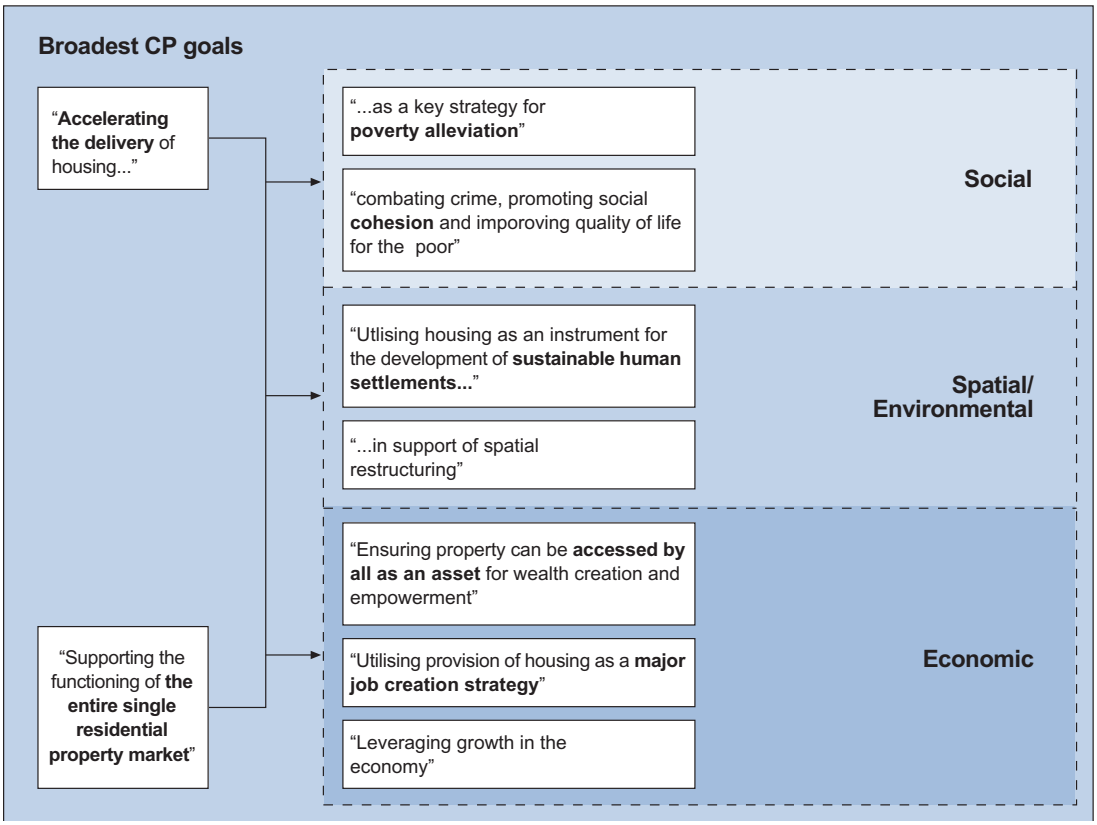
This is summarised in the figure above, and grouped according to whether the objective is motivated primarily by social, economic or spatial/ environmental influences.

There has been some debate about whether the new plan constitutes a significant departure from previous policy directions [46][47], and more to the point whether the instruments mooted in the plan are capable of delivering significantly more sustainable settlements than has been the case so far.

The aspects of the Comprehensive Plan which represent significant shifts in the programme for the next five years of housing delivery include:

- Moving beyond the provision of basic shelter and emphasizing the ultimate joint achievement of sustainable settlements within functional urban and rural economies;
- Shifting the focus of the housing programme to address the needs of whole communities and supporting coordinated area-wide approaches which have the impact of restructuring cities, towns and regions to be more efficient, equitable and integrated;
- Giving greater emphasis to instruments which are responsive to demand for housing and location;
- Introducing a phased development approach to housing projects which allows the extension of the basic elements of secure tenure, services and primary social facilities, in the shortest time spans feasible, to provide the basis on which

Figure: Summary of key objectives of the Comprehensive Plan



long-term consolidation (of housing and livelihoods) can occur;
- Devolving a greater amount of responsibility for directing housing investment to municipalities; and
- Renewing the focus on partnerships, harnessing the resources of the community by placing them at the centre of the development process, enhancing the participation of non-government organisations in support of communities, and recapturing the contribution of the private sector (eg the construction and financial sectors in particular), all in partnership with the public sector and its parastatals in order to fast track delivery and to deliver at scale.

Tomlinson believes the Comprehensive Plan is a significant departure given that there is an emphasis on not only scale delivery but also the quality of the housing and settlements (the shift from 'breadth' to 'depth') and that housing demand should drive the direction of delivery with government being prepared to share risk with the private sector [48].

If the state ambitions to see more delivery (indicated in the government's call for the 'rapid housing delivery') [49]) are to be met while at the same time there is to be better quality housing, then this implies greater budget allocations for the housing programme at a national level. Hassen [50] illustrates that limited (national and local) spending on housing means that the economic spin-offs hoped for from the programme do not materialise. Limited budget means ongoing peripheral location which weakens the forward linkages from new residential areas. The declining real value of the subsidy (until recently) means that poorer quality housing is built, quality land cannot be purchased, the requisite management and design skills cannot be accessed, and it is not easy to couple subsidy products with credit.

Dewar [51] points to a number of areas of ambivalence in the new housing plan, such as:
- The role of government (are they suppliers or enablers?);
- The role of residents (does the policy create passive beneficiaries or energetic and involved participants?);
- The level of real commitment to urban restructuring, 'intensity', density, and transport efficiency;
- An understanding of the process of urban development (does the policy truly create the environment in which people can consolidate their place in the city and benefit from the economic spin-offs of the process at the local level?);
- The jaundiced view of informal settlements which undermines the role of such settlements in providing what is often better quality housing than in formal areas; and
- The devotion to better quality housing and sustainable settlements, but little or no reference to the quality of the 'public spatial environment'.

The main challenge in the upcoming period (as existing housing delivery instruments are

amended and new instruments designed[1]) is whether this will alter the form and location of the settlements (and influence urban form) and ultimately through this influence the fortunes of the residents whom the programme purports to 'target'. Within this aim, whether the government-initiated supply of housing can truly be responsive to housing needs and demands remains to be seen. This will also hinge on whether the national and provincial departments are able to think beyond the subsidy approaches which have come to so dominate the state project. The developmental state approach being embraced in the second decade dispensation suggests a more present and active state machine devoted to fulfilling a housing and poverty alleviation mandate. But the question remains whether the style of government intervention will be such that the reinvented housing programme will open up real choice to allow people to consume housing and locate themselves in ways which suit their livelihood strategies (ie whether the demand-led approach will really succeed). Success will also depend on which way government leans in terms of the deepest fissure which runs right through the identity of the housing programme. To state it dualistically, this revolves around whether the housing programme from here on out is primarily to continue to be oriented around the transfer of a social welfare good to the poor, vulnerable and spatially marginalised, or whether it is also about urban regeneration, renewal, and economic development. If it leans towards the latter and the state gathers to itself the knowledge and expertise to deliver a productive social *and economic* good in ways which improve access for the poor to markets, then the next decade of housing delivery will look very different to the first.

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Strategic Perspectives on Infrastructure Development

Social Infrastructure, Housing

Discussion

The issue role of the private sector in influencing policy changes in housing provision was raised. Other issues that were raised aligned to Dr Napier's discussion were Banks' red-lining of townships as well as possible government intervention in this matter and the sustainability of jobs in housing projects.

In terms of the private sector influencing policy change, Dr Napier responded by saying that with the dissolution of the provincial housing development boards (except in the Western Cape) which had quite strong private sector representation, there is now more control by government. He added that there was a need to place a lot of trust in the IDPs and **dplg's** efforts to integrate delivery across the different departments. Dr Napier noted how the idea of the private sector actually driving the location of new development in terms of low-cost housing has in the last three years been effectively put aside. However, government was contemplating to get a toe-hold into the issue of private sector participation.

On the issue of banks still red-lining townships, Dr Napier asserted that it is no longer occurring in such a big way as had in the past. The Community Reinvestment Bill that went to Cabinet and the Mortgage Disclosure Act, somewhat enforce banks who are now compelled to disclose where they are lending. The Office of Disclosure also pronounces that banks must tell the public and the state where they are and are not lending. Furthermore, with the financial sector's Services Charter which has been signed by the banks, there has been more of a voluntary spread of lending. However, the sticking point is how does government share risk with the banks.

On the sustainability of jobs in the construction sector, Dr Napier asserted that the jobs related to the construction sector were obviously related to projects. With the contemporary construction boom, there were numerous job opportunities. If there were skilled people moving into the construction sector, then sustainability was taking place. However, since construction sector jobs follow the construction projects, they were not sustainable in that sense. Dr Napier added that the economic spin-offs of construction are more about the backward and forward linkages of residential areas once they are built.

Dr Mark Napier, CSIR

(Paper presented: A Macro-Perspective on the First Decade of South African Housing Delivery and its Contribution Towards the Formation of Sustainable Settlements and Communities)

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Dr Napier was also a member of the team that compiled the State of Human Settlements Report for South Africa which evaluated housing programmes and policies. He has also undertaken research projects on the environmental impact of home-based enterprises, enabled environments and universal access, technologies for enhanced environmental management, and sustainable livelihoods in the integration of informal settlements.

The DBSA Knowledge Week

The contribution of Free Basic Services (FBS), Municipal Infrastructure Grant (MIG) and Municipal Infrastructure Investment Framework (MIIF) to sustainable communities

Pregan Pillay – Senior Manager, Department of Provincial and Local Government

DBSA
Development Bank of Southern Africa

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Pregan Pillay – Senior Manager, Department of Provincial and Local Government

Abstract

The contributions of the Free Basic Services (FSB) Programme, the Municipal Infrastructure Grant (MIG) and the Municipal Infrastructure Investment Framework (MIIF) to sustainable communities are identified and discussed. The opportunities to deliver sustainable infrastructure via each of these programmes are explored.

Introduction

Sustainable communities are premised on holistic planning. Within a sustainable framework the delivery of water and sanitation should not be measured by the number of persons who have access to water and sanitation but by the reduction in the number of community members who suffer from water-borne and vector related diseases in our society. This should be the goal of our efforts in terms of effective service delivery. The qualitative aspects in terms of service delivery have a direct impact on the health and safety issues of our communities and invariably the sustainability of our communities.

The provision of social infrastructure by itself does not lead to sustainable communities. Equally important is the economic infrastructure that will lead to job creation, wealth creation and the provision of the required health, safety and security measures required to develop sustainable communities.

The following are some of the pillars for sustainable communities and these manifest themselves in one way or another within each of the **dplg** led programmes; namely the FBS Programme, MIG, MIIF. Some of these pillars for sustainability include viability of social and economic infrastructure; Local Economic Development (LED); job creation, capacity, community involvement in the planning process, monitoring and evaluation, infrastructure and service delivery mechanisms, food and social security, good governance, equality, respect and dignity.

Free Basic Services

In 2000 the President announced the government's intent to rollout Free Basic Services (FBS). The beneficiaries to the FBS programme are indigent households. The services regarded as FBS are water, electricity, sanitation and refuse removal. Previously these households did not enjoy these services due to affordability issues. The intention of the FBS programme is to reduce the scourge of poverty within the society.

The Department of Provincial and Local Government **(dplg)** is coordinating the delivery of FBS, while the Departments of Water Affairs and Forestry (DWAF) and Minerals and Energy (DME) are providing line function policy and technical support to the programme.

The following are some of the challenges in the delivery of free basic water and free basic sanitation:

- Lack of infrastructure;
- Lack of billing structure;
- Data management and monitoring;
- Equitable share not always adequate or appropriately used;
- Consumer awareness and consumer education;
- Implementation on privately owned land;
- Municipal implementation plans and effective planning; and
- Limited technical and institutional capacity within Water Service Authorities (WSAs);

Some of the challenges experienced with regard to the delivery of Free Basic Electricity (FBE) include the following:

- Poor targeting resulting in high leakages by the non- poor;
- Lack of technical and contract management capacity at municipal levels to manage the funding agreements between Eskom and the municipalities;
- Lack of adequate funding to sustain the programme in both municipal and Eskom serviced areas;

- Unspent allocation for FBE due to lack of infrastructure in the poorest areas.

Vulnerable groups such as the unemployed, indigent and poor in our society must be able to access free basic services in order to ensure that our communities are able to enjoy a certain minimum quality of life.

Our communities will not be sustainable if the indigents in our communities are not able to access basic services such as water, sanitation, electricity and waste management services.

Municipal Infrastructure Grant (MIG)

The Municipal Infrastructure Grant (MIG) is a new municipal infrastructure funding arrangement. It combines all the existing capital grants for municipal infrastructure into a single consolidated grant (figure 1).

Different departments in the past managed infrastructure grants. They were uncoordinated and fragmented. Municipalities were often not in control of infrastructure projects within their area of jurisdiction. This defeated the purpose of cost-effective planning and integrated service delivery. MIG is designed to overcome these challenges (The Municipal Infrastructure Grant, 2004-2007).

MIG funds can be used for the following categories of infrastructure:

Category 1: Households

MIG can be used for infrastructure for basic household (residential) services. This includes electricity, water supply, sanitation, storm-water management, municipal roads, street lighting and refuse removal (The Municipal Infrastructure Grant, 2004-2007).

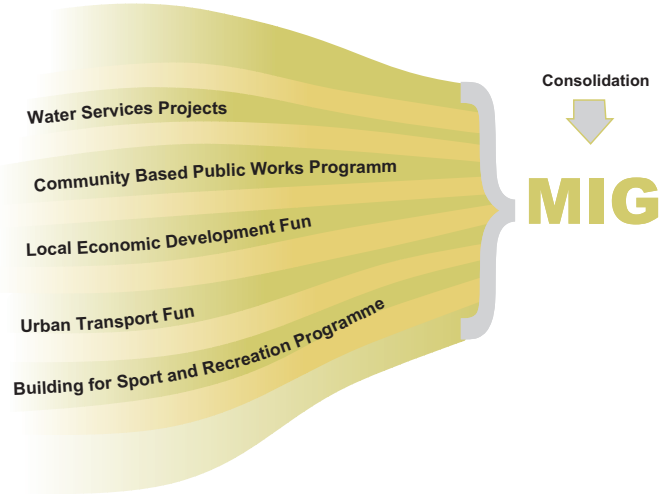
Category 2: Public municipal services

MIG funds may be used for public municipal services. This includes, public transport such as municipal public transport, municipal airports and pontoons, ferries and harbours; emergency services such as fire stations; community services such as childcare facilities, beaches and amusement facilities; cemeteries; funeral parlours and crematoria; cleansing; facilities for animals; fencing; local amenities; local sports facilities; municipal health services; and public places (The Municipal Infrastructure Grant, 2004-2007).

Category 3: Institutions other than public municipal services

MIG funds may be used for infrastructure to provide services to institutions such as schools, clinics, police stations, prisons, churches and recreational facilities.

Figure 1: Single consolidated grant



Source: The Municipal Infrastructure Grant MIG, 2004-2007

However, only services or institutions, which are used extensively by the poor, may be included. These services include electricity, water supply, sanitation, storm-water management, and municipal roads, refuse removal and street lighting. MIG funds may be used to bring the infrastructure up to the border of the site of the institution (The Municipal Infrastructure Grant, 2004-2007).

Municipal Infrastructure Grant and Sustainability

Sustainability means ensuring that services continue to operate effectively and generate benefits over the planned life of the constructed infrastructure. From a MIG perspective, sustainability starts with the IDP process (The Municipal Infrastructure Grant, 2004-2007).

Poverty eradication is still one of the biggest challenges facing our country. The Municipal Infrastructure Grant (MIG) programme is aimed at providing all South Africans with at least a basic level of service by the year 2013 through the provision of grant finance to cover the capital cost of basic infrastructure for the poor (The Municipal Infrastructure Grant, 2004-2007).

It is part of government's overall strategy to eradicate poverty and to create conditions for local economic development. The programme will therefore maximise opportunities for employment creation associated with national government's Expanded Public Works Programme (EPWP) and enterprise development.

The entire approach of MIG is focused on improving the capacity, efficiency, effectiveness, sustainability and accountability of local government. Whilst national and provincial government are responsible for creating an enabling policy, financial and institutional environment for MIG programme, municipalities are responsible for planning municipal infrastructure and for using MIG to deliver the infrastructure. This can be seen in the MIG policy framework, which encourages moving the responsibility for municipal infrastructure development to municipalities (The Municipal Infrastructure Grant, 2004-2007).

The MIG grant can only be used for capital investment and cannot be used to finance operating expenditure other than the prescribed percentage permitted for the operation of a project management unit in municipalities. The operation and maintenance of the infrastructure created is also the most costly one. Unfortunately, municipalities often do not consider these costs when a project is constructed. This leads to MIG funds being utilised for rehabilitation of infrastructure, which was not maintained by the local municipalities (The Municipal Infrastructure Grant, 2004-2007).

Municipalities must carefully consider these costs and ensure that adequate funds are budgeted for personnel, materials and equipment in order to operate and maintain the infrastructure created and to provide a sustainable service.

When providing services that require infrastructure, municipalities may choose one of several options to meet the service needs of communities in their areas as quickly and effectively as possible. However, there are a number of factors to be considered before this can be done. The overall aim is improved quality of life for all communities in South Africa, particularly the poorest, without compromising the ability to operate and maintain existing services (The Municipal Infrastructure Grant, 2004-2007).

Probably the most important factor is the level at which the service is provided. The term "service level" relates to the way in which the user experiences the service. The choice of service level is dictated by affordability and by community needs. Convenience may be as important to a particular community as health, environmental and economic factors. However, municipalities are responsible for making the final decision about the level of service to be provided. Such decisions have a critical impact on the long-term viability of the particular service and the municipality as a whole (The Municipal Infrastructure Grant, 2004-2007).

It should be noted that the MIG is only funding up to a basic level of service. If a municipality opts to provide a higher level of service the community or municipality must provide counter funding for the difference in cost between a basic level of service and the higher level of service.

Higher levels of service are generally associated with higher costs, for which customers must pay more. If higher levels of service are not affordable, the ability of a municipality to recover its costs is negatively affected, threatening the viability of the municipality (The Municipal Infrastructure Grant, 2004-2007).

Sustainability starts with proper planning

Because sustainability has environmental, technical, financial, social, and institutional dimensions, MIG projects must be properly planned and must involve all relevant stakeholders, particularly community members who are the users of the services.

Key elements of sustainability

There are a number of elements that need to be addressed to ensure long-term sustainable provision of services. These elements should be addressed as an integrated whole.

The Role of the Community Development Workers (CDWs)

Service provision must reflect the needs and preferences of the community. Community participation does not simply happen, it needs to be promoted and facilitated. Community Development Workers[1] have a key role to play in this regard.

Effective operations and maintenance

The lack of adequate operation and maintenance is often a major reason why services are not sustainable. Whilst MIG funding covers the capital costs for basic infrastructure services to the poor, the municipality must ensure that it also has sufficient equitable share or other revenue to pay for the operating costs of the basic services. If the operating costs are not sufficiently covered, the services will not be sustainable. It is for this reason that the MIG policy requires a three-year Operational Budget to be prepared as part of the Integrated Development Plan (IDP).

Employment generation during implementation (EPWP)

As part of its economic development strategy, Government has committed itself to a major public works programme, referred to as the Expended Public Works Programme (EPWP), which includes an infrastructure component. This programme places strong emphasis on the use of labour-based methods to be applied to the construction of infrastructure, with municipal infrastructure being the area where the greatest benefits can be achieved (The Municipal Infrastructure Grant, 2004-2007).

Economic development and sustainable livelihoods

The MIG programme has significant potential to alleviate poverty through the creation of jobs, use of local resources, improvement of nutrition and health, development of skills, and provision of a long-term livelihood for many households. MIG projects should be designed to support sustainable livelihoods and local economic development.

Integrated development and sustainability

The national drive to halve poverty and unemployment by 2014 is supported by specific plans and actions of all three spheres of government. The extent to which these plans and actions combine in a synergistic manner with each other and with those of public entities and the private sector, determines our level of success.

IDPs are important in guiding infrastructure investment, service delivery and economic development at local level. Since development has long-term consequences on the physical landscape and on community life it is important that proper forward planning aimed at building sustainable human settlements and viable local economies is pursued.

Various IDP assessments highlighted a range of issues such as a lack of institutional structural capacity, insufficient technical capability and skills, and inadequate intergovernmental collaboration, which have impeded negatively on the potential of integrated development planning to adequately address the development challenges and issues facing the communities residing and conducting business in the Metropolitan and District municipalities of our country. In response to these assessments, **dplg** and its partners have started to address many of these constraining factors.

As a condition, projects implemented by municipalities must be registered within the IDP of the municipalities ensuring that planning is deliberate and channeled towards sustainable outcomes.

1 CDWs are defined as community based resource persons who collaborate with other cadres to help fellow community members progressively meet their needs, achieve goals, realise their aspirations and maintain their well-being.

Municipal Infrastructure Investment Framework (MIIF)

Government has committed itself to removing the backlogs with respect to the provision of infrastructure to all in South Africa by the year 2013. Government is also committed to doing this in such a way that municipalities, which are at the forefront of providing infrastructure, have the capacity to operate and maintain this infrastructure while remaining financially viable (MIIF, 2005).

The MIIF has been used as an important source of reference for defining infrastructure needs (backlogs and future) and the resultant estimates of funding requirements. Its primary role is to guide government's infrastructure planning and multi-year budgeting requirements.

MIIF and Sustainability

With regard to the **capital account** many municipalities do not have access to sufficient capital to provide their constituents with the services they require to live an acceptable quality of life, as defined in the constitution. But the problem relates equally to the inability of municipalities to raise their own capital, largely related to the non-viability of their organisations on the operating account[2].

With regard to the **operating account,** many municipalities are unable to raise sufficient revenue to cover their operating costs. This relates to a variety of factors, namely setting of tariffs which are too low; inability to effectively bill consumers and collect invoiced revenue; inability to establish and manage a property rates system, again related to institutional capacity; selection of service levels which require technology that is too expensive to operate and maintain in relation to what consumers can afford to pay; inadequate access to subsidies (equitable share) which are sufficient to cover the cost of providing services free to the poor; and inappropriate allocation of subsidies, resulting in the subsidies not being targeted to the poor.

What *dplg* can do to ensure financial sustainability?

- Establishing clarity around the use of capital subsidies, maintenance and operations and then provision of bulk infrastructure;
- Establishing working relationships with lending bodies and acting on behalf of economically weaker municipalities to set up lending arrangements;
- Ensuring that all municipalities undertake long-term (at least 10 year) financial analysis to prove the financial viability of their proposed infrastructure programmes;
- Implementing a tariff guideline;
- Increasing the level of support to municipalities on property rates;
- Ensuring the equitable share allocations are adequate and are aligned with the free basic services policy;
- Providing guidelines to municipalities on the use of the equitable share; and
- Setting up structures through which economically weaker municipalities can access financial management advice.

Conclusion

Investment infrastructure must yield economic and social benefits and must redress the past spatial inequalities. Studies conducted by the World Bank indicate that infrastructure contributes to development in a real way – for every percentage point increase in infrastructure stock, there was an associated 1% increase in the gross domestic product (Parkin and Sharma, 1999). The FSB, MIG and MIIF programmes within the **dplg** have the capability to contribute to the sustainability of human settlements and this must be fully exploited.

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2 Lenders will only lend to organisations, which are able to demonstrate that they can raise sufficient revenue to cover the loan repayments.

The DBSA Knowledge Week

Municipal Infrastructure Investment Planning: Linking service delivery to planning processes, affordability and sustainability

JC Karemaker – Kwezi V3 Engineers and BC Gildenhuys – BC Gildenhuys & Associates

DBSA
Development Bank of Southern Africa

Municipal Infrastructure Investment Planning: Linking service delivery to planning processes, affordability and sustainability

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Abstract

In order to serve the objective of fundamental municipal transformation in South Africa and the need to cascade real benefits at grassroots level, a variety of mechanisms and processes were instituted over the past ten years. Milestones include announcement of the Reconstruction and Development Programme (RDP) in 1994. The development of local government was given its constitutional basis in 1996 with adoption of the Constitution of the Republic of South Africa. This was followed by a series of policy papers, for example the Municipal Infrastructure Investment Framework (MIIF), eventually culminating in the White Paper on Local Government in 1998. The White Paper was the basis for municipal transformation that included the Municipal Structures Act, the Municipal Demarcation Act, the Municipal Systems Act and the Municipal Finance Management Act.

This paper provides an introduction to a financial model developed whereby municipalities can refine their process of developing capital and financing strategies by addressing:

- The extent of backlogs and the demand created through growth;
- The capital investment associated with the demand for service delivery;
- The sources of funding these investments;
- The impacts of these investments on the operating account;
- The impact on household bills; and
- The impact on policy issues that should lead to a Municipal Infrastructure Investment Plan and Framework.

Introduction

Since the municipal elections in 2000, the agenda has refocused from being transformation orientated to delivering the services and benefits of the democratisation process in South Africa. Through the transformation process, two key mechanisms were developed to support local development. The first is the integrated planning and budgeting process and secondly, reform of the financial support systems resulting in the capital subsidy system and the mechanism for local government to share on an equitable basis in nationally raised revenue. The capital subsidy system evolved in an ad hoc manner to suit specific needs. This is the reason for introducing the Municipal Infrastructure Grant (MIG) that consolidates all previous systems and strengthens constitutional accountability at local level. Local government is recognised as a separate sphere of government with its own defined tasks and responsibilities.

Now that the legislative and institutional environment has been well defined, and implementation mechanisms are in place, the main focus has shifted to accelerated and sustainable service delivery. This implies the ability to integrate planning, budgeting and development at a local level in such a way that a municipality's strategic transformation focus remains while improving and sustaining access to services. The ability to do this is dependent on the following:

1. The ability to integrate the socio-economic, institutional, service delivery and financial

environments of a local authority so that options for service delivery can be determined in an objective way;
2. Translation of the demand for services into a realistic capital investment programme;
3. Identifying the operating consequences and continuing budget impact of planned capital investment; and
4. Assessing the final impact of service choices on household bills and the ability of beneficiaries to pay for such services.

These four steps constitute the essence of the process for determining capital and financing strategies for municipalities.

Processes Linked to Service Delivery

In order to facilitate and accelerate service delivery, three core processes were developed embodying constitutional principles and legislative requirements. The processes are:

1. **The Integrated Development Planning Process** as required by the Municipal Systems Act. Of particular relevance:
   - An in-depth analysis of stakeholders, local economic conditions, and institutional arrangements in infrastructure services;
   - Community priorities solicited and reworked into municipal priority issues per sector and in general terms;
   - Strategies for local development;
   - Capital projects identified to meet the priorities and fit the strategies; and
   - An integrated framework developed addressing:
     a. Performance management
     b. Spatial development
     c. Poverty reduction
     d. Environmental issues
     e. Local economic development
     f. Institutional development
     g. HIV and Aids
     h. Disaster management
2. **Local economic development planning,** which within the context of the IDP identified the needs, demands and strategies to enhance economic growth, job creation and the alleviation of poverty.
3. **Budget reform,** which gives impetus to the practical implementation of the frameworks contemplated in the previous two processes. Through the municipal budget cycle and flowing from legislative requirements, community inputs, demands and needs are accommodated in a very structured and transparent way.

A key issue factored into the whole system was the introduction of the policy of providing free basic services in order to give effect to the constitutional obligation to provide all households with access to at least a basic level of service. This policy cut across all activities and directly impacts the long-term sustainability of municipal service options.

Municipal councils spend between 55% and 65% of their budgets on providing water, sanitation, electricity, roads and stormwater and refuse removal services. These services are all included in government support structures and are the basis for delivering housing and free basic services. It is also these services that are subject to payment problems and debates regarding appropriate service levels. Furthermore, these services must always be assessed and delivered in the context of demand generated through the non-residential sector as a cornerstone of the economic base of a municipality.

As indicated, formulation of a financial and infrastructure strategy is part of the overall integrated development planning and management process of the Council.

IIP Model

The Infrastructure Investment Planning Model takes into consideration a strategic framework for sustainable service delivery that addresses:

a. The infrastructure required by the residential and non-residential sector. These demands are determined for a 10-year period and address current backlogs as well as normal growth in demand. Delivery is expressed in terms of the number of infrastructure units required and also in terms of service levels;
b. The capital requirements to address both bulk and reticulated infrastructure;
c. The funding options and possible sources of funding infrastructure investment;
d. The implications of capital investment on recurrent expenditure, showing:
   i. Projected annual and accumulated cash flows.
   ii. Income growth required meeting expenditure demands.
   iii. Debt service levels that can be expected given projected investment levels and the debt portion of financing.
   iv. Levels of non-payment and non-payment trends that can be expected given preferred service levels and the ability of households to pay for such services.
e. The impact of investment spending and recurrent expenditure on household bills. This includes an

assessment of the factors affecting changes in household bills as well as the scope and potential for cross subsidisation between higher and lower income households, and between the residential and non-residential sectors.

The result of the modelling process is to develop investment scenarios and describe the consequences of each. Based on these scenarios, policy parameters are determined and strategic issues identified that will guide the Council in decision-making. The result of the process is a 10-year investment programme that shows:

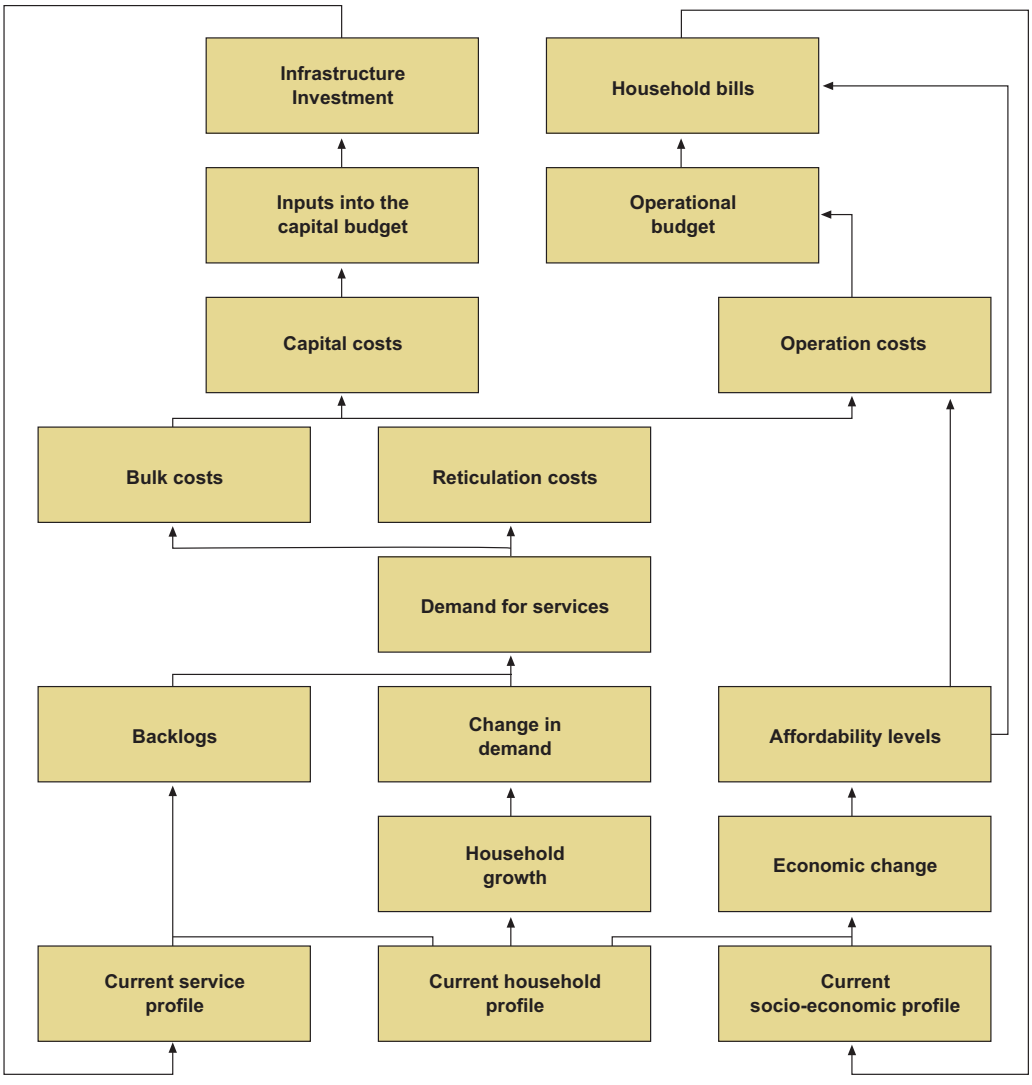
1. Infrastructure delivery required in terms of units to be provided of each service to meet demand;
2. The levels of services that are affordable and that can be sustained over the long term;
3. The capital investment requirement per services as well as the main sources of funding that has to be considered;
4. The impact of these services on the operating account and cash flows of the Council;
5. Borrowing requirements and projected debt servicing levels; and
6. The impact on household bills.

Key relationships considered through the assessment process

Infrastructure investment planning sets the strategic parameters of sustainable service delivery and highlights the relationships between socio-economic variables, service provision requirements and financial realities. Planning infrastructure investment and setting financial strategies should consider a number of variables and relationships in order to allow a municipality to provide services in a sustainable manner.

Before these relationship variables can be described and assessed, it is necessary to clarify the

Figure 1: Relationship between key variables



variables themselves. Figure 1 shows the variables and how one move from the basic building blocks, through the process, to the point where household bills for services can be rendered. It is at this point where the impact of a sustainable service delivery policy must take effect. Issues such as subsidisation, targeting and tariff setting, become critical.

The flow and linkages between variables in the figure can be used as a basis for calculating the demand for services.

1. **Service profile:** The service profile of a municipality describes the current state of affairs regarding service delivery. For the purposes of an infrastructure investment strategy, it is important to know how many households are provided with which services. As part of the 'service profile' of an area, an estimate should also be made regarding the rehabilitation requirements. Rehabilitation essentially refers to the backlog in repairs and maintenance.
2. **Household profile:** The consumer base of a municipal area can be divided into a residential (household) and a non-residential component. The household profile of an area describes the major part of the consumer base of any municipality. The purpose of describing this profile is to determine the extent of the consumer base and the need for intervention.

   Equally important are the changes taking place in the consumer profile of the municipality. Household growth, also referred to as household formation, is important. Household growth does not necessarily correlate with population growth, especially under conditions where structural changes in the housing sector are taking place. This is usually a socio-economic change in terms of income profiles and family structures. All this has direct consequences for household expenditure, and thus affordability and the ability to pay for different levels of services.
3. **Socio-economic profile.** From an infrastructure investment point of view, two socio-economic indicators are important. Firstly, economic growth can be related to job creation and thus to generating disposable income for households. Secondly, more importantly when planning for investment in infrastructure, is the household income distribution profile. Household income determines affordability levels and is also the basis for government assistance to poor households. Establishing household income profiles becomes a critical issue in infrastructure investment planning and the provision of services. Changes in these two economic yardsticks directly link with job creation and thus household incomes and affordability.
4. **Backlogs.** Backlogs refer to infrastructure and service backlogs and not housing backlogs. In the context of current government policy, service backlogs refer to households with access to less than basic services. Backlogs always refer to service levels and not to the standards of service. 'Levels of service' refers to the quantitative extent of service provision, whereas 'standards of service' refers to the qualitative aspects of service delivery. It is therefore possible to find a low level of service with a high standard of service delivery and vice versa.
5. **Bulk and connector costs.** Bulk and connector costs are usually restricted to the cost of bringing services to a township's boundary, or to services serving more than one township. Bulk services, by their very nature, are difficult to provide incrementally and are usually, at best, provided in a modular way. These characteristics make it very difficult to model the need for bulk services based on household growth rates.
6. **Reticulation costs.** Reticulated services refer to those services inside the township boundaries that serve individual households. Where reticulated services are linked to individual households, it is easier to allocate costs and to project demand based on household formation tendencies. Because reticulated services can be provided on an incremental basis, they are easier to estimate and report on.
7. **Capital costs.** Capital costs refer to the total combined once-off costs of providing bulk and reticulated infrastructure.
8. **Capital budget.** The capital budget refers to the proposed time-related expenditure of capital costs. It also includes the expenditure per type of service, as well as the funding source.
9. **Operational budget.** The operational budget reflects a council's intentions, in monetary terms, regarding the estimated day-to-day cost of service delivery to households.
10. **Infrastructure investment.** Infrastructure investment refers to the process whereby service infrastructure is created and added to the infrastructure pool of a municipal authority.
11. **Household bills**. Household bills are the amounts billed for services delivered to households. Household bills may not necessarily reflect the true cost of services delivered because they may, in terms of a council's pricing

policies, include elements of subsidisation or other elements that distort the price mechanism.

These variables relate to each other in a very particular way. Through the very nature of these relationships, it implies interdependencies where changes in one variable lead to changes in the total system. In this respect, the development of free basic service policy should be approached with great care and the impact of policy decisions should be assessed in all its dimensions before implementation starts.

As can be seen from Figure 1, all the concepts explained above stand in a specific relationship to each other. In order to plan for infrastructure investment, it is necessary to understand these relationships.

1. **Demand for services** is a function of the backlog and the household formation process or growth. A change in the demand for services is therefore also a function of changes in the backlog and the household growth rate. If the process is properly managed, the backlog should consistently decrease, but if it increases it implies either that the investment programme is inappropriate, or that the process is falling behind in meeting the targets of the investment programme. Changes in the demand for services will directly affect the impact of free basic service policy on the municipality's finances.
2. **Affordability** relates to two further important variables; household income and the cost of service delivery. The levels of economic activity in the area and the ability of the local economy to absorb household growth eventually determine household income. The cost of services is determined by an array of fixed and variable costs, ranging from bulk purchases, the cost of capital, salaries and wages, contributions to funds, to provisions for specific purposes. If provision for losses is included, subsidies and rebates are accounted for and the required surplus on cost is added, the selling price is determined, which becomes the cost of the service to the recipient household, or the household bill, as described above. It is this cost to the municipality of delivering a service that will impact on its ability or the extent to which it can provide services at various levels.
3. A distinction should also be made between **intervention on the capital side** and **intervention on the operating side.** Intervention on the capital side is particularly important. An intervention that reduces the cost of capital may not necessarily have an equivalent effect on the operating side. Reduced capital costs to households may lead to commitments to service levels that may imply an increase in operating cost as is the case with, for example, roads. A lower level of service such as a graded road versus a tarred road will imply a lesser capital expense when graded roads are opted for, but it might imply a much higher cost to operate and maintain irrespective of the extent and nature of intervention on the capital side, its effects must always be assessed on the operating side. The effects on households of interventions on the operating side are always more direct. An intervention that leads to a cost increase will also lead to an increase in expenditure for a household, and vice versa. There are many interventions possible on the operating side, ranging from subsidies, tariffs on a sliding scale, rebates for categories of consumers, and many more. Nevertheless, interventions tend to distort the price mechanism and might ultimately contribute to less transparency and hidden taxes. These distortions can result in ineffectiveness on the part of the municipal authority and a loss of income. It is therefore important that municipalities implement transparent targeting mechanisms which are reflected in municipal budgets.

Lastly, the **payment for services** is a function of affordability and willingness to pay. It is sufficient to emphasise that any changes in affordability levels will affect payment for services and so will any factor that changes a household's or community's willingness to pay for services. One should also note that affordability is more directly measured and more predictable than willingness to pay. The latter is more subjective and therefore more exposed to changes in perception and political manipulation.

Deliverables

The municipality is left with a strategy framework that spells out:

1. Key policy and decision-making parameters;
2. Performance indicators for service delivery and financial performance associated with service delivery;
3. Strategic links into the IDP, LED and budgetary processes of the Council; and
4. Operational links into the budgeting and planning process, such as detailed project prioritisation for capital budgeting purposes.

Municipal Infrastructure and Service Delivery

Planning and Supporting Municipal Infrastructure

Discussions

Session One

The presentation by Pregan Pillay highlighted current policies and approaches on service levels at local government which are not sustainable. A question was raised as to what government was going to do about this problem.

In his response, Mr Pillay stated in terms of investment planning, there is a strong move for infrastructure investment planning to be part of the IDPs. When projects start to get registered, the approach from the MIG side is to ask for a capital budget plan in which municipalities must demonstrate that they can cover the operation and maintenance costs of a particular project sufficiently and not only the capital costs. At a higher strategic level, alignment of policies has become important and there is a realisation that housing policy must be aligned with provision and delivery of water and sanitation simply because infrastructure delivery actually follows housing development in many respects. Mr Pillay added that the **dplg** was currently forging partnerships with all sector departments as part of refining MIG policy.

Mr Burgert Gildenhuys elaborated on the issue of service levels. He highlighted that it was important to note that when one talks about level of services, there was firstly an urban bias more geared to a reticulated type of service. However, there is a need to deliver services in rural areas whether or not it is appropriate.

Mr Gildenhuys also raised the issue of cross-subsidation as pertinent to the issue of affordability and service levels. However, cross-subsidisation in past policies did not assume that there are limits to which higher income groups can subsidise.

For instance. if one looked at income profiles and the contributions from households to the municipal income base, it can be discovered that it is not the rich people carrying the municipality but the middle-income group that earns between R3 500 to about R20 000 per month. It is this middle-income group, according to Gildenhuys, that should be protected and looked after as they are the people that cross-subsidise.

Mr Gildenhuys also touched on capacity building and the concomitant role of consultants. He noted the importance of optimal use of scarce human resources. Instead of paying a consultant R1 000 per hour to act as a secretariat for a council committee, such a waste of money could be avoided by buying skills and getting rid of that person once you've utilised that skill. He added that the rules of the game of engaging consultants in work needed to be revisited.

Session Two

A question was raised on the extent that national government was confident that the MIG funding will be sufficient to eradicate the current service delivery backlogs, especially in terms of sanitation especially when in some municipalities, the costs to eradicate the bucket system far exceeds the MIG allocation for the next two or three years.

Mr Pillay responded that the MIG programme is viable at a national scale but it must be understood that we have different profiles of municipalities. The B4 municipalities which are the ones that are particularly less developed

in rural municipalities are constrained by the fact that their borrowing capacity is very, very poor so they are not able to top up funding.

Mr Pillay emphasised that what was a constraining factor were not funds but the capacity of municipalities to deliver. Often there were situations where funding is adequate but municipalities are not able to use this money. This represents a capacity problem and **dplg** in partnership with DBSA and Treasury have actually gone out to try and identify the technical and engineering capacity constraints within the municipalities. He highlighted that the project is trying to address capacity constraints.

On the issue of basic services, Mr Gildenhuys maintained that he was not inclined to think that government's intention is just to provide everybody with basic services. If people are confined to basic services; it will actually be more costly to the revenue base of a council than aligning services with income levels. Aligning services with income levels also supports choice – not forcing people into high services or basic services.

Session Three

The problem of backlogs was highlighted and what was considered a rather urgent matter is the need to measure progress made in eradicating backlogs. Mr Pillay responded that the issue of backlogs was more of a moving target.

Firstly there were historical backlogs from pre-1994 whilst on the other hand there are demands for new services.

Mr Pillay suggested that municipalities must be capacitated to take ownership of understanding what their backlogs are in their respective areas. As a start, he referred to the MIG MIA system which will include a module to get backlog information from municipalities. At another level, backlog information is collected from municipal areas. It is anticipated that the **dplg's** initiative of ward committees would start to provide information in a bottom-up approach, which will allow effective monitoring of progress. Aside from the initiatives at municipal level, Stats SA is also able to provide the financial reporting status of the eradication of backlogs by municipality and province.

Mr Pillay further added that sector departments should provide a more supportive role to municipalities to help them align local initiatives to sector plans, growth and development strategies. He also addressed the concern of why funds are not actually being spent in the very municipal areas lacking services. With infrastructure delivery being a complex process, Mr Pillay said planning the delivery of infrastructure is often a long-term process. Typically one is looking at 18 months down the line when you have started thinking about a particular facility. Another drawback cited is the of culture investment planning, which for a long time was left with the national department. The participation of municipalities in infrastructure investment planning had become necessary.

Pregan Pillay

(Paper Presented: Free Basic Services, Municipal Infrastructure Investment Framework and Municipal Infrastructure Grant)

Pregan Pillay is a Senior Manager in the Department of Provincial and Local Government. He holds a Masters degree in Geographical Information Systems (GIS) from the University of Natal. Much of his published work centres on access to primary health care services, land and basic services using Geographical Information Systems (GIS) as a management tool.

Mr Pillay is a former Deputy Director: Corporate Information Systems at the Department of Land Affairs. He also held the post of Programme Manager: Information Technology and Construction Registers Service at the Construction Industry Development Board (CIDB).

Burgert Christiaan Gildenhuys

(Paper presented: Municipal Infrastructure Investment Planning: Linking Service Delivery to Planning Processes, Affordability and Sustainability)

Burgert Gildenhuys, Managing Director at BC Gildenhuys and Associates, is an internationally recognised expert in infrastructure investment planning and municipal finances. Since November 1997, he has acted as an advisor in the fields of urban development and development management. His main area of focus is on the long-term financial impact of infrastructure investment. His clients include various parastatals, national and provincial governments, major financial institutions, municipal authorities, private sector institutions and international aid agencies.

Burgert Gildenhuys graduated from the University of Pretoria with degrees in urban planning and municipal administration. Some of his career highlights include formulating DBSA's first urban mandate; participating in developing the first integrated model for assessing the impact of capital investment of operations of municipalities; and developing national guidelines for infrastructure investment planning. He has also participated in formulating financial strategies for more than 80 municipalities and advised national government on the Municipal Infrastructure Investment Framework at various stages of its development.

Burgert is a regular speaker at conferences and has conducted several workshops on topics related to development and local government finance and sustainability.

The DBSA Knowledge Week

Municipal Infrastructure: Roads

Peter Copley – Transport Specialist, DBSA

DBSA
Development Bank of Southern Africa

Municipal Infrastructure: Roads

Peter Copley – Transport Specialist

Abstract

As recently as 1994 it was commonly understood that South Africa had approximately 250 000 km of 'proclaimed road', with an unquantified length of urban road and an equally unquantified length of informal tracks. From work undertaken by a variety of parties over the last decade it is now accepted that the overall network is essentially mature (that is there are few gaps in the network) but that the total length of network is 750 000 km, or three times as large as historically recorded. In very broad terms one third of this network is the old formal road system of the provinces; one third that of the municipalities; and one third consisting of tracks in both the urban and rural environments. The overall national density of the network is about 0,60 km per square kilometre, which is considered high for a country at South Africa's stage of development. Adjacent territories tend towards 0,12 km per square kilometre. Put differently, South Africa has five times as many roads as most of its neighbouring countries. In parallel with the recognition now afforded to all roads in South Africa, constitutional and demarcation changes are fundamentally changing ownership and responsibility for different functions and classes of South African roads.

A need exists to bring some order into this world of confused uncertainty. This paper endeavours to contribute towards that process.

1. Introduction

There is consensus that good transport infrastructure is essential to a country's economic well-being, second only to education.

As a component part of this infrastructure, roads meet both the needs of economic sustainability and growth in any country as well as the need for social accessibility and mobility. In a developing economy such as South Africa with a history of spatial and investment distortion, it is also necessary to re-establish an effective and balanced system of road infrastructure for the good of the overall economy as well as the well-being of its inhabitants.

Effective public transport systems, on which 90% of the country's inhabitants rely for mobility, can only be provided with an effective road system, balanced with supporting public transport rail systems in places of known, consistent demand.

As recently as 1994, it was commonly understood that South Africa had approximately 250 000 km of 'proclaimed road', with an unquantified length of urban road and an equally unquantified length of informal tracks.

From work undertaken by a variety of parties over the last decade it is now accepted that the overall network is essentially mature (that is there are few gaps in the network) but that the total length of the road network is 750 000 km, or three times as large as historically recorded. In very broad terms one third of this network is the old formal road system of the provinces; one third that of the municipalities; and one third consisting of tracks in both the urban and rural environments.

The overall national density of the network is about 0,60 km per square kilometre, which is considered high for a country at South Africa's stage of development. Adjacent territories tend towards 0,12 km per square kilometre. Put differently, South Africa has five times as many roads as most of its neighbouring countries.

In parallel with the recognition now afforded to all roads in South Africa, constitutional and demarcation changes are fundamentally changing ownership and responsibility for different functions and classes of South African road.

A need exists to bring some order into this world of confused uncertainty. This paper endeavours to contribute towards that process.

2. Purpose of Document

Due to the uncertainty sketched above, a variety of parties have endeavoured to quantify the extent of and condition of the South African road network, particularly towards quantifying the extent of the

'backlog' and to propose policies and strategies towards addressing this.

The primary purpose of this paper is to describe these initiatives and to take from them a synopsis of the findings towards suggesting a way forward to meet the legitimate needs of both the first and third world components of the South African economy.

Just as a need exists for a sound and effective system supporting the first-world economy of the country, so does a need exist for meeting social needs for effective accessibility and mobility of the entire population in DBSA markets 1, 2 and 3.

Conventional wisdom suggests that where financially feasible, roads should be financed through direct cost recovery, justified financially. The best examples of this can be seen in the national toll roads recently put out to concession.

Where roads can't be financed directly by the private sector on the grounds of a lack of supporting revenue[1], a need exists to fund roads from a dedicated fuel levy, justified economically. The best examples of these are the national roads other than toll roads which are funded through the portion of the fuel levy collected by Treasury and allocated to the South African National Road Agency Limited (SANRAL).

Where roads cannot be financed via a dedicated fuel levy but are funded from the general tax base, they are justified economically (provincial environment) or socially (municipal environment) and funded depending on perceived political priority accorded by relevant spheres of society.

3. Background Information

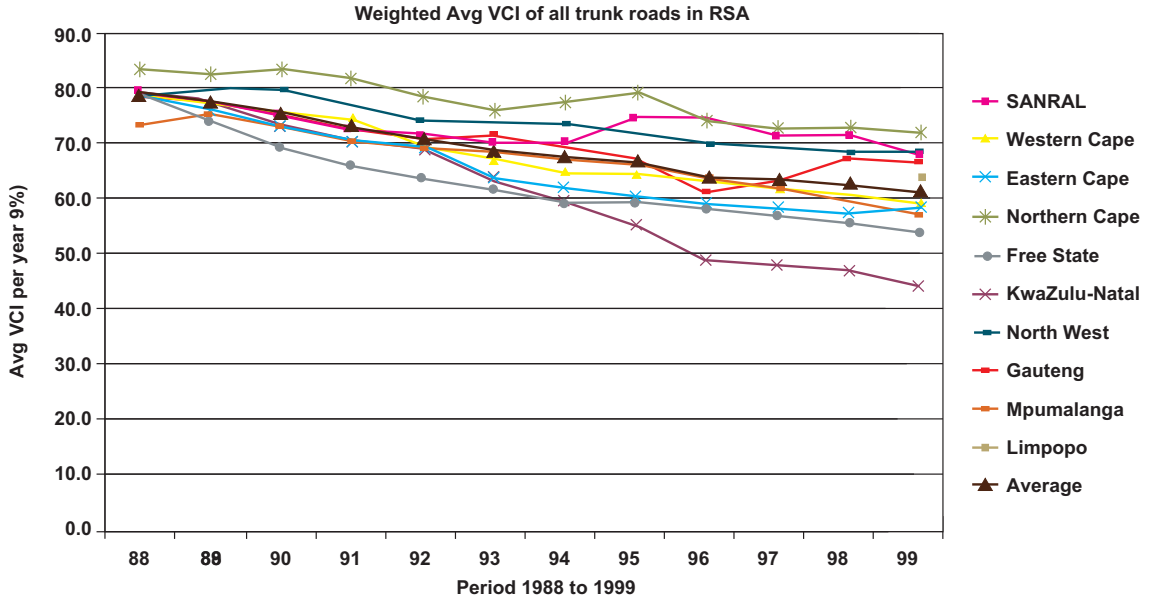
This process has led to a situation in South Africa where the national road system is good but the provincial systems are severely degraded and the municipal systems are, in many instances, non-existent or on the verge of collapse. This deterioration is well described visually in Figure 1.1. This describes the overall Visual Classification Index (VCI) for South Africa's through-routes.

The VCI is a commonly accepted indicator which expresses road condition from information collected from routine and ongoing road management systems which are undertaken by all rural road agencies. It is expressed as a percentage of overall condition of the respective networks.

While municipal government has been slow in operationalising such systems, there is no reason to suspect that there is any material difference in the condition of roads in the rural or urban environment within similar regions of the country given that the greatest impact on roads is generally from weather and from the effects of routine maintenance or, on most South African systems, lack of routine maintenance.

In general, the average condition of South Africa's major rural arterials has decreased over a decade by 25% (from 80% to 60% 'good'), with the wetter eastern parts of the country, not coincidentally with more heavily trafficked roads, doubling this rate of deterioration.

Figure 1: Overall South African through-route condition (after Sampson, SARF AGM, 2002)



1 For a toll road to be financially self supporting in the South African model, it requires average vehicle usage of 4 000 vehicles per day (vpd). There is scope to extend this model into tolling tonnes of freight for roads carrying less than 4 000vpd, or to consider shadow tolling. This options have not yet been explored in South Africa although the N1 north of Warmbaths, Bella Bella, does move partially in the direction of shadow tolling.

On a more positive note five of the major rural players have stabilised the decline at about 70% 'good'. Significantly these players are all in areas where independent agencies of one form or another have begun to play an increasing role in road management.

In must be recognised that shifts in national investment priorities into sectors such as education, health and water provision have limited the fiscal resources available for roads, and that National Treasury has over the last three years increased allocations to roads by approximately 15% per annum. It can be said though, with a measure of confidence, that with the exception of KwaZulu-Natal and Free State provinces, the overall condition of South Africa's through-routes is beginning to stabilise, particularly in those areas where dedicated agencies are managing the network. Eastern Cape does also gives rise for some concern although road conditions there appear to be stabilising.

The case of KwaZulu-Natal was fairly predictable as a general reallocation of provincial funds from the primary network to the very successful Community Access Roads Programme did lead to a reduction in resources available for upkeep of the primary network. Like Free State, KwaZulu-Natal also has to bear the brunt of national traffic making use of its system to access the ports of Durban and particularly Richards Bay, over provincially managed roads. Free State's situation was also exacerbated through a rapid exodus of experienced professionals during the period.

In general, however, it is probable that the worst has past and as district roads are handed over from provinces to district municipalities, the condition of through-routes will continue to stabilise and marginally improve.

Fundamental from this discussion is the readily apparent fact that where funding is adequately and consistently allocated, roads continue to meet the needs placed upon them by society; where funding is politically determined, roads decline in their ability to meet the expectations of society.

The institutional choice in addressing road needs lies consequently in dedicated, adequately resourced agencies driven by commercial considerations, independent of political interference and influence or competition from other sectors. There are no other successful models.

The secondary purpose of this paper is therefore to describe road institutional experience in South Africa and elsewhere and endeavour to pave the way for spheres of government responsible for road provision to enter into hands-off arrangements with operational roads bodies. This is all to ensure that South Africa's road network regains the position it once enjoyed of being the best on the continent and one of the best in the world.

4. Extent of the Network

As stated in the introduction South Africa's historic road system was good but skewed. It met the needs of inter-city and rural-to-urban connectivity very well in some areas of the country and wholly inadequately in others. Intra-urban needs were adequately met in financially well managed municipalities and, again, woefully unmet in others.

The approximately 250 000 km historically proclaimed system which fell under the jurisdiction of the National Roads Board and the provincial roads departments was well managed and effective. Its extent is described below.

Table 1: Extent of Proclaimed Provincial Road Network in km (year 2000) (National Department of Transport, 2002)

PROVINCE	SURFACED ROADS (KM)	GRAVEL ROADS (KM)	ACCESS ROADS (KM)[2]
Eastern Cape	6 233	34 718	7 631
Free State	7 070	22 046	20 000
Gauteng	3 487	1 771	2 410
Kwazulu-Natal	7 489	19 347	10 571
Limpopo	6 403	11 866	10 578
Mpumalanga	7 062	10 517	7 479
Northern Cape	5 630	53 725	12 023
North-West	6 723	19 161	10 017
Western Cape	7 172	24 991	7 822
TOTAL	57 269	198 142	88 531

Two particularly important components in the management of those systems were dedicated (focused) institutions and effective management systems.

2 'Access roads' are not included in the 'Provincial Network' proclaimed total as in terms of their function they should be the responsibility of district municipalities. They were historically classified as 'district roads' administered by district road advisory boards. Their primary function was to provide access to a limited number of users to the provincial system. In the old Cape Province they were administered by the old divisional councils, the predecessors of the current district municipalities.

Also effective was the co-ordination role played by the national Department of Transport through what were known as the Committee of State Road Authorities (CSRA) and Committee of Urban Transport Authorities (CUTA) respectively. These committees were representative of all road infrastructure agencies across the then 'RSA' with secretarial services provided by Transportek of the CSIR.

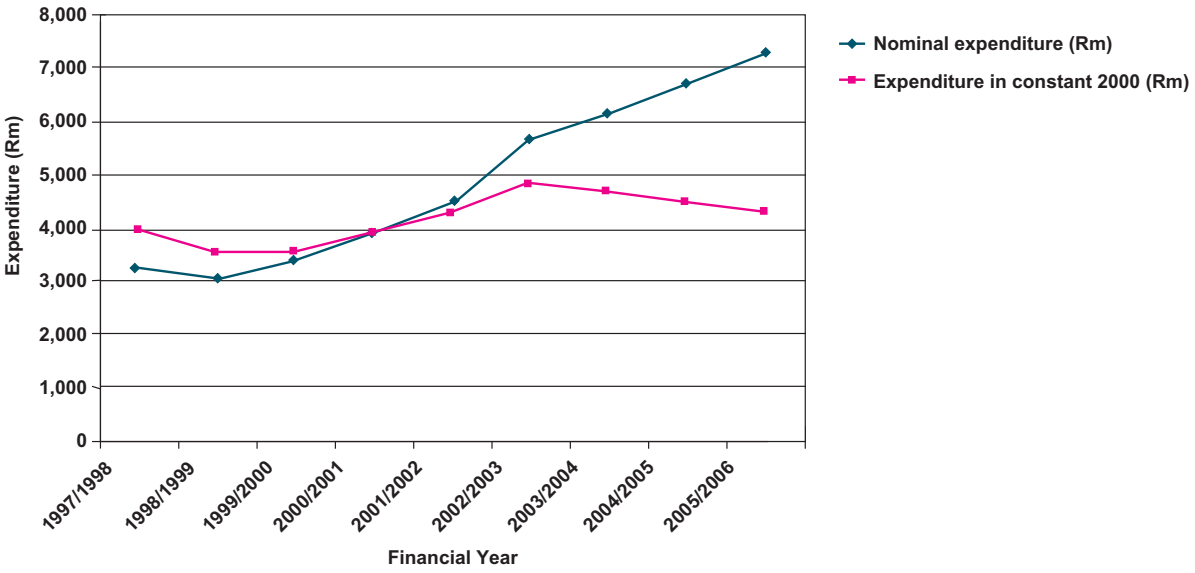
The system worked well for a limited network. While it was appreciated, it was not representative of the entire system. A balanced system of constant funding of this network from the Treasury evolved as indicated in Figure 1.2 below. This proved effective to meet the needs of users of the proclaimed system.

In the early 1990s the national Department of Transport began trying to grapple with quantifying urban needs, while Transportek, funded by the South African Bitumen Association (SABITA) tried through on-ground and aerial photographic sampling to get its handle on non-proclaimed rural network, which was particularly important on the peripheries of the metropolitan areas.

Through that early work, it was confirmed that the total rural network was in fact approximately one and a half times as large as that proclaimed and that the formal municipal networks were in total approximately half the length of the proclaimed rural network.

This work was pursued by both the South African Road Federation (SARF) and more recently (2003) by

Figure 2: Total government expenditure on roads (National Department of Transport, 2002)



the national Department of Transport (DoT) through the 'Road Investment Framework for South Africa' (RIFSA) study and document, produced by Transportek under appointment by the DoT. Both bodies agreed with an overall figure of approximately 750 000 km as being the overall total length of roads in South Africa. The distribution of this network is best described in the Table 1.2, reported on in the RIFSA document.

An analysis of these figures, together with the VCI information in Figure 1.1 suggests that the national road system is in relatively good repair. Due to the capabilities of SANRAL, it is likely that its responsibilities will be doubled through taking over roads which are regarded as being of national strategic importance from provinces.

It is also likely that approximately one-third of the current provincial road responsibilities, the access roads, will be handed over to district municipalities,

Table 2: Approximate length of road networks in South Africa (National Department of Transport, 2002)

ROAD AUTHORITY	LENGTH (KM)	PERCENTAGE SPLIT
National roads	6 700	1%
Provincial roads	357 000	47%
Unproclaimed rural roads	221 000	29%
Metropolitan, municipal and other	168 000	23%
Total	**752 700**	**100%**

Note: The provincial network, which can be argued, is the real economic and social backbone of the country, is in the process of being divided in terms of responsibility between provinces and district municipalities. The degree of this transfer varies from province to province.

thus returning the provincial responsibilities to a known figure of about 233 000 km. This leaves district municipalities responsible for a're-allocated' length of 124 000 km of historic provincial responsibility and an additional 221 000 km of historically unproclaimed road which no one accepts responsibility for. This suggests that almost half of the network (46%) is 'floating' and looking for a home.

In concept at least, these roads are the responsibility of district municipalities and of local municipalities. It is difficult to deduce which lie where and, for guidance, one is directed to the Palmer Development Group's work for the Department of Provincial and Local Government on the Municipal Infrastructure Investment Framework and, particularly urban service backlogs. Palmer made use of municipal samples as indicated below.

Table 3: Municipalities used in municipal financing modeling exercise (Palmer Development Group, for DPLG, 2005)

Municipality type*		Name	Province
A	Metros	Johannesburg Metro Cape Town Metro	Gauteng Western Cape
B1	Secondary cities: the 21 local municipalities with the largest budgets	Buffalo City Mhlatuze	Eastern Cape KwaZulu-Natal
B2	Municipalities with a large town as core	Breede Valley Kokstad	Western Cape KwaZulu-Natal
B3	Municipalities with a relatively small population and a significant proportion of urban population but with no large town as core	Cederberg Umsobomvu	Western Cape Eastern Cape
B4	Municipalities that are mainly rural communal areas with, at most, one or two small towns in their area	Makhudutamaga	Limpopo
C1	District municipalities that are not water services providers	Cape Winelands Karoo	Western Cape Western Cape
C2	District municipalities that are water services providers	Amatole Sekhukhune	Eastern Cape Limpopo

Note: * Although not official, these municipality types have been used in previous policy initiatives of DPLG

The table below summarises Palmer's findings for what is required to address water, sanitation and electricity backlogs in the municipal environment in South Africa. This information is represented graphically in Figure 3.

Table 4: Backlogs to basic services

Municipality type	Total house-holds (m)	Households without access to a basic level service					
		Millions			Percent		
		Water supply	Sanitation	Electricity	Water Supply	Sanitation	Electricity
A	4.7	0.39	0.67	0.80	8	14	19
B1	2.2	0.31	0.57	0.45	14	26	22
B2	0.6	0.05	0.14	0.26	9	22	27
B3	1.1	0.13	0.36	0.44	44	33	29
B4	0.4	0.12	0.25	1.30	72	65	47
Total	**12.6**	**2.3**	**3.9**	**3.3**	**18**	**32**	**28**

Figure 3: Summary of number of households without access to adequate services, 2004

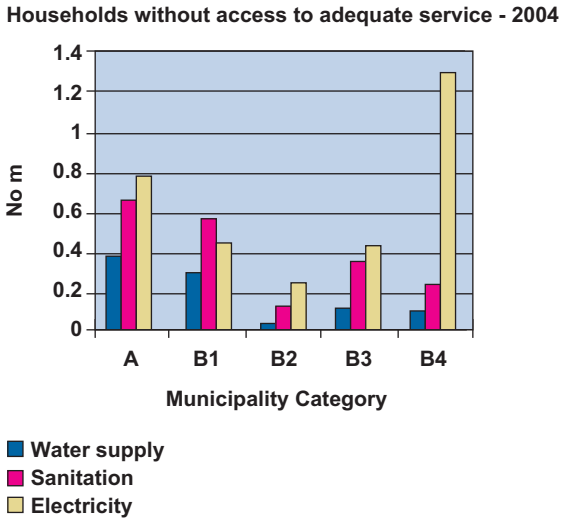
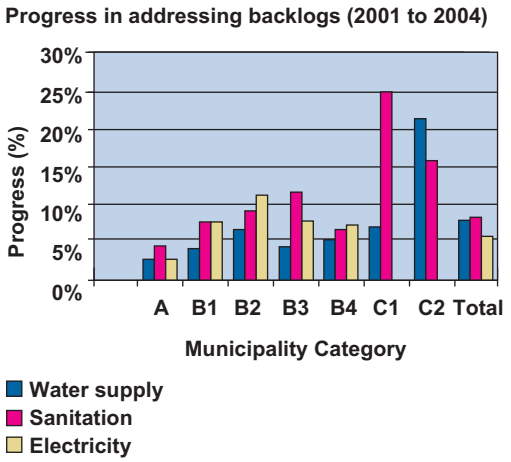


Figure 4: Progress in addressing backlogs, 2001 – 2004



In general water provision is the best provided service. This is to be expected when recognising the essential role of water in support of life. Effective sanitation tends to lag water provision by approximately 50% in the metropolitan areas and larger (B1) municipalities and by approximately 100% in others. The electricity backlog approximates the sanitation backlog with the noticeable exception of the B4 municipalities, where those households without electricity amount to 1, 3 million, or 47% of all dwellings.

Progress has been made by local government in addressing some of these backlogs. This is represented in Figure 4.

In general the rate of addressing the backlog of electricity has tended to be 6% per annum; that for water 5% per annum; and that for sanitation a remarkable 10% per annum. Also in general the C class municipalities (i.e. district municipalities) have outperformed the other municipalities by a factor of 2, 5 in catching up on backlogs. While these rates are in their own right significant it will be appreciated that they are not sufficient to catch up on the backlog as South Africa's urbanisation rate is currently of the order of 7% per annum. The country is in fact standing still. The purpose of the DPLG report is an effort to double these delivery rates.

Targets in the DPLG report/model for eliminating backlogs to a 90% level of service were arrived at for:

- Water backlog 2009
- Sanitation backlog 2012
- Refuse backlog 2012/3
- Electricity backlog 2012/3.

From this work the Department of Provincial and Local Government have accepted the total figure of roads in the country but has found that there is little sound information at local levels to support either lengths or conditions of roads and hence has made some educated guesses as to conditions and 'backlog' of roads. For purposes of modeling the financial backlogs, Palmer assumed that 20% of the municipal network was in good condition.

The primary purpose of this paper to further analyse the road backlog and condition within the framework developed by Palmer.

As a fundamental assumption it is assumed that the inadequacy of road infrastructure providing accessibility to the spatial economies serving people is the average of that for households lacking adequate sanitation and electricity.

The derivation of this assumption is that the same or similar authorities are responsible for providing water, sanitation and roads, while electricity, as a trading account, tends to be provided in accordance with revenue models and affordability, as are roads.

A second assumption made is that in the normal South African municipal environment, one dwelling equates with one structure and each structure demands direct road access.

This situation is changing as South African municipal densification continues. While South African's do not like living in high-rise buildings,

development of three dwelling structures and four dwelling structures ('four-level walkups') are proceeding apace. This will have the overall effect of reducing the need for road space in the municipal environment by factors commensurate with the number of dwellings per structure. Assuming one dwelling per structure and one structure per road frontage does accordingly represent the worst case scenario in terms of demand for road space.

Central to Palmer's experience is the unfortunate fact that the local networks are in many instances essentially unmanaged, with no accurate data available as to who owns which portions of local networks and what are their various conditions.

A second purpose of this paper is accordingly to suggest ways by which responsibility can be fairly apportioned and how the component parts of the network might be managed towards developing an effective overall system.

This comment in particular remembers that, in terms of the constitution, responsibility for roads (and for training in road provision and maintenance) is a responsibility shared by all three spheres of government.

Based on the assumption above and augmenting the work already done, the distribution of inadequate road network systems by different types of municipalities is approximately that indicated below.

Table 5: Approximate backlogs of services, including municipal road networks, in South Africa (after Palmer Development Group, for DPLG, 2005)

Municipality type	Total house-holds (m)	Households without access to a basic level service							
		Millions				Percent			
		Water supply	Sanitation	Electricity	Roads	Water Supply	Sanitation	Electricity	Roads
A	4.7	0.39	0.67	0.80	0.74	8	14	19	15.6
B1	2.2	0.31	0.57	0.45	0.51	14	26	22	23.2
B2	0.6	0.05	0.14	0.26	0.20	9	22	27	33.3/24.5
B3	1.1	0.13	0.36	0.44	0.40	44	33	29	36.4/31.0
B4	0.4	0.12	0.25	1.30	0.78	72	65	47	193.8/56.0
Total	**12.6**	**2.3**	**3.9**	**3.3**	**3.6**	**18**	**32**	**28**	**28.6/30.0**

While these figures are based on assumptions, it can be said with reasonable certainty that approximately 30% of all households in the country do not have adequate road access. The situation is best in the larger urban areas and, as can be expected becomes progressively worse when moving into the smaller municipal areas.

If the percentages above are reverted back to kilometres of road by correctly pinpointing the responsible authority, in terms of the current Demarcation Act, the following table is arrived at (see Table 6).

By dividing the total government financial allocation for roads, which is spent on the SANRAL and provincial road networks (Figure 2), we arrive at an overall annual expenditure of R14 602 per network kilometre per annum (year 2000 rands). Approximately 10% of this is spent on administrative costs leaving R13 142 per km per annum for capital investment (new construction and rehabilitation) and maintenance. In an ideal scenario the same is spent on maintenance as is spent on capital over the long term. The assumption is then made that the cost per network km length of capital vs maintenance is the same at R6 571.

In reality it is a strategic decision as to how much investment is made into capital and how much into maintenance and a model has been developed as to how this decision can effect overall investment amounts but, for purposes of this report, a 50:50 ratio is assumed as being the best for long-term sustainability.

From these figures, the following table indicates millions of households served by municipality type, together with theoretical metres of road per household based on the theoretical total network responsibility.

This factor is then split into 'adequate metres per household' by dividing the existing municipal network lengths by number of households and assuming that condition of these networks is the same as that for the through route indicators given in Figure 1, proportionally for the regions considered.

The 'unproclaimed' network is then apportioned by municipality type in proportion to the annual operating expenses incurred by each type of municipality (Figure 5, in Section 6), also given the same condition factor by region, and expressed as

Table 6: Probable backlog by responsible road supplier

Responsible Agency		Kms	Conceptual responsibility (based on households and including provincial handovers)	Split of unproclaimed road (based proportionally on annual operating expenditure per municipality type)	Conceptual length of total network, by responsible authority/agency
National		6 700	12 700		12 700
Provincial		35 7000	22 7000		22 7000
Municipal		168 000	292 000	221 000	513 000
	A		62 667	103 385	166 051
	B1		29 333	29 260	58 593
	B2		8 000	9 753	17 753
	B3		14 667	12 192	26 858
	B4		5 333	6 096	11 429
	C1		15 840	2 438	18 278
	C2		32 016	4 877	36 893
Unproclaimed		221 000	221 000	Nil	Nil

Table 7: Probable backlog by responsible road supplier

Millions of households served	Metres network per household	Meters adequate per household	Meters backlog per household	Cost per network km admin (R per km pa)	Cost per network km maintenance (R per km pa)	Cost per network km construction (R per km pa)
		Costs derived from rural network		1 460	6 571	6 571
		Factors for admin & main vs. constr		0.1	0.5	0.5
				Municipal network cost pa (ZAR millions: Year 2000)		
12.6	40.7	23.2	16.3	300	1 348	1 348
4.7	35.3	13.3	14.1	97	436	436
2.2	26.6	13.3	12.0	39	173	173
0.6	29.6	13.3	11.8	10	47	47
1.1	24.4	13.3	10.4	17	75	75
0.4	28.6	13.3	11.4	7	30	30
1.2	15.2	13.2	6.1	11	48	48
2.4	15.4	13.3	6.9	24	109	109

'metres backlog' per household per municipality. The two systems are then combined to provide an estimated annual budget requirement by type of municipality on the capital account (ie to build new roads to meet the current backlog) and on the operating account (ie to ensure that the system which currently exists does not degrade). This suggests that the metropolitan areas should be spending a total of R3 billion per annum on road provision and maintenance in their areas, the B1 municipalities R969 million, and so on.

The total routine annual expenditure on municipal roads in South Africa should accordingly be of the order of R5 037 billion per annum (year 2000 rands). This compares with the stable R3,7 billion spent annually on the rural through-system. Based on the assumptions made, R500 million of this should be spent on administration and R2,5 billion each on maintenance (recurrent budget) of the existing system and capital investment (loan funds) into the 'new' (or 'backlog') system, this all in year 2000 rands.

In practical terms the year 2000 rands have currently increased to R7,3 billon, a factor of

2 (two). This represents an actual increase in central government road financial allocation over the last five years of 20% per annum.

5. An analysis

It is apparent that the level of both fixed (capital) and recurrent (operations and maintenance) investment into road infrastructure, together with changing responsibilities will have an impact on the system. This is aggravated by climate and, naturally usage.

In the rural environment, the impact of these effects as previously shown by work done by Dr John Sampson for the Automobile Association, gives a good indication of current road condition and rate of deterioration. The Visual Classification Indices (VCI) obtained from the provincial and national road agencies for South Africa's trunk routes have been shown in Figure 1.1. While these only run to 1999 there is unlikely to be any material difference between this condition and that for all roads, particularly municipal roads and the currently 'unproclaimed' roads. Thus, while Palmer assumed only 20% of the municipal road 'backlogs' were in a good condition, further analysis in this paper has made use of Sampson's VCIs for the regions considered.

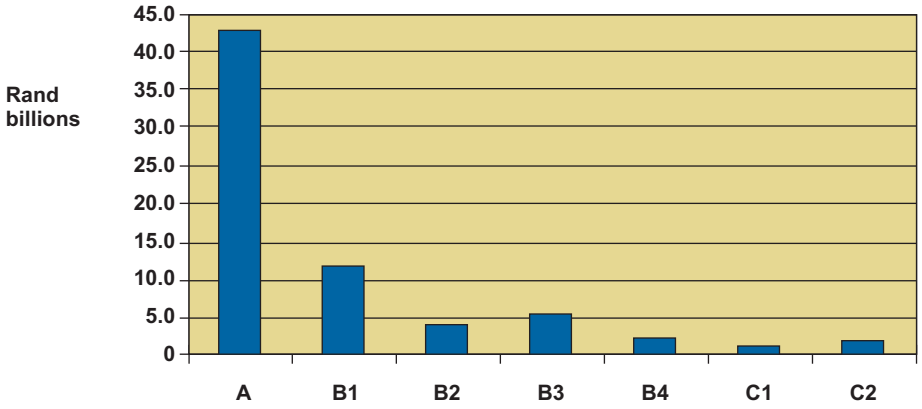
The primary concern has to be with the country's municipal systems, both district and local. From the Municipal Infrastructure Investment Framework of the DPLG and the Palmer Development Group, the following predicted capital expenditure has been derived. It provides an indication of what is required by each type of municipality to address infrastructural backlogs over the next 10 years. The framework also provides a useful framework for looking into road provision systems.

Palmer suggests that the real problem in South Africa is not the availability of initial capital to fund the national municipal infrastructure programme, but rather the sustainability of the services provided. This analysis indicates that municipalities should investigate reducing costs, providing service levels that are more appropriate to municipal and households' ability to pay for them, and improve their ability to raise revenue.

Fundamental to the roads environment of this statement is that municipalities should spend as much as possible of their own funds on recurrent maintenance of the existing system to prevent further regression and make use of loan funding for capital improvements, including addressing the backlog.

As a first step in attempting to close the gap, further scenarios with different types of municipalities need to be tested, with the specific goal of discovering the gap between expenditure and revenue in the operating account. This is central as it represents the funds currently available to municipalities on a regular basis. Palmers estimate is accordingly provided graphically below.

Figure 5: Opex per type of municipality



In urban areas, the ability to deliver housing represents the major constraint because infrastructure delivery is linked to the provision of housing. There are serious constraints on the ability to provide well-located, well-planned housing for the poor. These constraints relate mostly to the process of land purchase, planning, registration and transfer. Infrastructure targets will not be met unless the housing delivery process is improved dramatically. Grants available to municipal governance, including housing grants, are indicated in Table 8.

Table 8: Grants available to municipalities

Year	MIG	CMIP	DWAF	Housing infrastructure*	Total grants	Housing total
2003/04	47	2 246	1 102	1 960	5 355	4 355
2004/05	4 446	-	160	2 013	6 619	4 474
2005/06	5 694	-	139	2 135	7 968	4 745
2006/07	7 453	-	-	2 264	9 717	5 030
2007/08	8 301	-	-	2 490	10 791	5 533

From these grants the total funds available to municipal governance are of the following order.

Table 9: Sources of capital (R million, real, constant 2003/04 prices)

Year	Capital grants	Borrowing	Own sources	Total
2003/04	5 355	2 400	3 700	11 455
2004/05	6 288	2 622	3 339	12 250
2005/06	7 191	2 865	2 855	12 911
2006/07	8 331	3 130	2 441	13 901
2007/08	9 252	3 599	2 197	15 048
Average	7 283	2 923	2 906	13 113
Split (%)	56	22	22	100

Note: Estimates of 'borrowing' and use of 'own source' funding based on 2003/04 NT figures for all municipalities. 'borrowing' and 'own source' funding escalated at 10% and -5% respectively over the next three years.

Based on recent information on aggregated municipal accounts, it is estimated that in 2003/04, municipalities borrowed some R2.4 billion per year and used their own capital sources (including capital development funds) of some R3.7 billion per year. It is likely that borrowing will need to increase but that an increase in the use of internal funds is unlikely. Based on this position, capital funding available to municipalities for the coming years has been estimated (in real terms) and is detailed in Table 10.

Table 10: Predicted capital expenditure over 10 years for each type of municipality (2005/06 to 2014/15)

Type of Municipality	Capex	Capital finance (modeled) (R million for 10-year programme)			MIG split (%)
		Housing	MIG	Municipal own source	
A	35 254	8 346	12 696	14 212	24
B1	17 982	3 384	8 442	6 157	16
B2	9 883	1 497	4 615	3 771	9
B3	19 976	2 263	9 974	7 739	18
B4	39 023	1 889	18 237	18 896	34
Total model	122 119	17 380	53 964	50 775	100
National	124 311	15 974	58 434	49 904	

In many municipalities, particularly those serving rural areas, and especially types C2 and B4 municipalities, there is insufficient capacity to manage the infrastructure provided. This relates primarily to the shortage of personnel with engineering and technical qualifications.

There is an urgent need to encourage and support municipalities to engage in regular infrastructure investment planning and to develop affordable and sustainable service delivery programmes, particularly by matching the levels of service with affordability for both consumers and the municipality/service provider.

Infrastructure asset information is seriously lacking in many municipalities.

A particular example is municipal roads. For asset management purposes, spending on municipal roads should be a major part of municipal capital expenditure. There is, however, little information available on road length and road condition, and the institutional responsibility for specific roads is often unclear. This situation makes it very difficult for the DPLG to allocate municipal infrastructure grants to municipalities to finance road construction, maintenance and rehabilitation. The total national capital allocation of grant funding, as indicated in the DPLG report by Palmer, appears to be at the right level, but the allocation to different types of municipality may need to be adjusted to their individual ability to raise own capital finance. The specific circumstances in each type of municipality require further investigation to ensure that national targets for removing backlogs can be met in all circumstances.

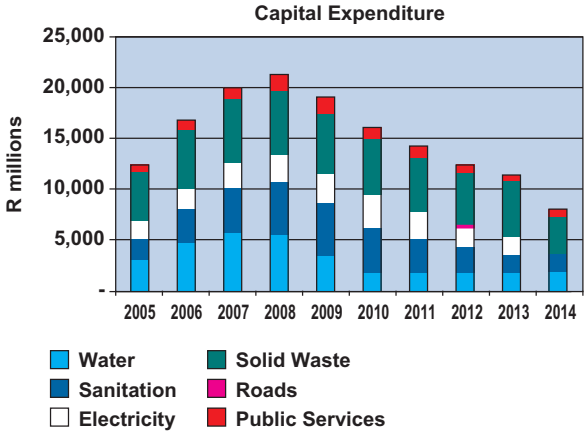
In order to achieve national targets, the annual rate at which services are delivered needs to be carefully monitored. In order to improve the quality of information and reporting, municipalities should be assisted to enhance or develop easily managed services backlog information systems, not only for their own IDP and performance management purposes, but also to facilitate the regular rolling out of that information to provincial and national levels.

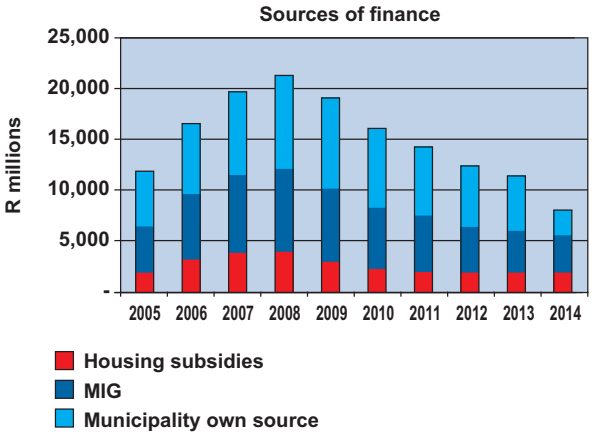
Proposals in respect of a national backlogs information system and municipal asset management are part of the current MIIF update exercise.

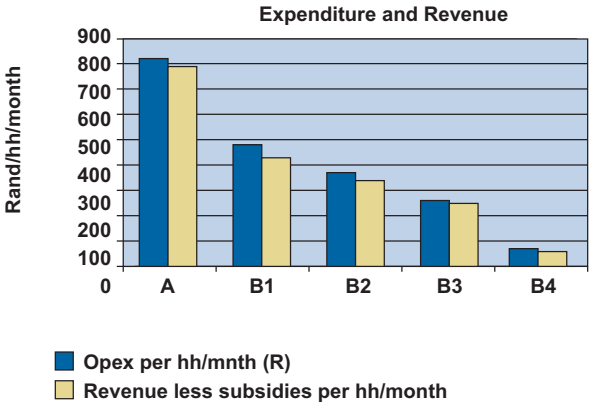
6. A prognosis

This discussion above is elaborated on in the histograms overleaf. These are extracted in their entirety from the Palmer Development Report and should be read in conjunction with the tables above for accurate detail but the graphical representation is useful for discussion purposes.

Predicted capital expenditure, sources of finance and expenditure and revenue for all levels/spheres of municipal government are indicated below.







In order to achieve national targets, the annual rate at which services are delivered needs to be carefully monitored. In order to improve the quality of information and reporting, municipalities should be assisted to enhance or develop easily managed services backlog information systems, not only for their own IDP and performance management purposes, but also to facilitate the regular rolling out of that information to provincial and national levels.

Proposals in respect of a national backlogs information system and municipal asset management are part of the current MIIF update exercise.

Palmer suggests that municipalities will spend approximately R6, 5 billion on capital investment into roads in 2008, the predicted peak of municipal expenditure. This represents 31% of total municipal capital investment. This percentage pattern is replicated over the full 10- year period but with total annual capital road investment amount decreasing to R2, 7 billion in 2014, the end of the planning period. This level of investment for all services requires a measure of cross subsidy. This is expanded on below.

Cross Subsidy Potential

The viability of the national municipal infrastructure programme is strongly dependent on the amount of cross-subsidy that can be generated. This is achieved by charging high-income households and non-residential consumers at above cost and then applying the surplus to fund services to the poor. The levels of cross-subsidisation in excess of actual cost of service, at which tariffs to high-income consumers will be set in order to generate a surplus and then applied in the chosen scenario, are given in Table 11.

Table 11: Levels of surplus generated from high-income consumers (percent)

Category		Water	Sanitation	Electricity	Solid Waste
High-income residential	Urban formal	30	30	30	30
	Urban informal	10	10	30	10
	Communal areas	10	10	30	10
	Rural formal	10	10	30	10
Non-residential	Urban formal	20	20	34	20
	Urban informal	10	10	34	10
	Communal areas	10	10	34	10
	Rural formal	10	10	34	10

No reference is made in the model to cross subsidising of road infrastructure. Hence it must be assumed that road costs stand on their own.

The reality is somewhat different. Municipal roads are funded from two primary sources. Firstly, use is made of the municipal loan fund to provide roads in general. These loans are then serviced by the rates structure of the municipality. As this is a function of the value of respective properties, people pay in effect proportionately to what their properties are worth. A measure of cross subsidisation between more affluent areas and less affluent areas is accordingly built into the financial systems of municipalities. This can be more accurately quantified through an analysis of the figures in Table 7.

Secondly, developers are now called upon to finance road construction as a component cost of respective developments. Hence newer developments bear the costs of road provision themselves. Maintenance of this infrastructure is not, however, provided for and this expense ultimately reverts to the municipality.

Central to this paper has been a comparison of road-related information from the Department of Transport's Road Investment Strategic Framework for South Africa (RIFSA) and that of the Department of Provincial and Local Government's Municipal Infrastructure Investment Framework (MIIF).

7. A role for the DBSA

The nub of the table 12 (next page) is that municipal governments are facing a shortfall in road capital investment of the order of 10% when compared to the Municipal Infrastructure Investment Fund. The purpose of the MIIF is to determine the size of the backlog to enable it to be addressed by MIG allocations from National Treasury.

In the second column we see that the Palmer model does in fact provide sufficiency in terms of numbers to meet capital need. However, from the second last column we see that, taking the percentage borrowings determined by the MIIF model of the actual affordability by municipalities, recognising the other capital demands placed on them is in general 10% short of the annual capital requirement (this assumes that maintenance is adequately funded and undertaken in an equal amount to annual investment).

In the main the backlog is for municipal streets, which are primarily classified as social infrastructure. This suggests that the backlog/shortfall is not a candidate for loan funding. There are, however, several routes that the DBSA can pursue to support the long-term regeneration of South Africa's municipal road systems.

Table 12: A comparison of RIFSA and of the MIIF

MIIF Year	Capital requirement for municipal roads through MIIF	Long-term Capital Requirement through RIFSA	Long-term extrapolated maintenance requirement through RIFSA	Capital available to municipal government for road investment	Capital shortfall per annum
2005	5,0	5,0	5,0	4,77	-230
2006	5,5	5,0	5,0	3,95	-1 005
2007	6,0	5,0	5,0	3,87	-1 130
2008	6,5	5,0	5,0	4,21	-790
2009	5,5	5,0	5,0	4,36	-640
2010	5,3	5,0	5,0	4,34	-600
2011	5,0	5,0	5,0	4.52	-480
2012	5,0	5,0	5,0	5,25	+250
2013	5,0	5,0	5,0	5,96	+960
2014	2,2	5,0	5,0	3,84	-1 160
Total to 2014	**51,0**	**50,0**	**50,0**	**45,07**	**-4 825**

Classification and ordering of the network

Of the overall South African road network, 28% remains unproclaimed and outside of the jurisdiction of any authority/agency.

All access roads and unproclaimed roads should be given a home under municipal government. It is not sound road planning to extend neither the national resources nor the provincial resources to levels of the network that they do not naturally control.

Institutional

It was suggested at the start of this paper, from the information provided in Figure 1 on the general condition of South Africa's through-roads that in general the impact of road agencies as opposed to government departments is leading to a stabilisation of networks under agency control.

This applies particularly to SANRAL; to Limpopo Province and to Johannesburg. This finding should be propagated to all municipalities, particularly those of the metropoles, the district municipalities and such authorities should be actively encouraged to move in this institutional direction.

Asset Management

Crucial to ensuring the well-being of the municipal networks is to introduce professional, ongoing management information systems to ensure that the necessary maintenance function is adequately handled on both the existing road systems and new roads which are recapitalised.

From experience with Ukahlamba, Mahlakana, Uhlamba (Port Alfred) and the Central District municipalities, it is necessary for each district municipality to spend approximately R500 000 to identify their road networks and to develop ongoing management systems for these networks.

Thus far the Development Fund and the DBSA have been willing to fund this development from TA. The results should be conveyed to the national Department of Transport as well as the provinces via the Road Co-ordinating Body and future funding of these studies should be funded jointly between provinces and district municipalities, which parties will derive the greatest benefit from the exercise.

Public-Private Partnerships

While most of the roads described in this paper are social or public goods, the nature of municipal road networks is such that there is still scope for PPPs in the making of the arterials. Should road agencies be developed in other of the bigger municipalities, there is scope for developing/redeveloping some of the infrastructure as PPPs. This strategic direction should be pursued with local government on a continuous basis.

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The DBSA Knowledge Week

An opportunity to improve electricity service delivery for sustainable communities

Summary of key issues in the energy sector

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An opportunity to improve electricity service delivery for sustainable communities

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Abstract

Currently, South Africa supplies electricity in the traditional industry structure of vertical integration. Eskom generates 97% of electricity in South Africa, solely owns the transmission network and is involved in the distribution of electricity to 60% of all customers by number or 40% by sales volume. The rest of the distribution is undertaken by about 187 municipalities.

Even though this electricity distribution mechanism is delivering, the Electricity Distribution Industry (EDI) in South Africa is faced with numerous challenges.

These challenges relate to fragmentation of the EDI leading to absence of economies of scale, maintenance backlogs, inequitable treatment of customers, slow and inconsistent roll-out of government's social programmes, ie, electrification and free basic electricity. These challenges impact on the sustainability of communities, business and the country as a whole.

The restructuring of the EDI by introducing Regional Electricity Distributors (REDs) would present an opportunity for improved service delivery. The REDs would be viable and sustainable service providers that focus on the delivery of an equitable and sustainable electricity service. Thus, the REDs would be in a position to focus on business improvement initiatives and roll-out of electrification and free basic electricity to the benefit of their customers.

The municipalities would, in turn, remain service authorities, as contemplated in the Municipal Systems Act, 2000 (Act 32 0f 2000).

Introduction

This paper aims to give a background on the Electricity Distribution Industry of South Africa and the challenges it faces. This is followed by a discussion on regional electricity distributors, their operational nature and the opportunity they present to improve electricity service delivery for sustainable communities.

Background

Electricity Distribution Industry in South Africa

Currently, South Africa supplies electricity in a traditional industry structure of vertical integration. Electricity is generated, mainly in the Mpumalanga Province, and fed into an integrated transmission network and passed onto a distribution network that finally distributes to consumers.

The distribution of electricity in South Africa is undertaken by Eskom and about 187 municipalities. The municipalities collectively service about 60% of total customers by number, and about 40% of total customers by sales volume. The municipal distributors differ greatly in customer density, size and type of customer base, geographic spread, financial base and effectiveness. In addition, collectively they differ from Eskom which distributes to 40% of total customers by number, and about 60% of total customers by sales volume.

According to the 2003 National Electricity Regulator (NER) electricity supply statistics[1], the electricity distribution industry (EDI) serves over 7.7 million households and had a total revenue base of around R50 billion. In order to achieve this, 31 000 employees are committed to the industry, 365 000 kilometres of electricity lines straddle the country and 200 000 kilometres of cable complete the intricate web of distributing electricity.

Electricity is core to the development of sustainable communities and the eradication of poverty in South Africa. To that end, the President of South Africa has set a target for 2012 for universal access to electricity by everyone. There has been

1 Lighting up South Africa, 2003 – National Electricity Regulator

significant movement towards this target. From 1995 to 2003, household electricity connections increased from 50% to approximately 70%.

Challenges in the Electricity Distribution Industry in South Africa

Even though the electricity distribution mechanism is delivering, the industry is still characterised by wide disparities in supply standards and service quality between distributors. Key problems in the sector in South Africa are:

Inequitable treatment of customers

Customers face significantly different levels of tariffs and standards of supply reliability and service across the country. In March 2005, NUS Consulting determined, through a survey of electricity prices, that the average price charged by the municipality of Musina (Messina) in the Limpopo Province was 71c a kilowatt hour (kWh), while Ezakheni Industrial Estate in KwaZulu-Natal and Nala (Bothaville) in the Free State charge only 19c per kWh[2].

Consumers in areas serviced directly by Eskom without going through a municipality did even better by being charged only 17c per kWh.

The result is widespread inequity among customers. This is inconsistent with government objectives of promoting economic and social development throughout the country.

Inefficiencies

The EDI is currently highly fragmented. Administration and technical functions are duplicated across adjacent distributors in rural, urban and industrial areas. There are instances where Eskom and municipal distributors have technical and/or call centres in the same vicinity, serving customers adjacent to each other.

Network extension and maintenance

According to the 2003/4 National Integrated Resource Plan compiled by the NER, supply interruptions cost the country between R2.9 billion and R8.6 billion per annum in opportunity costs[3]. There have been estimated 57 instances of blackouts in Johannesburg alone up to the end of November 2005.

This is as a result of a decline in investment in both existing and new distribution networks to maintain the assets and to extend the network to meet growing demand. Approximately 50% of the networks require immediate attention or major refurbishment/replacement. The industry estimates maintenance backlogs at R5 billion.

Electrification and free basic electricity

Social equity needs are not evenly distributed across regions, with some of the poorer regions having the greatest electrification need. The ability of many municipalities to meet the management and financial demands of the electrification programme and the supply of free basic electricity is under serious threat. Currently, there has been slow and inconsistent roll-out of free basic electricity.

Employment

According to statistics by the NER, two of the larger metros report vacancies as high as 43%, totalling 1 750 staff members between them, with average vacancies estimated at around 20%. It is estimated that the average age of technical staff is approaching 50 years.

A financially weak distribution business does not represent secure employment prospects for their labour force. This, in turn, creates pressure on skilled staff to leave the industry for more secure employment elsewhere, and creates significant uncertainty and concern among other members of the current labour force.

Financial viability

Many municipal distribution businesses in recent years have suffered financial collapse and many are facing severe debt problems at present.

These disparities could have an impact on the Government's stated objectives of providing low-cost electricity and a high-quality service to our growing economy and growing population. This would, in turn, have an impact on sustainable communities.

Regional Electricity Distributors

History of restructuring

The challenges that are currently facing the EDI have beset the Electricity Industry for a number of years. As a result, numerous studies into the Electricity Supply Industry (ESI) have taken place over the past couple of years.

The restructuring of the South African EDI was first mentioned in the late 1980s. However, it was

2 Industrial Electricity Municipal Survey, 2005 – NUS Consulting, 3 National Integrated Resource Plan, 2003/2004 – National Electricity Regulator

only during the early to mid-1990s that government commenced serious debate around this issue, as it saw it as part of creating a better life for all.

In its first draft minerals and energy policy document of 1994, the Draft Minerals and Energy Policy Discussion Document, the ANC already alluded to the need to restructure the EDI. This was further taken into different debates at government level and in 1997, Cabinet approved the Electricity Restructuring Inter-departmental Committee (ERIC) Report on restructuring. This report endorsed the concept and approach of creating Regional Electricity Distributors (REDs) to replace the multitude of utilities in existence at the time, that still continue to subsist.

Between 1997 and 1999, a lot of preparatory work was undertaken in order to lay the foundation to formally commence the restructuring process. The White Paper on the Energy Policy of the Republic of South Africa of 1998, also gave further impetus towards the need for a restructured Electricity Distribution Industry.

In 1999, approval was granted by Cabinet to the Department of Minerals and Energy to commence with the restructuring process. By the end of 1999, the Electricity Distribution Industry Restructuring Committee (EDIRC) was established. This committee had a mandate of developing an overall framework for the restructuring of the Electricity Distribution Industry in South Africa.

This committee created a framework that lays a strong foundation for the future Electricity Distribution Industry, known as the Blueprint Report on the Restructuring of the Electricity Distribution Industry in South Africa, or simply as the Blueprint.

In April 2001, Cabinet approved the Blueprint. The document represented the official recommendations of the Department of Minerals and Energy on the framework for the restructuring of the Electricity Distribution Industry.

Operational nature of REDs

Both the White Paper on the Energy Policy of the Republic of South Africa of 1998 and the Blueprint Report on the Restructuring of the Electricity Distribution Industry in South Africa of 2001 had clear objectives that the introduction of the REDs should meet. These objectives are:

- Universal access to electricity for all South Africans;
- Acceptable and sustainable levels of supply security and quality;
- Achievement of government's electrification programme;
- Sustainable electricity supply to low-income consumers, regardless of location, at affordable prices;
- Operating future REDs on a sustained financially viable basis as independent businesses;
- Provision of secure employment by future REDs to their employees, including skills development and training consistent with a high technology, modern distribution business;
- Planned and managed transition; and
- Transition to be done within the context of a comprehensive human resources strategy and an agreed social plan.

Based on these objectives, especially the first six above, it is clear that the REDs would have to operate within a framework that supports equity, development, growth, security, viability and sustainability.

In order to achieve this, the REDs would:

1. *Be the service providers of choice to the service authorities*

   Municipalities would remain service authorities and the REDs would become service providers. This relationship between the REDs and municipalities would be governed by the Service Delivery Agreement as contemplated in Section 81 of Municipal Systems Act, 2000 (Act 32 of 2000).

   Not only would this respect municipal right to distribute electricity, it would also ensure streamlined relationships between the REDs and municipalities reducing duplication and creating clear accountability. This would also create a

better regulatory platform with role clarity between service authorities, service providers and the National Energy Regulator.

2. *Enable government social policy for electrification and free basic electricity*
   As single institutions focusing on electricity distribution, the REDs would focus on service delivery and the quality thereof. The same principles would be applied to the roll-out of electrification and free basic electricity.

   Thus, the REDs would apply consistent policies and practices in rolling-out electrification and free basic electricity across the RED geographical area ensuring that they are delivered to appropriate communities in a manner that would lead to sustainable and developing communities.

   The REDs would also be in a position to develop and apply best practices in manner that would ensure that the government's objective of universal access to electricity by 2012 is achieved.

3. *Be viable businesses with positive business case*
   Based on the industry business case developed, the REDs are projected to become more efficient and able to service customers equally well, at realistic tariff levels.

   The REDs would achieve this through lower interest charges due to improved access to capital markets, improved efficiencies in general costs and increase in accounts receivable by using best practices and focused effort to reduce bad debt accounts.

   It is projected that a 5 % improvement in accounts receivable, general costs and interest costs will yield the following approximate increase in annual cash flows of R50 million from a decrease in interest costs, R50 million from a decrease in general costs and R250 million for improved accounts receivable. It is anticipated that these cost savings can be attained within a three to five-year period[4].

Opportunity for Improved Electricity Service Delivery

Based on the challenges the EDI faces and the operational nature of the REDs, it is anticipated that the REDs would provide an opportunity for improved electricity service delivery.

This opportunity for improved service delivery can be summarised through benefits that a consolidated industry could bring. These benefits are:

- Economies of scale;
- Financial viability and sustainability;
- Facilitation, through institutional alignment, of free basic electricity and electrification; and
- Rationalised and competitive tariffs.

These benefits would, in turn, translate to tangible benefits for sustainable communities. Such benefits could be quantified as:

- Access to electricity for everyone;
- Improved provision of service;
- Improved reliability of supply;
- Revenue enhancement for municipalities; and
- Local economic growth.

These benefits would have many positive downstream impacts that would lead to overall development and growth of communities.

Conclusion

Even though South Africa continues to supply electricity to most of its residents, the industry is still characterised by wide disparities in supply standards and service quality between distributors.

These problems, if not addressed, could impact on government's objectives of a better life for all, particularly, having universal access to electricity by 2012 and reducing poverty by half in 2014.

The restructuring of the EDI in South Africa and introduction of the REDs presents an opportunity to improve electricity service delivery. Benefits and advantages of a consolidated and restructured industry would lead to sustainable communities.

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4 Business case for the incorporation of REDs, 2005 – EDI Holdings

The DBSA Knowledge Week

Water quality management and health in South Africa

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Water quality management and health in South Africa

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Abstract

The provision of safe drinking water determines to a large extent the incidence and prevalence of water borne diseases and therefore, provision of clean water can prevent disease outbreaks.

In South Africa access to basic water has improved markedly since the new government took over in 1994. Legislation and guidelines on water quality management have been provided to ensure a clean and safe water supply. However, the quality of water supplied in areas outside of metros still does not meet required standards.

Outbreaks of water related diseases such as dysentery, cholera and typhoid still occur, mainly in areas where there is no basic water supply. Outbreaks of the same diseases from protected and official water sources are very rare. In Delmas, an outbreak of typhoid occurred during 2005, in a community that had water provided by a municipality.

This paper looks at water quality in non-metro areas in South Africa and highlights the health consequences of non-safe water supplies, especially in a population with high levels of HIV and AIDS.

Introduction

South Africa is known for maintaining high standards in the quality of drinking water provided to communities. It would, however, seem that this might only be the case in selected areas, mainly metropolitan areas. Water quality, as well as water quality management in non-metro areas, sometimes does not meet standards required by the Department of Water Affairs and Forestry (DWAF).

This paper explores the regulatory environment for water quality management in South Africa, the current state of water quality management and the health consequences of non-safe water supplies. The Delmas typhoid outbreak is mentioned to illustrate these points.

Recommendations are made on how to strengthen the monitoring of water quality management and the role that environmental health officers can play in water quality management.

Background

Since 1994, South Africa has made major strides in increasing access to basic water and sanitation to all communities in the Republic, with an emphasis on those that were previously disadvantaged. Access to basic water infrastructure improved from 23 million in 1994 to 44 million in 2004, with 3, 7 million still without access to basic water supply. Access to basic sanitation has also improved from 49% of the population having access in 1994 to 67% having access in 2004. The number without access to basic sanitation infrastructure is still high at 16 million people[1].

With the increased provision of basic water, there has been a decline in the cases of cholera and typhoid reported, although these diseases continue to occur. In 2004, 2 780 cases and 35 deaths from cholera, and 60 cases and eight deaths from typhoid were reported in the country. Most of these cases were occurring in areas where there was no basic water supply.

As much as progress has been made on the provision of water, the monitoring of the quality of water supplied by water service authorities outside of the metros in South Africa is a cause for concern and there are indications that water related disease outbreaks can and do occur. Such an outbreak occurred in Delmas municipality, with a typhoid outbreak reported during 2005. This raised questions around the management of water quality in the municipality.

South Africa has a significant percentage of individuals that are immuno-compromised through the HIV epidemic and any drop in the quality of water supplied will impact on their morbidity and

mortality by increasing their exposure to water related diseases. The maintenance of high standards of water quality is thus crucial and should be monitored, and advocated for.

Legislative and regulatory frameworks for water and sanitation in South Africa

Water

In South Africa the rights to an environment that is not harmful to one's health and to access to sufficient water are enshrined in sections 24 and 27 of the Constitution (Act 108 of 1996).

Two major pieces of legislation govern the management and provision of water, the National Water Act (Act 36 of 1998) and the Water Services Act (Act 108 of 1997). The National Water Act deals with water resources (dams, rivers, ground water) and gives authority for oversight of these resources to the National Department of Water Affairs and Forestry. The Water Services Act deals with portable water and sanitation provided to households and other municipal water users and elaborates on the functional areas already given to local authorities in Schedule 4, Part B of the Constitution which are "water and sanitation services limited to portable water supply systems and domestic waste-water and sewage disposal systems".

The Water Services Act provides for, among others, the right to access basic water supply and the right to basic sanitation necessary to secure sufficient water and an environment not harmful to human health or well-being.

Basic water is defined as the "prescribed minimum standard of water supply services necessary for the reliable supply of sufficient quantity and quality of water to households, including informal households, to support life and personal hygiene". Basic sanitation is the "prescribed minimum standard of services necessary for safe, hygienic, and adequate collection, removal, disposal or purification of human excreta, domestic waste water and sewage from households, including informal households".

The Act establishes water services authorities (WSA), water services providers (WSP) and water boards. WSAs are district or metropolitan municipalities or a local authority if authorised by the Minister of Provincial and Local Government. The responsibilities of WSAs are to regulate how water supply and sanitation services are provided and who provides them in their area of jurisdiction[2]. WSPs operate under the permission of the WSA and do the actual provision of water to customers. A WSP can be the WSA, or be a community-based organisation, private company, a water board or an adjoining WSP. The primary activity of water boards is to provide water services to other water service institutions within their service area.

Water quality is legislated for in the Water Services Act, and the Compulsory National Standards for the Quality of Portable Water are the regulations on water quality, under this Act. Under the Compulsory National Standards for the Quality of Portable Water, within two years of promulgation of the standards in 2001, water service authorities were to have developed suitable programmes for sampling the quality of portable water supplied to consumers, including details on the points and frequency of testing. Where the water supplies posed a risk to health, the Director-General for DWAF and the head of the Provincial Department of Health were to be informed.

The Compulsory National Standards for the Quality of Portable Water require WSAs to monitor drinking water quality. Another mechanism for monitoring is at a national level where the Water Services Act states that "the Minister and any relevant province must monitor the performance of every water services institution in order to ensure compliance with national standards under this Act." The Minister may also assume responsibility for the functions of WSAs if they cannot effectively perform their function.

The Water Services Act is supported by the Strategic Framework for Water Services which states that all WSA are required to report annually on water quality. DWAF is required to check results and testing systems on a random basis, and where quality standards are not met, the WSA must demonstrate what actions it is taking to improve the quality of services provided and must show reasonable annual improvements in the quality of service provided so as to meet the quality standards within a period of five years[3].

The monitoring of water quality is thus a responsibility of the WSA, but DWAF is empowered to monitor that this gets done and can intervene in instances where the WSA does not comply with national standards.

The Department of Health also participates in the monitoring of water quality. The National Health Act 61 of 2003 requires all metro and district municipalities to ensure provision of municipal health services, which include water quality monitoring. The regulations under the Health Act 63

of 1977 on water intended for human use and food processing also still apply. Environmental health officers conduct tests on water quality at the point of use (eg tap), and report to the municipality and the provincial Department of Health.

Sanitation

As stipulated in the Constitution, the provision of basic sanitation is a responsibility of local government and DWAF assists where local government is not able to undertake the task.

Basic sanitation is provided for under the Water Services Act and the minimum form of sanitation to be provided is a Ventilated Improved Pit (VIP) latrine.

From 2001, DWAF has run a National Sanitation Programme that focuses on the eradication of the sanitation backlog in the rural, peri-urban and informal settlement areas by the year 2010. It also aims to eradicate the bucket system by 2007. The programme has a two-pronged approach – the provision of the physical infrastructure and the promotion of health, sanitation and hygiene. Municipalities thus have to work closely with their own e nvironmental health officers (EHO) or EHOs from the Provincial Health Department in providing sanitation services that include education of the community.

The White Paper on Basic Household Sanitation (DWAF, 2001) focuses on the safe disposal of human waste in conjunction with appropriate health and hygiene practices.

The provision of sanitation requires an intersectoral effort and departments involved at a national level are the Department of Water Affairs and Forestry; Department of Provincial and Local Government; Department of Health; Department of Education; Department of Housing, Department of Public Works, Department of Environmental Affairs and Tourism and National Treasury.

Water quality in non-metro South Africa

South Africa has some of the best quality water in its metropolitan areas, with some saying it is in the top 12 countries with high standards of water. This is, however, not the case for areas outside metros. Numerous publications have raised concerns around the non-compliance by WSA to the Compulsory National Standards for the Quality of Portable Water. [4, 5]

Standards of water quality are set by DWAF. DWAF's Strategic Framework for Water Services, states that "water supplied by water services providers intended to be used for drinking or domestic purposes (portable water) must be of a quality consistent with SABS 241."

SABS 241 of 2001 specifies three classes of drinking water, as follows:

- An ideal (class 0) classification that is closely comparable to current international standards for water quality;
- Class I, that is considered to be acceptable for lifetime consumption; and
- Class II, that is considered to represent the minimum acceptable quality for various maximum consumption periods.

Water is tested for physical, chemical, and biological contaminants. The main tests for biological contaminations are the total and faecal coliforms. The different levels tolerated in each class are tabled below.

Table 1: SABS Limits for total and faecal coliforms

Class	Total coliforms (number/100 ml)	Faecal coliforms (number/100 ml)
Class 0	Not detected	Not detected
Class I	10	1
Class II	100	10

No comprehensive surveys are done regularly on water quality, but several surveys have been done by Department of Water Affairs and Forestry that give an indication of the water quality in a number of non-metro municipalities.

In a DWAF survey in 2004, 155 municipalities were "self-assessed" on drinking water quality monitoring, service quality and service reliability. The result showed that 43% of municipalities adhere to drinking water quality issues. The lowest number not adhering was in the Eastern Cape (20%), and the highest compliance was in North West (73%)[6]. The same authors report that a survey done in the Western Cape in 2004 identified the following drinking water issues:

- Most local municipalities are not aware of the legislative and regulatory governance requirements around drinking water service delivery.
- Inadequate drinking water monitoring was resulting in drinking water that fails legislated requirements.
- Inadequate infrastructure management was resulting in premature failure of the drinking water services.

- Present WSA institutional capacity was limiting adequate service provision.

All the above illustrate serious shortcomings in water quality management, and a need to increase awareness on water quality issues at the level of municipal staff.

Link between water, sanitation and disease

The link between water, sanitation and health is well established. Numerous studies have shown the need to keep drinking water and human waste separate, and the link between poor quality water and diseases, especially gastrointestinal diseases. Water quality has been shown to impact on those who are immuno-compromised, such as people with HIV and AIDS.

The list of water-related diseases that can be contracted from poor quality water sources is in Table 2.

The presence of any of the above pathogens is dependent on the quality of drinking water. Most would be found in untreated water. **E.coli** is one of the organisms that are resistant to disinfection, hence it is used as an indicator. A few **E.coli** might be allowable depending on water standards in a country, but serious pathogens such as **Salmonella typhi** are not acceptable in treated water. Some organisms are resistant even to normal water treatment methods, eg, **Cryptosporidium** are resistant to chlorine, ordinary water quality tests do not pick it up, and filtration is used to remove it. **Giardia** also tends to be resistant to chlorine.

Those most susceptible to water-related diseases are children less than two years, the elderly and the immuno-compromised. Individuals with HIV and AIDS are at greater risk of contracting opportunistic infections that are water related. These diseases are mycobacterium avium complex (MAC), salmonellosis, cryptosporidiosis, isosporodiasis, and microsporidiosis. MAC, and cryptospororiosis commonly occur in individuals with CD4 counts of 50/mm^3 and less. Microsporidiosis and isosporodiosis can occur in any individuals but are worse and last longer in those with HIV. Salmonellosis occurs at any CD4 count but is 20 times more common in HIV positive individuals.

Organisms recorded to have caused diseases to HIV and AIDS infected people from treated water sources are **Mycobacterium avium, Cryptosporidium**

Table 2: Water related diseases and causative organisms

	Organism	**Disease**
Bacteria	Salmonella typhi	Typhoid fever
	S. paratyphi	Paratyphoid fever
	Salmonella spp.	Gastroenteritis
	Shigella spp.	Bacterial dysentery
	Vibrio cholerae	Cholera
	Escherischia coli	Gastroenteritis
	Leptospira icterohaemorrhagiae	Weil's disease
	Campylobacter spp.	Intestinal infections
	Francisella tularensis	Chills weakness
	Mycobacterium	Tuberculosis
Viruses	Enteroviruses	Polio,meningitis, hepatitis
	Rotaviruses	Diarrhoea and enteritis
Protozoa	Entamoeba histolytica	Amoebic dysentery
	Giardia lamblia	Diarrhoea, malabsorption
	Naegleria fowleri	Amoebic meningoencephalitis
	Cryptosporidium spp.	Diarrhoea
Helmiths	Diphyllobothrium latum	Tapeworm
	Taenia saginata	Tapeworm
	Schistosoma spp.	Bilharzia
	Clonorchis sinensis	Trematode infection
	Dracunculus medinensis	**Guinea worm**

parvum, Aspergillus, Pseudomonas and Microsporidia.[7, 8, 9]

Most of these diseases cause diarrhoea and are thus difficult to distinguish from each other without laboratory support. Diarrhoea is a very common symptom in HIV and AIDS and contributes to loss of fluid and protein, which is necessary for building any immunity. Diarrhoea thus hastens deterioration in individuals leading to premature death.

Description of 2005 Delmas Typhoid outbreak

At the time of writing, there was very little information available from official sources on the Delmas typhoid outbreak as no permission could be obtained to solicit information. Information given here is therefore that which is available to the general public.

Delmas is a Category B municipality in the Nkangala District Municipality and has a total population of 59 994. In 1996, 17,3% of the households had below basic water services, and this figure improved to 6,8% in 2001. In terms of sanitation, 12,4% of households had below basic sanitation services which had a very slight improvement to 11,9% in 2001.

There are two sources of water supply in Delmas, Rand Water and the Delmas Municipality. Delmas Municipality extracts its water from groundwater using a number of boreholes. The town also still has a bucket system for sanitation in some of its areas.

The most recent case of typhoid in Delmas was reported on 22 August 2005. As of the end of November 2005, five deaths from typhoid, 614 cases of typhoid and 4 061 cases of diarrhoea had been reported in the town. The last major outbreak in the area was recorded in 1993, when over 1 000 people were affected.

According to the Mail and Guardian of 23 September 2005, the typhoid outbreak in Delmas, Mpumalanga, was caused by human waste in one of the boreholes. They quoted a government biologist, Vusi Kubheka, as saying that Salmonella typhi, the bacteria that causes typhoid, was found in borehole A4 in the area. “There was a lapse in the management of the water system. We are trying to improve the system so that a repeat does not happen." He said low levels of chlorine were picked up in some areas of the water system. "An agent managed to get through the system. We have managed to boost the level of chlorine in the water."

The former Delmas Municipal Manager Sipho Vilakazi said town authorities were warned about the danger 10 years ago but failed to implement a single recommendation to fix the problem. “No one needed to die," he said. "The government had all the warnings and technical information it needed to prevent this disaster. They ignored the warnings and should be sued to ensure that every civil servant in South Africa understands that they are accountable for their actions," said Vilakazi.[11]

In a statement on 23 September 2005, DWAF indicated that results from DNA analysis of the boreholes in Delmas had shown that one of the boreholes (Borehole A4) gave positive results for Salmonella typhii, the bacteria that causes typhoid.[12] This was the same borehole that was contaminated with typhoid bacteria in 1993.

The Treatment Action Campaign maintained that there were more deaths that had occurred during the period when the community was exposed to unsafe water supplies. This was, however, not confirmed by the municipality.

The typhoid epidemic was ultimately brought under control and the town negotiated with Rand Water for the provision of water.

Discussion

As much as South Africa has made great strides in the provision of basic water to its population, drinking water quality outside of the metros does not necessarily comply with the Compulsory National Standards set by DWAF. Provision of basic sanitation has also not been as successful as that of water provision and continues to be a factor that can still contribute to persistence of water related diseases that are mainly transmitted via the oro-faecal route.

There is adequate legislative provision to ensure that water quality is monitored and in cases where this is not done, that the next level of government intervenes. As much as the legislative provisions are available, there currently does not seem to be an effective mechanism to make municipalities comply with drinking water standards.

Some of the reasons for this non-compliance may be found in the principles that DWAF is using to implement is water services strategy. These principles are incremental regulation, the need to balance regulation with support, and reliance on self-regulation.

DWAF states that the regulatory framework will be matched to the capacity of the municipality. Municipalities with limited capacity are expected to take longer to comply. This is also in line with the framework giving WSA five years to bring water quality standards to adequate levels.

For five years, (2003 -2008), DWAF has decided to play a bigger supportive role to municipalities, as opposed to regulation. This is to give a chance to the less capacitated municipalities to catch up on water quality monitoring. DWAF's role runs the risk that regulation and thus monitoring might not be adequately carried out and these roles might be better executed if they are separated as there is an element of DWAF being a player and referee at the same time.

The expectation that WSAs self-regulate is dependant on many variables, such as communities keeping the municipality in check. This can work well in municipalities with active communities and where information is provided to communities. In instances where the community might be very poor people who will not question authority or where no information is provided, the community will not be able to keep the municipality in check.

Delmas is just one example where poor quality water supplies have led to an outbreak of typhoid, but it is possible that many gastrointestinal conditions are occurring throughout the country due to inadequately managed water supplies. Unsafe water supplies might therefore be leading to excess, preventable morbidity and mortality due to water related diseases.

In a country where around 13% of the population is HIV infected and thus has a higher number of immuno-compromised individuals, water quality standards have to be maintained and monitored rigorously to prevent any unnecessary morbidity and mortality from water related diseases. South Africa can thus not afford to be lax on water quality management.

More immediate action has to be taken to ensure that municipalities comply with water quality standards as soon as possible, rather than the incremental manner that was planned by DWAF. Examples of improvements in water quality management exist in the Free State and in the Western Cape and these should be encouraged and replicated.[13]

The role of environmental health officers in the management of water quality has also not been fully exploited due to several factors. With the uncertainty around provision of municipal health services (MHS), a number of local authorities did not employ EHOs, leading to high vacancy rates for EHOs. In some district municipalities, EHOs must be employed for the first time as this service was provided by provincial health departments. No funding has yet been provided for MHS in district municipalities, and with some provinces considering using their existing EHOs to render services other than MHS, the shortage of EHOs might continue for some time. This means an important cadre who can advocate for the health of communities in municipalities is missing.

Recommendations

DWAF needs to find a more effective mechanism for monitoring and censuring municipalities that do not comply with drinking water standards. A water regulatory body should be considered if DWAF cannot perform this function and this will leave DWAF to concentrate on support to municipalities.

Municipal staff has to be made more aware of the consequences of not maintaining water quality standards.

The Department of Health needs to advocate for and highlight the importance of maintaining high standards of water quality in a country with a high prevalence of HIV and AIDS.

Environmental health officers need to play a more active role in water quality management. Municipalities need to fully take over their function on provision of municipal health services, which includes water quality monitoring.

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Waste disposal site management from a local government perspective

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DBSA
Development Bank
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Waste disposal site management from a local government perspective

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Abstract

Waste disposal on land, as the fifth step in the internationally accepted waste management hierarchy, is environmentally acceptable if properly managed by the responsible person. Unfortunately, if not managed to sufficiently high standards, land filling has the potential to have an adverse impact on the environment and human health.

The need for environmentally acceptable yet cost-effective waste disposal practice has become a critical priority in South Africa. A key factor leading to challenges in waste disposal is a result of increased urbanisation which has increased waste generation, placing pressure on the environment and local government, the principal task master in waste disposal. There is also an increasing awareness of environmental issues and a desire for a clean environment on the part of the public.

The permit holder, in most cases local government, is primarily and ultimately accountable for landfill management and any effect it may have on the host environment and in human health, during the course of operations and in their aftermath.

The Department of Water Affairs and Forestry guiding document on waste disposals stipulates that responsible entities must ensure that all waste is disposed off in an environmentally and socially acceptable manner and that a disposal operation is acceptable to those whom its affects.

The Landfill Classification System provides for ten different classes of landfill sites. Of the ten landfill site classes, eight cater for general waste and two cater for hazardous wastes.

Introduction

The Department of Water Affairs and Forestry published a waste management series to assist local government, industry and other waste managers with a reference framework for standards for waste management in South Africa, including the management of waste disposal sites. The series consists of the following documents:

Document 1: Minimum Requirements for the Handling, Classification and Disposal of Hazardous Waste.

Document 2: Minimum Requirements for Waste Disposal by Landfill.

Document 3: Minimum Requirements for Monitoring at Waste Management Facilities.

The waste management series also facilitates the enforcement of the landfill site permitting system provided for in terms of section 20(1) of the Environmental Conservation Act, 1989 (Act 73 of 1989).

The minimum requirements are implemented through and enforced by the Landfill Site Permit, which includes the management of a waste disposal, the details of which will be discussed in this paper.

Landfill Site Classification

Landfill sites are grouped according to the type of waste involved, the size of the waste stream, and the potential for significant leachate generation.

Type of waste

Waste types are grouped into two classes, general waste and hazardous waste.

General waste (G):

General waste is waste that because of its composition and characteristics and if properly managed, does not pose a significant threat to public health or the environment. Examples include domestic waste, commercial waste and builder's rubble.

General waste may be disposed off on any permitted landfill site.

Hazardous waste (H):
Hazardous waste is waste which can, even in low concentrations, have a significant adverse effect on public health and/or the environment. Examples include inorganic waste, oily waste, organic waste, infectious waste and chemicals.

Hazardous wastes are grouped into nine classes, based on international danger groups. They are also allocated a hazard rating namely:

- Hazard Rating 1: Extremely Hazardous
- Hazard Rating 2: Highly Hazardous
- Hazard Rating 3: Moderately Hazardous
- Hazard Rating 4: Low Hazard.

The hazard ratings have different treatment and disposal requirements. H:H landfill sites can accept all hazard ratings of waste, while H:h landfill sites can only accept hazardous ratings 3 and 4 and general wastes.

Size of waste stream

The size classification of general waste sites focuses on the size of the waste stream, because the immediate impacts of a landfill site, the resources required to manage them and the minimum requirements applicable to the site are dictated by the size of the operation.

The classification of hazardous waste landfill sites does not take size into account, but is based solely on the hazard rating of the waste.

Potential for Significant Leachate Generation

All hazardous waste landfill sites are assumed to require leachate management systems.

Any general waste landfill site has the capacity to generate sporadic leachate in excessively wet weather conditions. It is only necessary, however, to install leachate management systems (underliners, drains and removal systems) when leachate generation could impact adversely on the environment.

The Climatic Water Balance is a simple calculation that assists in deciding whether leachate management is required or not.

The Climatic Water Balance is defined by:
B= R – E
where: **B** is the Climatic Water Balance in mm of water
R is the rainfall in mm of water
E is the evaporation from a soil surface in mm of water

If the classification is B-, there should be no significant leachate generation on account of the climate. If the classification is B+, there should be significant leachate generation (see Table 2).

Waste Disposal Site Operation and Management

In terms of the Environment Conservation Act, only an approved landfill site, which has been issued with a permit in terms of section 20(1) of the Act, may operate.

The objectives of the minimum requirements for landfill site operation are to ensure that all waste is disposed of in an environmentally and socially acceptable manner and that the disposal operation is acceptable to those whom it affects.

It is the duty of local government as the responsible entity to ensure that the operation of the site conforms to both the permit conditions and to the minimum requirements associated with the site classification to the satisfaction of the responsible authority, currently the Department of Water Affairs and Forestry.

To operate a waste disposal site is quite simple. It includes access control, compaction of waste, covering of waste, control of nuisances and monitoring.

Table 1. Landfill size classes

Landfill size class		Maximum rate of deposition (Tonnes per day)	
Communal	C		<25
Small	S	>25	<150
Medium	M	>150	<500
Large	L	>500	

Table 2. Landfill Site Classification System

WASTE CLASS	G GENERAL WASTE								H HAZARDOUS WASTE	
SIZE OF LANDFILL OPERATION	C Communal Landfill		S Small Landfill		M Medium Landfill		L Large Landfill		H:h Hazard Rating 3&4	H:H Hazard Rating 1 – 4
SITE WATER BALANCE	B^-	B^+	B^-	B^+	B^-	B^+	B^-	B^+		

Signposting and road access

Signs in the appropriate official languages must be erected in the vicinity of the landfill site, indicating the route and distance to the landfill site from the nearest main roads. These traffic signs must conform to the requirements of the Road Ordinance.

Suitable signs must also be erected on site, to direct vehicle drivers appropriately and to control speed.

A general notice board must be erected at the site entrance. This must also be in the appropriate official languages, stating the names, addresses and telephone numbers of the permit holder and the responsible person, the hours of operation, and an emergency telephone number, the class of landfill site and the types of waste that can be accepted.

The board must also state waste categories that are not accepted as well as a warning note about the likelihood of prosecution for possible offenders.

Road access to the site must be maintained at all times, in a manner suitable to accommodate the vehicles normally expected to utilise the facility.

Controls

Waste acceptance

Prior to waste being accepted at general waste disposal sites, it must be inspected by suitably qualified staff and the transporters must confirm that it is general waste.

The frontline person on duty at the site must also ensure that no hazardous wastes (eg, hazardous liquids, sludges, sealed drums or medical waste) are disposed.

If waste cannot be identified, a precautionary principle - in which waste is regarded as potentially hazardous until proven otherwise - must be applied.

Access control

Vehicle access to the site must be limited to a single controlled entrance to prevent the unauthorised entry and illegal dumping of waste on the site.

The site entrance must comprise a lockable gate which must be manned during hours of operation.

All sites must have the portion of the site currently in use adequately fenced and/or secured. In the case of medium and large general landfill sites and hazardous landfill sites, fences must be 1.8m with an overhang.

Where normal fencing is removed, or is not practicable because of continued theft despite security measures, barbed wire fences, earth berms and/or shallow trenches must be used to prevent unauthorised vehicle access.

Collection of disposal tariffs

Since the minimum requirements increase the standards of waste disposal, they also increase the cost. In order to offset these costs, waste disposal tariffs should be levied and collected at all landfill sites, from medium-size upwards.

Tariffs should be displayed on the notice board. They should be based on mass, where a weigh bridge exists or on estimated volumes.

Security

In addition to access control, suitable security must be provided to protect any facilities on the site.

Primarily for the purpose of protecting public health and safety, waste reclamation and squatting should be discouraged at general waste disposal sites. No reclamation should be allowed at hazardous waste disposal sites.

Operating plan

An operating plan describes the way in which the landfill site is to be operated. It includes details of daily cell construction and projected development of the landfill with time.

The operating plan should also include, *inter alia,* the phasing, the excavation sequence, the provision of wet weather cells, site access and drainage. It should also include all operation monitoring procedures and a plan for mitigatory actions in response to problems detected by monitoring.

Resources

Infrastructure

The facilities at a landfill site will vary in accordance with the size of the operation. In the case of a G: C site, only access control should be a requirement. Larger sites should typically have services such as water, sewerage, electricity, telephones, security and infrastructure such as weigh bridges, site offices and plant shelters. In the case of hazardous waste disposal sites, an onsite laboratory is a requirement.

Plant and equipment

Larger sites should have a combination of purpose-built landfill compactors, bulldozers, front-end loaders and trucks to transport cover material. In the case of smaller sites, however, less would be required. For example, a small bulldozer or a tractor combination system would be sufficient to compact and cover waste at a G: S site.

Staff

It is a requirement that the operation of all landfill sites be carried out under the direction of the person responsible. This may be a gate controller in the case

of a G: C site, a site foreman in the case of a G: S site, a site superintendent in the case of a G: M site and a landfill site manager with a post-matric or tertiary qualification in the case of a G: L site. In the case of hazardous waste sites, the responsible person must have the academic equivalent of a BSc degree with a Chemistry major and suitable experience.

Landfill site operation

In terms of principles of sanitary land filling, waste must be compacted, and covered at the end of each day's operations.

Compaction

Compaction is best achieved if the waste is spread in thin layers and compacted by a purpose-built landfill compactor.

Daily cover

Waste is deposited in trenches or cells, spread, compacted and covered, so that each day's waste is effectively isolated from the environment.

The material to be used for cover may be onsite soil or builder's rubble. With the approval of the Department of Water Affairs and Forestry, ash or other artificial covering may be used. Enough cover material should be maintained for at least three days. A minimum thickness equivalent to the effective covering of 150 mm of compacted soil is required.

Methods of land filling

Trench system

At communal and small landfill sites, where relatively small volumes of waste are disposed of, trenches are often made in preference to cells. There must always be sufficient trench capacity on site to accommodate at least two week's waste.

Trenches must always be suitably fenced or protected, and off-loading must be such that persons or vehicles cannot accidentally fall into the excavation.

Standard cell operation

The basic landfill site unit is a cell of compacted waste which, when completed at the end of each day, is entirely contained by cover material. The sides are usually formed by 1.5m to 2m high berms, constructed from soil, rubble, or sloped waste covered by daily cover.

The working face is the active part of the landfill, where waste is deposited by incoming vehicles. The working face must be kept as small as possible for control and covering purposes. There must also be sufficient cell capacity on the site to accommodate at least one week's waste.

Wet weather cell

An easily accessible wet weather cell must be constructed close to the site entrance or close to an all weather road, for use under abnormally wet weather conditions. The wet weather cell must have sufficient capacity to accommodate one week's waste.

Special cells or trenches for food waste and dead animals

Such waste should be deposited and covered immediately with a layer of soil at least 0.5m thick. This is to prevent odours and to discourage uncontrolled salvaging. Alternatively, such waste may be deposited at the base of the working face and covered immediately with other waste. The latter method has the advantage of not disrupting the standard operation.

Methods other than cell operation

End tipping is the method whereby waste is pushed over the edge of an extended advancing face. This is not permitted on a normal landfill site because it results in slope instability, minimal compaction and many other related problems.

Drainage

Upslope run-off water must be diverted away from the waste, to prevent water contamination and to minimise leachate generation.

Where contaminated water or leachate does arise on a site, it must be managed. This means that it must be kept out of the environment.

Clean, uncontaminated run-off water must not mix with, and increase the volume of, contaminated water.

All drains must be maintained. This involves ensuring that they are not blocked by silt or vegetation.

Control of nuisances

Burning of waste

The burning of waste is unacceptable, because of aesthetics, odours, and the potential of health dangers from air pollution. Accidental fires at landfill sites must be extinguished immediately. Rather than using water, burning waster must be spread and smothered.

Possible exceptions would be to communal and small landfill sites in rural areas, provided that they are at least 1 000m downwind of residential areas.

Litter

Wind blown litter must be picked up and removed from fences and vegetation on a daily basis.

Movable litter fences and the principle of daily compaction and cover will prevent wind blown litter.

Odours

Odour must be prevented by good cover application and maintenance. In extreme cases, odour suppressants such as spray curtains may be required.

Landfill gas can also be the reason for odour problems. Venting and flaring will then be necessary to alleviate the odour problem.

Noise

All equipment used on site must conform to the local authority's by-laws concerning noise levels and hours of operation. In the absence of by-laws, national regulations on noise control must be complied with.

Vermin and disease vectors

Appropriate measures must be taken to eliminate or minimise disease vectors such as rats or flies.

Dust

Unsurfaced roads and ungrassed or unpaved areas, which give rise to dust, must be regularly watered to restrict dust to levels so as not to pose a nuisance to workers or users of the facility.

Waste reclamation

While the ethic of reclamation from the waste stream is supported, reclamation at landfill sites can endanger the health and safety of the reclaimers. Therefore, the Department of Water Affairs and Forestry discourages waste reclamation at landfill sites.

It is the responsibility of the permit holder to ensure the safety of any reclaimers on the site.

Progressive rehabilitation of completed areas

Capping should be implemented on all areas where no further waste deposition will take place, and vegetation should commence as soon as possible.

All final levels and slopes must be in accordance with the landfill site design and the End-use Plan. Slopes should not be steeper than 1 in 2.5 as this will promote erosion.

Health of workers

In terms of the Occupational Health and Safety Act, the employer is responsible for the health and safety of the people under his or her jurisdiction.

Water quality monitoring

The overall objective of water quality monitoring is to quantify any effect that the landfill site has on the water regime.

For this reason, water quality monitoring begins before the commissioning of a landfill site and continues throughout and beyond its operation, and post-closure water quality monitoring may continue for up to 30 years after the closure of a landfill site.

Rehabilitation, closure and end-use

Closure is the final step in the operation of a landfill site. However, in order to close a landfill site properly, closure must be preceded by rehabilitation, to ensure that the site is environmentally acceptable. The site must also be rendered suitable for its proposed end-use, as determined during permitting and as set out in the End-use Plan.

Where bad practice has occurred, this must be rectified by means of remedial measures.

Conclusion

Landfilling is environmentally acceptable if properly managed by the permit holder. Unfortunately, if not managed to sufficiently high standards, land filling has the potential to have an adverse impact on the environment and human health.

Short-term impacts include problems such as noise, flies, odour, air pollution, unsightliness and windblown litter. Such nuisances are generally associated with the waste disposal site operation or management and should cease once the waste disposal site has been closed.

Long-term impacts include problems such as pollution of the water regime and landfill gas generation. Such problems are generally associated with incorrect landfill site selection, design, preparation or operation and may persist long after the landfill site has been closed.

The permit holder can ensure public acceptance by ensuring environmental acceptability.

An important relationship exists between good landfill site selection, simple cost-effective design and the standard of management and operation of a landfill site.

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Municipal Infrastructure and Service Delivery

Municipal Infrastructure

Discussions

Session One

Waste disposal

A key discussion theme was how local authorities could be assisted to ensure provision for proper waste disposal in the light of budgetary constraints municipalities often face. Ms Wilna Moolman notified participants that the Department of Water Affairs was busy drafting new minimum requirements for the upgrading of operations in landfill sites. In the minimum requirement there will be a memorandum of understanding between the national departments and the local government that finances allocated for waste management must be used as such.

She highlighted the difficulties of tacking waste disposal which is always last on the list in municipal planning. She hoped that with the upcoming memorandum, the budget for waste disposal will be used as such and not diverted elsewhere.

A concern was raised about the plight of people living in waste disposal sites. According to Ms Moolman, permit requirements state that land initially rezoned for waste disposal is not to be used for residential purposes even after it has been rehabilitated. The onus rests on municipalities to do proper land planning to avoid building taking place in land rezoned for waste management.

Roads

In a discussion of road classification and which authorities are responsible for maintenance, Mr Peter Copley said although the classifications in the Road Infrastructure Strategic Investment Framework for South Africa were good, he believed that there should be spatial differentiation as well as functional differentiation. For instance, district municipalities would take responsibility for a bunch of roads rather than a province because a district municipality was closer to the problem. He also argued that district municipalities are well placed to handle the old homeland roads.

Session Two

Water

Dr Balfour responded to queries on who is responsible for testing borehole water. She said the DWAF, which provides permits for drilling boreholes, conducts initial tests such as for bacteria assessments. The role of monitoring tends to be done by environmental health officers aligned to the Department of Health. DWAF tends to oversee water provided through water service authorities who often provide more formal water supplies rather than informal water supplies such as boreholes. However, the environmental health officers who are supposed to play the biggest role, are very few for rural areas. For instance, in most of the former homeland areas there were very poor levels of environmental health officers available and these were from the provinces. As a result, there was minimal testing done. The gap continues and the challenge of servicing rural communities with better water quality still remains.

Electricity

On the question of how to ensure that REDS do not increase their cost structures unnecessarily to reap unnecessary profits, Ms Phindile Nzimande respond that it was an economic regulation matter. Her own preference was that REDS should be regulatory economically by a sector regulator rather than by municipalities as is contemplated in the current suite of local government legislation.

On the issue of credit ratings, MS Nzimande assured discussants that revenue streams will be guaranteed to municipalities in a manner that will be acceptable to

investors which would make them continue to lend to those municipalities. She said plans were afoot to consult with investors in the country to see what arrangements would be compatible for them to ensure that municipalities are not left unable to borrow thereby creating another set of backlogs.

Peter Copley
(Paper presented: Municipal Roads)
Peter Copley, a Transport Specialist at the Development Bank of Southern Africa, started his early career in roads in KwaZulu-Natal. He subsequently joined the Urban Transport branch of the national Department of Transport. As part of a two-year secondment to the CSIR, he undertook research into the impact of transport on economic and social development.

He has been employed at the Development Bank in a variety of capacities since joining in 1985, all relating in some way or the other to transport. He advises the DBSA on its involvement in transport infrastructure. He also advises clients on future trends and scenarios in the transport infrastructure industry.

He is a UCT trained civil engineer with transport qualifications from Wits and an MBL from UNISA.

Phindile Nzimande
(Paper presented: Regional Electricity Distributors: An Opportunity to Improve Electricity Service Delivery for Sustainable Communities)
A Wits University graduate, Phindile Nzimande served articles with Wright Rose Innes. She left the legal practice in 1994 to take up a role in government as Strategic Management Team Advisor to the Gauteng MEC for Housing and Local Government.

In 1996, Phindile joined the Metropolitan Council of Johannesburg as Executive Director of Contract Management for the City of Johannesburg in 2001.

In June 2003, Phindile accepted a fresh career challenge as CEO of Electricity Distribution Industry (EDI) Holdings, the company tasked with project managing the restructuring of the electricity distribution industry. She has served on a number of boards such as Nurcha, a presidential lead project established to facilitate investment in the financing of low-cost housing. She currently serves on the board of Sanparks and Momentum. Phindile is single, and the proud mother of a single child, Thandolwethu.

Dr Thuthula Balfour
(Title of paper: Water Quality Management and Health in South Africa)
Thuthula is a qualified medical doctor and Health Policy Analyst at the Development Bank of Southern Africa. In her 14 years' management experience, she has worked as a Director for the SADC Health Sector Coordinating Unit and as Head of International Health Liaison at the national Department of Health in South Africa between 1998 and 2004.

She also worked as a Medical Officer of Health at Umtata Municipality following clinical work as medical officer and intern. She has an interest in preventive health issues and the strengthening of primary health care services.

Wilna Moolman
(Title of paper: Waste Disposal Site Management from a Local Government Perspective)
Ms Wilna Moolman is has a diploma in Nuclear Technology from the Technikon Pretoria (now Tshwane University of Technology). She has worked as a Senior Experimental Officer for five years at the Atomic Energy Corporation.

She is currently the Acting Deputy Manager for Local Government and Water Services Institutions at the Department of Water Affairs and Forestry.

The DBSA Knowledge Week

Advancing Human Development to address poverty, inequality and social exclusion

An overview of the City of Johannesburg's Human Development Strategy

Vishal Ramduny – Human Development Specialist,
City of Johannesburg Metropolitan Municipality

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Advancing human development to address poverty, inequality and social exclusions – An overview of the City of Johannesburg's Human Development Strategy

Vishal Ramduny – Human Development Specialist, City of Johannesburg Metropolitan Municipality

Abstract

On 8 December 2004, the Council for the City of Johannesburg approved the *Human Development Strategy*. The strategy is the City's plan for fighting poverty and promoting human development in the medium term. Guided by the vision of a world-class African city, the strategy supports the City in doing what is legally and politically required for it to become a mature developmental municipality. The Human Development Strategy complements the City's economic development strategy, *Joburg 2030,* and ensures that the world-class city is one for all residents, the poorest included.

Since people and communities are attached to a spatial location, a concerted effort to address human development challenges in the city would have a long-term impact of creating more self-sustaining communities, especially in the poorer parts of the city.

1. Introduction

The City of Johannesburg has developed a *Human Development Strategy* as a partner to its economic development strategy *(Joburg 2030)* to address poverty, inequality and social exclusion. Since interventions in this regard are to be targeted at particular communities and vulnerable groups, such a response to advance human development is integral to the creation of sustainable communities in the medium to long term. Human development is about investing in people to enable them to enjoy long, healthy and creative lives through more secure livelihoods, greater personal security, greater access to knowledge, advancing their political and cultural freedoms and enhancing their participation in community activities. Human development therefore goes beyond the mere provision of "hard" infrastructure but also of "soft" services that seek to effect social change through ideas and programmes to inculcate social values, identities and self-worth to enable people to be more proactive in improving their own lives.

A human development thrust to the City's strategic development path recognises that people are the city's biggest asset and that they need to be supported and encouraged to realise their full potential to become fully fledged and fully integrated urban residents.

As the largest metropol in South Africa, Johannesburg is committed to meet the human development challenges that have manifested either as a result of apartheid-based development and by virtue of it being a metropolis that is increasingly becoming subject to the volatile nature of the global economy. Furthermore, economic growth during the past decade has been characterised by several fundamental social changes that have occurred in cities worldwide. These include a growing polarisation between rich and poor; increased marginalisation of those previously socially excluded from the city fabric based on socio-economic status, ethnicity, or even nationality. Increasing erosion in the status of long-standing social institutions (such as the traditional family unit or religious organisations); and growing social diversity and acceptance of a range of life style preferences and non-mainstream ideologies (Yiftachel and Alexander 1995:275).

Despite commendable achievements by the Council in meeting service delivery needs of poorer residents since the advent of democratic local government, poverty and low levels of human development still persists, as many still remain mired in the effects of apartheid underdevelopment.

2. Addressing Human Development in Johannesburg – The Strategic Thrusts

The *Human Development Strategy* is comprised of three strategic directions, which combined are known as the "Joburg Triangle".

Each of these directions has served as the basis for the development of key programmes for implementation. Although the City is not starting afresh with the *Human Development Strategy* (since

Fig 1: The Joburg Triangle

it has been involved in numerous projects and programmes designed to improve the state of human development since the onset of democratic local government) but what the Strategy seeks to do is build upon and consolidate some of the existing initiatives within the city and outline new directions for advancing human development.

The Strategy was written in such a way as to ensure that its major programmes impact on all departments within the city that have a vested interest in human development. The scope of the Strategy is comprehensive and successful implementation thereof is dependent on a number of departments and role players working together. The Strategy is underpinned by the recognition that there are multiple approaches to addressing human development. The programmes selected for implementation therefore a) represent immediate solutions to problems of poverty, inequality and social exclusion to help the city address these in the short- to medium-term and, b) represent ways of overcoming some of the structural underpinnings of poverty, inequality and social exclusion for sustainable human development. Furthermore, the programmes are framed by:

- The capabilities of Council;
- The core competency of local government;
- Compliance issues (especially with regards to legal requirements);
- The sustainability of the programmes; and
- Extending and advancing the human development mandate of the City of Joburg.

2.1. Safeguarding and supporting the poor

Enhancing social protection recognises that reducing the levels of vulnerability, risk and deprivation amongst the poor is essential. It is crucial therefore that citizens (including the aged, children, people with disabilities, poor households and others) who are eligible for social protection offered by the three spheres of government, are indeed able to access safety nets. These safety nets play two roles: firstly, a redistributive role - by transferring resources towards poorer members of society to help bring them out of poverty - and secondly, with additional resources, the poor are better able to manage risk and deal with the volatility of their poverty.

Targeted income transfers to those not benefiting from economic growth because they remain trapped in the "Second Economy" and who are therefore more vulnerable to external economic shocks, is therefore essential for their sustainable livelihood. The social welfare programmes of government mean well and are well designed but the challenge is to ensure 'maximum coverage' by making sure that everyone who is eligible, is indeed able to benefit from them as intended. Two ways in which local government in the region could play a role in advancing social protection for the poor is through the full provision of free basic services and through the facilitation of access to provincial social grants.

There are still households in the city who do not have access to houses and services. The ability of these households to access and enjoy the opportunities created as a result of economic growth is seriously constrained when their basic rights are still to be met. The ultimate goal of local government should be to provide equal access to a full free basic services (of which water and electricity are a key component) for all its residents, on a progressive basis. As such, a staged approach could be adopted in terms of how local government provides services to the indigent in seamless manner together with other spheres of government. The City of Johannesburg is currently looking at ways in which the following could be targeted:

- New arrivals to the city and newly displaced people who should be provided with urgent and interim household services: water, sanitation, solid waste (refuse) removal.

- Households which are established in the city, but not yet fully integrated – the City is looking at ways (through reviewing its Social Package Policy) in which these households could be targeted through the provision of an essential household services package that includes free water, sanitation and solid waste (refuse) removal, plus access to public services such as roads, health, libraries, sports and recreation facilities, social services, parks, emergency services and the municipal police.
- Over time, all poor households to have access to a full range of social services as decided upon by the City and in accordance with national and provincial policy.

It is therefore important for local government in Johannesburg to prioritise its investment in terms of gaining access (capital investment in the infrastructure required as part of the free basic services); maintaining access (operational investment in the ongoing management of services so that they function effectively); and targeting the poor through subsidised rates and tariffs, to ensure affordability.

Access to provincial social grants is often restricted because the poor and vulnerable lack information on its availability and their eligibility, or because they do not have an identity document, which is required before any grant can be paid out. The City of Johannesburg is also looking at addressing these two blockages in ensuring greater access by the poor to social grants within its geographical area of jurisdiction.

2.2. Promoting rights and opportunities for the poor

Issues of inequality are strongly informed by the ongoing struggle against the legacy of apartheid and need to be addressed in terms of the promotion of rights and opportunities in order to give greater effect to human development. The promotion of rights and opportunities should address issues of economic inequality, gender and generational inequality and spatial inequality. This would support the region's poor and marginalised in an asset building framework that is part of a longer term approach to poverty alleviation and creating a sense of worth. This can be done by helping to build the social, economic and human capital of the poor through the provision of targeted support. South Africa has a rights-based Constitution in which the Bill of Rights entitles everyone to progressive access to housing, health care services, sufficient food and water, social security, and social assistance. However, not all residents are equally able to claim their rights and opportunities. The poor and unemployed often struggle to join the labour market. These individuals suffer from economic inequality. Vulnerable groups, such as women, children and youth can be excluded from opportunities, denying them the prospect of claiming their rights and realising their potential. When individuals in such groups are also migrants, people with disabilities, HIV positive or carrying other illnesses, or marginalised in some other way, their situation is exacerbated.

Households who live on the urban periphery, away from economic opportunity and social facilities, may suffer spatial inequality. The City is therefore committed to the champion rights and opportunities of those marginalised by spatial inequities.

2.2.1. Promoting economic equality

The City's focus on economic equality through a human development approach is targeted at lower skilled job seekers. The national Expanded Public Works Programme (EPWP) presents a building block for the City to promote effective short- to medium-term labour absorption and skilling through public works and it is also a key programme aimed at promoting sustainable livelihoods. The City is therefore keen to play a proactive role in the provision of infrastructure, home-based care and Early Childhood Development. The City also recognises that economic equality can also only be achieved by actively seeking ways to promote economic opportunities for women in the informal economy such as assisting women with subsistence businesses in becoming entrepreneurs.

2.2.2. Promoting the cause of women and children

The City recognises that women and children are the most directly affected by poor services, and that they often experience health and security burdens as a result of inadequate services. Poor access to services (which is a contravention of basic rights) also undermines the ability of women to access opportunities that might exist and thereby realise their potential to become productive members of the economy. The City has therefore developed a programmatic response to gender and generational inequality based on Early Childhood Development, women's health, and women's security.

2.2.3. Promoting spatial equality

Apartheid spatial planning served to compromise urban opportunities for black residents of the city by locating townships on the periphery of urban areas.

Aside from their locational disadvantage, these areas, in the past, also suffered limited provision of social and economic infrastructure. Notwithstanding the advent of the democratic dispensation, spatial development has largely continued within the overall framework of that set by apartheid-based plans. The City's human development response to spatial inequalities looks at the creation of sustainable human settlements, which calls for a coordinated, integrated approach in which various departments of a municipality work together in respect of specific settlements. Such an initiative needs to foster the provision of housing from a sustainable livelihoods approach in which the provision and promotion of social, human, financial, and environmental capital is also addressed in the provision of a physical (housing) structure.

2.3. Building the prospects for social inclusion of marginalised groups and communities

The City recognises the need to building prospects for social inclusion through the building of social relationships and productive partnerships amongst its citizens and between the citizens and the council itself. This is based on an understanding that that its geographical area of jurisdiction is inclusive of all who live in it. The City's social inclusion initiative therefore promotes human development by building social cohesion and community trust among all its residents. This is being done through the development of key projects that target poor communities, the youth, new migrants, cultural groups etc.

Impoverished and excluded communities become self-motivating when they feel acknowledged and supported by their local municipality. Through existing structures such as ward committees, as well as other community-based partnerships, municipalities in the Johannesburg region should pursue an enhanced relationship with marginalised communities in particular. This would help "intensify efforts aimed at building a spirit of community, good citizenship, social activism, moral regeneration and solidarity at the local level" (*ANC Manifesto 2004*).

The City acknowledges that substantial capacity for social development exists within community based organisations (CBO), non-governmental organisations (NGO) and business sectors.

3. The proposed intervention

3.1. Early Childhood Development (ECD)

Investing in Johannesburg's children is a major intervention in the strategies related to the prevention of intergenerational poverty and also those directed at militating against creating a generation of dependent adults. In line with the overall strategic agenda of the City, it is proposed that investments in children made today will begin building the conditions for all children to prosper now and in the future.

The proposed ECD programme aims to create the policy and regulatory context for ECD to evolve from its current state of care giving to that of a facilitative environment where children can flourish in their formative years. In addition, aspects related to the spatial and physical environment will also be addressed and appropriate institutional support mechanisms will be proposed. The outcome of the different interventions will yield short, medium and long-term benefits.

The City is committed in demonstrating to its stakeholders that it is committed to early childhood development and that it intends to play a leading role in the transformation of the current system to address the inadequate supply or inappropriate quality of ECD services, where this exists, and intergenerational poverty. The proposed ECD Implementation Plan comprises of the following key projects.

3.1.1. Establishment of a Council ECD Subunit

In the short- to medium term, it will be necessary for the ECD programme to be given management capacity (medium term) and strategic direction. It is further proposed that an ECD Subunit be established in the Social Development Department during the period 2006/07. The role, function and relationship with other structures would, however, be planned in advanced to ensure that the unit gives effect to the programme and has meaningful impact.

3.1.2. Establishment of In-Council Day Care/ Training Centre

Council is looking at the possibility of establishing an in-house day care facility at its Metropolitan Centre in Braamfontein as a centre of excellence and as a base for the training of care givers for facilities that are poorly resourced and where the quality of ECD care is substandard. However, a decision on the establishment of such a centre is dependent on a proper feasibility study and an assessment of demand. The establishment of a day care/training centre at the Metropolitan Centre would:

- Demonstrate what ECD facilities in the city should offer and how they should be managed;
- How council facilities can be used as centres of excellence and training;

- Ensure that council leads by example; and
- Ensure that the multiple use and optimal use of facilities contribute to greater efficiencies.

The concept of an "operational ECD Training Facility" would be a first in South Africa. Accredited short courses could then be developed by the manager/trainer and a theoretical course combined with practical exposure to the operations of a world-class facility would be offered. care givers can be exposed to all aspects of childcare, irrespective of their educational level, ability to pay for training, prior knowledge, etc.

3.1.3. Preparation of a Comprehensive ECD Strategy
Government alone cannot achieve the development of a comprehensive ECD or childcare strategy. It needs the contribution of the private and voluntary sectors, parents, and the community. Council would therefore be looking at establishing childcare partnerships to bring interests together along with the combined knowledge, expertise, ideas and resources. Plans and proposals could then be generated to meet the need, and to mobilise commitment and resources to achieve it. It is intended that the strategy and plans would encapsulate a holistic approach to education, health, welfare, safety and nutrition of the child as well as clarity on roles and responsibilities in each sector.

3.1.4. Review and expansion of ECD related by-laws
A number of by-laws relating to health etc seem overly restrictive, and are impeding the ability of some service providers (particularly those in lower income areas) to receive grants. These need to be reviewed in the light of the Human Development Strategy, and adjusted as necessary. Council would also then look at reviewing its policies with regard to rates and grants-in-aid to ensure that the additional rates burden (Property Rates Act) placed on non-profit ECD centres does not mean that these facilities are no longer viable.

3.1.5. Establishment and maintenance of an ECD facility database
Council is keen to establish a comprehensive database of ECD facilities in the city. This database would be developed incrementally and expanded to serve as a management tool. Once the ECD database (and mapping) has been developed, a risk profile, or vulnerability index would be prepared. The vulnerability index would integrate all three ECD elements namely, health (both environmental and aspects relating to primary health care), education and welfare, providing a composite index of various indicators of poverty and risk. This would enable authorities to identify those areas most at risk and where interventions would make the most difference to the lives of the children with the city.

3.1.6. Feasibility study for ECD expansion
A feasibility study would be conducted to look at the expansion of overall ECD service provision, through developing new and innovative approaches. Examples include:

- Early Excellence Centre
- Communal crèches
- Toy libraries
- Night facilities
- Mobile crèches
- Safe houses in each region.

3.1.7. Establishment of multi-disciplinary task teams
Once the ECD Unit is functioning, one of the first tasks would be to establish multi-disciplinary task teams. These teams would be responsible for recommendations regarding the allocation of grants, the development or assessment of training programmes and materials, comments on by-laws and standards, etc. In addition, the teams would take responsibility for empowerment and capacity building workshops and ECD Forum meetings. The task teams would also be responsible for the planning and organising of annual events.

3.1.8. Monitoring childcare homes and crèches
Council recognises the importance of ensuring that child health programmes be developed as an integral part of a comprehensive ECD approach. Council would

be looking at a childcare monitoring programme that would comprise:

- Immunisation;
- Children's growth interpretation on the Road to Health charts;
- Monitoring of the storage and management of medication for the sick children;
- Environmental inspections to check for compliance with the Municipal By-Laws;
- Bacteriological tests on food samples and swabs; and
- Development of a Referral register.

3.1.9. Establishment of an Early Excellence Centre

The proposed Early Excellence Centre would fulfill the following functions:

- Training;
- Carrying out government plans for children and families on a local level;
- Information on grants/financial assistance;
- Information on childcare provision (children's centres, child minders, day nurseries, out-of-school clubs, etc);
- Health and welfare advice;
- Helpline; and
- Fact sheets

3.1.10. Training and empowerment

The cornerstone of a developmental ECD programme would be an ongoing training and empowerment programme. A number of council functions would be involved in this initiative. A variety of training programmes need to be developed for care givers, mothers and fathers, ECD institutions, funders/ donors, politicians, etc. The focus of the health-training component would for instance be issues such as immunisation, measles and isolation, growth monitoring, personal hygiene and by-law requirements. Council's Arts, Culture and Heritage Department would in turn develop ECD specific programmes at museums. Training programmes would also empower care givers to better equip themselves to care for children with disabilities.

3.1.11. Awareness campaigns and child-activism

Awareness campaigns of child-related issues would also be a major component of this programme. This would include campaigns on the awareness of children's rights, child friendly city events, Mayoral children games day, media articles, etc.

3.1.12. Facility support programme

One of the key problems of informal/poor care facilities is the lack of educational tools and material. Council's sport and recreation and library departments could play a major role to bridge this need through the development of an educational loan system. Council is looking at the possibility of acquiring buses that would be designed and built to visit identified informal/poor facilities on a regular basis to distribute books, toys, music (records/cassettes/CDs), puzzles, sport equipment such as balls, basic children game plans, etc. If this initiative is feasible and approved by Council, it is intended that existing staff be seconded to the mobile edu-unit to assist with and to provide advice on the available educational material.

3.1.13: Establishment of partnerships

The establishment of a partnership programme to define roles and responsibilities, oversight, commitments, etc is thus of vital importance. The role of the City in ECD related partnerships could vary from one of facilitation and co-ordination, to one of providing an enabling environment, to one that is far more directive, in which the City could even enter into specific partnership agreements. Compulsory and potential partners include:

- Provincial – range of departments, including Dept of Education's ECD Unit;
- City – range of departments;
- National – e.g. Department of Labour (sponsors training);
- Private sector employers;
- Private sector ECD providers – informal (unregistered) and formal;
- NGOs and CBOs; and
- Unions.

3.1.14. ECD fund

Once the ECD strategy and partnership programmes are developed, an is intended that an event should be arranged to establish and launch an ECD fund to support the City's initiative. The management of the fund, annual reporting and other institutional mechanisms and requirements should also be investigated and formalised.

3.1.15. Bridging grants-in-aid

The Provincial Government is managing several grant programmes to support children and care facilities. There are however several requirements that an applicant must meet, prior to being eligible for the available grants. It is proposed that the City identify ECD facilities, be it formal or informal, that could be assisted on an interim basis while steps are being taken to meet provincial grant application requirements.

3.2. The Social Package and Social Grants Initiative

The Social Package Programme has been ranked as a 5***** programme in the *Human Development Strategy*. This, together with the Social Grants Initiative (ranked as a 3*** programme) offers the City the opportunity to strengthen its developmental and interventionist mandate in tackling poverty directly.

3.2.1. Social Package

The objective of the social package programme is the full provision of the social package to all households in the city through more seamless government. This includes:

1. Identifying the appropriate means of targeting poor households;
2. Factoring in affordability of services ;
3. Registering non-account holders onto the city's database; and
4. Ensuring a sustainable exit from poverty.

The City has initiated a process that would enable it to finalise a coherent and more inclusive Social Package Policy that would allow for better targeting of poor households. However, the finalisation of the policy is dependent on the finalisation of the City's new valuation roll (which is expected to be done by July 2006). In the interim, the City has also embarked on a process of helping its poor households by implementing a debt write-off scheme. In addition, an "incentivised write-off" scheme has also been introduced whereby people with arrears earning less than R6 500 per month can make arrangements to repay the outstanding amount, and once they've paid off 50%, the second half would be written off (The primary intention here is to build a habit of regular payment, rather than recover arrears). A registration process for account holders is already underway and this initiative is expected to continue until 31 January 2006. The existing Indigent Policy is still in place for people who qualify and want to register for it whilst the incentivised scheme would be promoted as an additional benefit to support the poor. The process of developing the Social Package programme with cost estimates for inclusion into the Human Development Implementation Plan as well as the IDP would start after the local government elections in 2006. Additionally, the draft national and provincial policies would also impact on the development of the local policy, as there are complementarities as well as differences between these.

3.2. 2. Social Grants

In recognition of the important role played by social grants, the Gauteng Provincial Government is setting up a "single window of opportunity" that will ensure that the provincial package of safety nets is available to all residents through one process. The City is keen to link up with the process and provide assistance where it is considered to be the most prudent.

In the short-term there are two functions the City has identified that it could perform to facilitate access to social grants:

- An information campaign
- Assisting with identity documents

Some of this work is already underway through the Department of Social Development (the main driver of the programme) and the Regions. There is further scope to intensify the existing programme so as to capture as many potential recipients of these grants as possible.

3.3. Building Social Cohesion

Building Social Cohesion has been ranked as a 3*** programme in the *Human Development Strategy*. This is in line with the City's undertaking to play a leading role in fighting social exclusion (in its different manifestations) and in actively promoting social inclusion. While the City cannot single-handedly create a socially inclusive city, it can pursue this in the work it does and it can publicly support these principles.

The projects included in the Social Cohesion Programme Implementation Plan include the following:

3.3.1. Multi-purpose Open-Air Neighbourhood Squares

During apartheid, many communities were disadvantaged by the design of the built environment. Consequently, Johannesburg is still left with many areas (especially in the previously disadvantaged areas) without adequate recreation amenities or without adequate public space that fosters social interaction. It is therefore intended that the City identify specific neighbourhoods in which multi-purpose open-air squares can be designed and built to foster social interaction and recreation. Such neighbourhood squares should be designed for games such as chess, hopscotch, marbles, tenniquoit etc. It is proposed that the City, through the Soweto Development Initiative, initialise the concept of creating neighbourhood squares in Soweto and gradually replicate it in other areas of the city.

3.3.2. Heritage Park in Sophiatown

Plans for a heritage plaza around Dr Beyers Naude

Square are quite advanced and the project is to be implemented by provincial government with investment from the private sector. It is, however, important for the City to champion new heritage initiatives for places that might otherwise be neglected or passed over. The City's Arts, Culture and Heritage Department is keen to develop Sophiatown as a unique cultural icon by building upon its symbolic history as a multicultural and multiethnic community that was subject to apartheid forced removals. If approved by Council, it is proposed that the possibility of establishing a heritage park in the large open space opposite Sophiatown's commercial hub be looked into. Major features of such a precinct could include:

- An orientation centre to support the Sophiatown Heritage Trail;
- A pair of monuments or beacons (one in Sophiatown and the other in Meadowlands – the latter being the area where many former Sophiatown residents were forcibly removed to);
- Archaeological diggings and displays uncovering evidence of old Sophiatown.

The heritage park has the potential to serve as a major unifying symbol for its citizens. It is proposed that value for such a development also be added from a public safety, aesthetics, environmental, and 'uniqueness' point of view to ensure that it becomes a distinct Joburg landmark that brings the people of the city (young and old, rich and poor and of diverse cultures) together.

3.3.3. Recreational Streets

This would be a space within townships or settlements with very little recreational amenities where road space (it is suggested that cul-de-sacs be used) would be formalised for either children's play or for recreational activities. This concept is very similar to the *'Living Streets'* initiative in the United Kingdom as well as a similar initiative being run in the Middle East but is being adapted here to address the South African context.

It is important to note that many streets in the previously disadvantaged townships already serve as places of informal socialisation. This has happened by default rather than by design, as many of these areas do not have appropriate spaces for socialising and recreation. However, the *Recreation Street* initiative would require Council to identify a cul-de-sac street and demarcate it (using painted lines or paving blocks on the street) and paint the street to accommodate street games such as hopscotch, tenniquoit, street cricket, street football, and street basketball and street netball (as desired by the community). This can be done by painting the street to create sport pitches and by providing immovable sport 'equipment' such as cricket stumps, mini-goal posts for football, basketball and netball baskets and poles. As part of the lead up to World Cup 2010, it is proposed that street football be used as a key sport to initiate the *Recreational Street* concept. A braai area for street braais could also be constructed by Council to facilitate social engagement in the street. Appropriate road signs proclaiming the street as a recreational street would also be installed and an attempt would be made to get private companies to sponsor the sign boards.

Formally proclaiming such streets as *recreational streets* would also ensure that they are safe for children to play or for adults to mingle by drawing attention to them as a space for socialising and community interaction. Such streets would encourage safer outdoor activity in communities with poor access to recreational amenities and provide an opportunity for youngsters and their parents from adjacent household to interact with each other in a safer environment. The value of acknowledging this form of informal social contact for community cohesion is that it would provide for a safer environment for children and adults alike.

3.3.4. Support for 2010 World Cup

This intervention would form part of a special project to promote football amongst children in the lead up to World Cup 2010. Such an initiative would include training programmes for the youth, referees, linesman and coaches in socio-economically disadvantaged communities. It is proposed that the *Recreational Street* initiative also be linked to this.

3.3.5. Acknowledging the city's religious/cultural diversity and fostering inclusivity through key events and through celebratory gestures for key cultural/religious festivities

Johannesburg is a diverse city that is home to people of many religious beliefs and cultural backgrounds. If the Human Development Implementation Plan is approved, Council would look at ways of showing greater acknowledgement of this diversity through the following key sub-outputs of the Social Cohesion Programme Implementation Plan:

- Annual celebratory events or cultural days;
- Annual street decorations marking a key celebratory event for the city's main cultural/ religious groups;

- Formation of a religious/cultural stakeholder group for consultations with the Council;
- Design and launch of public calendars of religious/cultural events on an annual basis as a celebration of its diversity.

The above would also be a good marketing tool for the City.

3.3.6. Exchange of Performance Art (dance, drama and music) between High Schools

This initiative aim at bridging the socio-economic divide between schools in the poorer areas of the city and in the more affluent communities through the exchange of performing art productions (drama and music) on a formalised basis. This would foster the exchange of creativity and ideas in performing arts between these schools which would not only diversify talent but would also have the effect of bringing together children of different socio-economic backgrounds together.

It is proposed that this initiative be piloted between six schools initially (three from a poor community and three from a more well-off community). Council would need to play a co-coordinating role in terms of engaging with the respective high school boards to make this initiative a reality. High schools would use their school buses to take performers to partner schools but should a school not have such a bus, council should provide the service when it is needed.

By working side by side with high school boards on implementing this initiative, Council has the opportunity to reaffirm its commitment to creating a future citizenry that is socially cohesive. This would have the effect of creating a more tolerant and inclusive city citizenry of the future that transcends class or socio-economic distinctions. Depending on the success of the pilot, it would be replicated to other schools within the city.

3.3.7. Integrating Foreign Migrants into our City

The objective for this component of the Social Cohesion Implementation Plan is to reduce the potential for exploitation, deprivation and poverty amongst poor foreign migrants by providing a source of assistance that would address all areas of need for a migrant through a one-stop information point both upon arrival into the city, and during their stay. It is proposed that the City evaluate the services available at the migration centre in Hillbrow in order to ascertain how it can be improved.

As the Refugees Act of 1998 places restrictions on asylum seekers by prohibiting their employment while government is processing their applications, such a centre could offer advice on places to stay or places offering services to the homeless (eg Central Methodist Mission etc), translation services, health

care advice, advice on trauma services, advice on the nearest soup kitchen facility and training provided to migrants on their rights and obligations utilising programmes developed by the Department of Home Affairs. It is important to ensure that the services provided to foreign migrants are courteous and friendly and that they do not discriminate between legal and illegal migrants. A key sub-output would be to establish a city advocacy group to work with migrants.

3.3.8. City Awards

It is proposed that council initiates a City Awards ceremony that rewards those deserving of recognition for their contributions to various initiatives that promotes social cohesion in their communities. Many ordinary citizens of the city make enormous contributions to the improvement, development and betterment of those in their communities with very little recognition. The City Awards aims to rectify this and would have the following aims:

1. To create awareness of the priorities of the City of Johannesburg;
2. To foster civic pride; and
3. To promote a culture of excellence and recognise positive achievements in the area of social entrepreneurship, bravery, safety of women and children, environmental protection etc.

To win the main award, the individual or group or organisation must have made a special or outstanding contribution to the fostering, generation or promotion of social cohesion in the city, where benefits of such contribution have had a tangible impact on the welfare of people or communities. It is proposed that a special committee be established to oversee nominations for such awards.

The Social Cohesion Programme Implementation Plan represents a response by the City to address fragmentation and exclusion from the city fabric based on either socio-economic status, ethnicity or because of historical circumstances. It also seeks to build upon unique events (such as World Cup 2010) as well as the city's strength in its rich cultural diversity to effect positive social changes. This plan gives effect to the concept of developmental local government as it entails working with communities and community groups to improve their social integration into the city fabric.

Building the prospects for social inclusion requires multiple stakeholder involvement. The Council cannot singlehandedly improve the state of human development in Johannesburg. It is undertaking a multi-pronged approach in which it can actively provide for the poor (as in the case of the social package) and facilitate and enable (as in the case of the social grants initiative).

In order to effect as much change as possible, the City is committed to working with other interest groups. Success in this domain requires the active establishment of a partnership framework to advance the objectives of the Human Development Strategy.

3.4. Women's Health

Improving women's health has been ranked as a 4**** programme in the *Human Development Strategy,* and has therefore been accorded high priority status by Council. In terms of the three strategic thrusts of the *Human Development Strategy's* "Joburg Triangle", it is integral to the "Championing Rights and Opportunities" strategic area of focus.

The proposed Women's Health Programme Implementation Plan is the City's recognition of its role in advancing human development through the ongoing improvement in service provision to the women of the city. The proposed implementation plan not only gives effect to the City Health Department's existing initiatives, but also to that of the national Department of Health's commitment of ensuring that services that constitute the core of primary health care, are 100% accessible to all women.

Many poor women are burdened by socio-economic and locational factors that undermine their health. A targeted improvement in the provision of health services for women would provide a boost to women's rights and economic security, as these are unattainable without good access to basic health and reproductive health services.

The Women's Safety Programme Implementation Plan therefore recognises the importance of the health of our women, as they are a key agent of the City's social investment objective in the promotion of sustainable human development.

The Women's Health Programme Implementation Plan comprises the following projects:

3.4.1. Provision of comprehensive antenatal care at all fixed health facilities in the city

Not all facilities in the City are providing antenatal care services at present. The intention is for the city's Health Department to ensure the provision of antenatal care at all fixed health facilities by 2011. However, first visit assessments need to be provided

in all facilities by the end of the 2005/6 financial year, which would enable the necessary interventions and referrals to be made to the antenatal care clinics. Training for operational staff on antenatal care would need to take place together with community-based awareness campaigns on maternal health issues as a way of intensifying education on maternal and reproductive health and emphasising the importance of early booking during pregnancy. Regular updates on antenatal care for health care providers to ensure adherence to protocols would also be facilitated.

3.4.2. Improvement of access to Choice on Termination of Pregnancy (CTOP) services

As part of the drive to ensure access to comprehensive reproductive health services for women, it is vitally important that access to CTOP is improved. The Provincial Health Department has already done a preliminary designation of facilities for expanding its CTOP service but these are yet to be operationalised as an audit of designated facilities needs to be undertaken to determine if adequate space is available (1 consulting room is required at the facility). Equipment also needs to be purchased and staff need to be trained.

3.4.3. Improvement of access to Voluntary Counselling and Testing (VCT) by ensuring provision of rapid on-site testing at all fixed health facilities in the City

One of the problems of having to wait for the result of an HIV test is that it could cause unnecessary anxiety and stress, as well as delays in formulating safer sex practices. It is intended that VCT services and rapid on-site testing (which would ensure the immediate availability of results) be provided in 95% of health facilities by 2011. Knowledge of HIV status would also assist in modifying behaviour to ensure adoption of safe practices and healthy living.

3.4.4. Implementation of Prevention of Maternal to Child Transmission (PMTCT) programme at all health facilities providing comprehensive antenatal care services

It is intended that PMTCT be integrated into the existing routine Mother and Child (MCH) services. The high HIV infection rate in pregnant women has huge implication for HIV infection rates in children. The commonest route of transmission of HIV to children is from their mothers, either in utero, during delivery or during breast feeding. Administration of nevaripine to pregnant women and children can decrease the vertical transmission of HIV from mother to child.

3.4.5. Improvement of cervical cancer screening coverage (by 5% annually)

There is a need to ensure that the Cervical Cancer Screening Programme (launched in 2002) attains optimum coverage. It is proposed that, as targets for progress, screening coverage be increased by 5% annually. Regular feedback to health care providers on cervical smear uptake would also be provided in order to encourage them to utilise all opportunities to take cervical smears from women in the target age group (30 years and above). A sub-output of this programme output would be to conduct awareness/education campaigns on breast cancer including (breast self examination). Although such educational programmes have been done in the past, there is a need to evaluate and improve their effectiveness.

3.4.6. Implementation of one Youth Friendly Service per Region to improve access to Health Services for youth and young women

It is intended that health care services for the youth be integrated into the existing services, so as to make them more accessible and acceptable to the youth. Training of health care providers on principles of youth friendly services will be conducted.

3.5. Women's Safety

The Women's Safety Programme Implementation Plan is specifically aimed at ensuring that the City addresses the issue of women's insecurity by means of a targeted and visible impact response. The aim of the plan is to create and maintain a city environment in which women feel safe and secure at all times. This plan falls within the broader ambit of the *Joburg City Safety Strategy,* which in turn supports the *Human Development Strategy.*

Many of the city's women residents are susceptible to crime because many commute on foot or utilise public transport facilities (a particular concern raised by women relates to their safety on public transport facilities and at bus, train and taxi ranks, with one in three women feeling unsafe). Many poor women are burdened by financial and physical factors that undermine their security. The proposed women safety programme aims to improve and mitigate risks in the spatial, physical and social environment. The proposed Women's Safety Implementation Plan comprises of the following key programme deliverables:

3.5.1. Safety improvements at transport termini, parks and other vulnerable public areas

The Transport Division of the City's Development Planning, Transportation and Environment Department is in the process of applying the Crime Prevention Through Environmental Design (CPTED) guidelines that have recently being developed to ensure that safety considerations are built into any new transport termini development. In the short term, Council will work closely with South African Police Services (SAPS) and Johannesburg Metropolitan Police Department (JMPD) in order to determine crime "hotspots" at transport termini. Once this is established, a plan to improve police visibility will be put in place as well as the possibility of surveillance cameras in key 'termini hotspots'.

Key parks and public areas would also be identified in which Council would install emergency telephones, in conjunction with SAPS. It is proposed that the identification of these areas be done scientifically and qualitatively (utilising police statistics on the location of crimes against women as well as through the Safety Assessment Focus Group (see programme output 6). It is also proposed that the phones be "vandal proof" (similar to the emergency phones found on our national highways) and that Council investigate the possibility of reaching an agreement with a security company for responding to dialled calls, for general maintenance and for the provision of a security escort service for women who may feel unsafe or threatened. Such an agreement could be done as part of the company's social responsibility programme. However, as a first step, the City would engage with the Security Industry Board.

3.5.2. Developing and implementing a lighting master plan for the city

Good lighting deters crime and vandalism, offering the freedom from fear. It is proposed that an assessment of lighting in the inner city be done particularly with regards to the situation at dawn/dusk and at night to gauge where improvements can be made. It is intended that the lighting master plan be initially (in the financial year 2005/6) developed and implemented in a particular precinct after which a more comprehensive plan for the city would be developed. The Johannesburg Development Agency and the City Safety Programme have already initiated discussions with companies involved in such initiatives in other parts of the world, where tremendous successes have been achieved in terms of creating a safer environment.

3.5.3. Developing a safety awareness programme for school-going teenage girls to mitigate against abductions, date rape and falling victims to drugs

JMPD's Public Awareness Unit, together with SAPS and other relevant role players, such as the Department of Community Safety and NGOs (such as the Centre for the Study of Violence and Reconciliation), should develop a safety awareness programme targeted at female teenagers. SAPS currently runs a number of school safety programmes and it is proposed that an assessment of the nature of these programmes be undertaken to see if they have a component that deals with safety awareness for teenagers. If not, it is proposed that a programme be developed that looks at a suite of safety issues that would benefit teenagers. These would include awareness on how to avoid being abducted (and what to do in the event of an abduction), 'date rape', falling victim to drugs and/or other social abuse. Once such a programme has been developed, formal awareness campaigns would be done by both the City and SAPS at high schools in the City. This should be seen as a priority programme and would therefore be developed in the first quarter of 2006 after which the campaigns would be taken to each school in the city on an incremental basis until 100% coverage is reached. The awareness programme should be ongoing.

3.5.4. Informal Businesses Against Crime

It is proposed that two city streets (in which there are designated trading zones) and where crimes against women are common, be identified and that informal businesses in that area be provided with awareness training on crimes against women and on how to help women in need. It is proposed that the awareness campaign be done in a way that does not compromise the trading time of the informal traders. Traders who partake in the awareness programme would be provided with specially-made vests identifying them as being intolerant to crimes against women. This would also provide a visible deterrent against any street crime against women. Utilising informal traders in this way would not only have the added benefit of making women feel safe and secure in shopping in the streets targeted but would also help support informal trade through the creation of a safer environment to street-shop. The selection of the two streets with designated trading zones would initially be done as a pilot initiative. If successful, it would be rolled out in other areas of the city in ensuing years. JMPD's Public Awareness Unit would drive the awareness training.

3.5.5. Improving women's awareness of safe houses

It is proposed that one safe house for abused women be identified in each of the City's regions to serve as a main 'port-of-call' safe house for abused women. Council would take the responsibility of creating the awareness for this facility. The identification of a regional safe house as the 'port-of-call' facility would be done after a proper audit of safe houses is undertaken. The result of the audit by Council would be made available to each and every safe house in the city for referral purposes and networking amongst safe houses.

3.5.6. Safety Assessment Focus Group

The focus group will be used to collect information on public perceptions of urban safety in relation to urban design. This audit will assess the safety of the city according to the opinions, experiences and perceptions of safety by the women. The aim of the exercise is to note practical recommendations for change in the urban environment that will enhance safety.

3.6. Sustainable Human Settlements (SHS)

In terms of the three strategic thrusts of the *Human Development Strategy's* "Joburg Triangle", sustainable human settlements are integral to addressing spatial inequality as part of championing rights and creating opportunities in the city.

The largest and most far-reaching intervention for providing access to development opportunities is through ensuring the City's poor are eventually housed in settlements that are sustainable. However, the issue of building sustainable settlements has often been accepted in principle but has often been fragmented at an implementation level to include either a socio-economic response to housing or an environmental one. Sustainable human settlements actually necessitate addressing development challenges in settlements on a number of levels including social, environmental, economic, institutional and infrastructure-wise.

The proposed programme for Sustainable Human Settlements is geared towards the eventual formulation of a housing project (ie the physical capital) that have positive impacts in respect to natural, social, human and financial capital (all of which are assets of the poor). This is in line with a sustainable livelihoods approach, which offers an analytical tool to understand the various ways in which a holistic settlement can be created that meets the needs of the poor.

In order to begin moving in this direction there must be a shift in paradigms from a "housing only" approach to one that is holistic including agencies such as City Parks, Joburg Water and so on, with the Housing Department being the main driver. Collective planning for new settlements and management of existing settlements is crucial. Attention needs to be paid to planning in a settlement framework that includes transportation planning.

The Sustainable Human Settlements Programme Implementation Plan aims to provide the test case for inculcating a sustainable human settlements approach into future housing projects within the city. It is therefore proposed that Council undertake the following interventions in the next five years as a way of initiating a move towards creation of sustainable human settlements within the city.

- Establishment of a Council SHS Task Team (this would include consolidating a SHS vision/approach for the City; developing a model for sustainable human settlements and housing typologies and; a review of the framework, functional policies and the various strategic tools the City applies in its decision-making process that impacts on the development of sustainable settlements.
- Feasibility study for the establishment of a Sustainable Human Settlement Unit within Council.
- Pilot projects – focused area-based initiatives (It is proposed that one of the pilots be undertaken for an informal settlement upgrade or relocation programme and the other for a new (greenfield) low-income housing development).

The sustainable human settlements programme requires City-wide commitment if it is to be a success. This requires that appropriate institutional mechanisms be put in place to ensure that future housing developments are indeed based on a sustainable livelihoods approach.

3.7. Expanded Public Works Programme (EPWP) and Labour Market Intelligence Database

The Joburg-based EPWP is already up and running. Since the Human Development Strategy stresses the importance of the social, environmental and cultural elements of this programme, the City has undertaken to ensure that these elements are included in the work done by the recently established EPWP steering committee and the social development and the health departments.

The City's EPWP programme is founded on four sectors:

- **Infrastructure** – by increasing the labour intensity of public infrastructure projects;
- **Environment and Culture** – by creating work opportunities in public environmental programmes;
- **Social** – by creating work opportunities in public social programmes; and
- **Economic** – by developing small businesses and cooperatives.

The Social Sector Plan of the Expanded Public Works Programme is composed of three sub-programmes namely, Community Health Worker, Early Childhood Development and Home Community Based Care programmes. The HCBC programme would also be used to kick-start small enterprises that would provide support services, for example, catering, laundromats, crèches, and hygiene services. This would help ensure that money is circulated within the community.

In terms of the social sector plan these programmes will contribute to the EPWP by providing work opportunities to the unemployed in various communities. The approach in the social sector plan places primary emphasis on the provision of proper basic training to all community workers in order to equip them with the relevant knowledge and skills to render good quality social services to communities. In addition to appropriate training, the social sector seeks to expand the reach of these social services to unserviced areas. The extension of the reach of these services, coupled with the said training, places these programmes within the objectives of the EPWP. This would also include:

- Career guidance during the EPWP employment and mentorship for entering the formal job market after the EPWP contract has ended;
- Skills development plans for contractors to enable them to secure better jobs after the contract;
- Sustainable enterprises ancillary economic sectors based on skills developed during the contract;
- Ensuring that main contractors are committed to train new and semi-skilled sub-contractors providing for quality control and promoting a 30% Black Economic Empowerment (BEE) strategy.

The City has undertaken measures to ensure that the Social Sector component of the EPWP effectively integrates all the above initiatives without weakening the value or impact of each.

The Labour Market Intelligence Database (LMID) programme introduces the idea of facilitating the flow of information for job seekers through a database. This resource will assist job seekers, particularly those entering the job market for the first time, to access information about real jobs placement. The City is looking at the possibility of housing such a database in public amenities and facilities (such as sports and recreation centres, libraries, health care facilities and people's centres). The City is also linking this initiative with the existing City Skills Programme as well as looking at establishing synergies with similar database developed by the Department of Labour and by recruitment agencies. The Skills Development Sub-Unit of the Economic Development Unit will monitor the development of skills from such a database and be able to evaluate the impact of interventions. In line with *Joburg 2030,* a component of labour market intelligence is about filtering growth sectors to job seekers.

3.8. Women Entrepreneurs

The *Human Development Strategy* identifies the economic empowerment of women as a key intervention in the fight against poverty and inequality. In particular, the City selected the empowerment of women entrepreneurs in the informal sector as its focus. Many women in the informal economy run small businesses (such as 'spaza' shops) but many of these under perform as businesses due to a lack of institutional support. As a consequence of the importance attributed to assisting women entrepreneurs, the City is in the process of developing programmes that can be implemented in the short to medium term. These programmes should be innovative, high impact and sustainable.

The scope of work will specifically involve working out a programme (s) to assist women entrepreneurs in the informal sector through:

- An appropriate/applicable entrepreneurial education programme (it is suggested that links be made to the Entrepreneurial Institute who are developing such a programme targeting women entrepreneurs);
- Access to credit and procurement opportunities;
- Women's cooperatives; and
- Mentoring and business support for women-led SMMEs.

International experience has demonstrated that providing or facilitating access to credit is critical to the success of businesses in the informal economy. These programmes have been especially successful with women entrepreneurs. As such the City would like to be able to roll out or to facilitate the roll out of a number of programmes that target women in small businesses in the informal economy.

4. Key requirements for successful implementation

It is acknowledged that the successful implementation of the plan requires the dedicated assistance and engagement of all the relevant operational departments and the City's regions. It is also recognised that appropriate institutional mechanisms need to be put in place to allow for greater co-ordination and integration since human development (and the nature of programmes and projects that have been developed and proposed) is cross-cutting. Such an institutional mechanism would also look at how joint budgeting can be more effectively fostered to enable implementation of the plan together with a linked performance management system for all the in-house role players concerned. Part of the institutional make-up would include establishing a Human Development Technical Task Team to report on and monitor progress to the Human Development Sub-Committee.

Integration and co-ordination also applies to the other spheres of government especially with regards to working towards a revised social policy for the city and implementing it and the women's health programme as some of the City's responsibilities in terms of primary health care may be become provincial functions in terms of the National Health Act. Strong partnerships with external roleplayers, such as NGOs, CBOs and the private sector is also critical for success. Finally, political commitment and oversight is also important to ensure that the administrative bureaucracy is able to function effectively with regards to implementing a cross-cutting strategy and its associated plans, once the latter has been approved.

5. Conclusion

The City of Johannesburg has recognised that a greater emphasis on human development would provide the leverage for it to intervene decisively to promote development of the poor and marginalised. It would give greater effect to the City's efforts to address poverty, inequality and social exclusion by providing the means to effect greater social mobility and help to bridge the gap between those residing in the so-called "First Economy" and those in the so-called "Second Economy".

The city has also recognised that complimenting economic growth with a human development thrust does not require huge injection of new resources as it is based on an acknowledgement that local government in the region has limited capacity given its legislative and regulatory responsibilities. However, the City acknowledges that some thinking needs to go into how resources are allocated with respect to both economic growth and human development. With limited resources and with an increasingly complex urban environment, the strategy for human development has been developed with the intention of it being lean and targeted to ensure that it is able to impart optimal development effectiveness through the rapid improvement in the quality of life of the poor and the creation of more self-sustaining communities.

Complimenting economic growth with a greater emphasis on human development, as has been attempted by the City of Johannesburg, also provides for the appropriate paradigmatic discourse through which the twin challenges of apartheid under-development and the social exigencies of globalisation can be more effectively addressed by Council.

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The DBSA Knowledge Week

Growing civil engineering capacity in local government

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Growing civil engineering capacity in local government

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Abstract

The 2014 goal of providing housing and free basic services for every South African will be beyond reach unless concerted action is taken now. A recent survey has shown that 79 local and four district municipalities have no civil engineering staff and a further 38 local and six district municipalities employ only civil technicians below the age of 35! Project Consolidate, aimed at supporting fragile municipalities, is set to tackle problems such as billing systems, municipal debt, free basic services and local economic development. A question that arises is what about technical capacity building - this at a time when hundreds of university of technology graduates are unable to find jobs.

The Local Government SETA (LGSETA), the South African Institution of Civil Engineering (SAICE) and the Department of Local and Provincial Government (DPLG) have recognised these problems and have put a number of interventions in place to:

- Offer university of technology students experiential training with municipalities who have capacity to train young people, and contribute towards their stipends;
- Make funds available to allow bright young graduates to continue with their BTech degrees in order to specialise in facets of municipal engineering such as roads, storm-water or water and sanitation;
- Institute a system of mentoring / coaching for students and young graduates; and
- Register learnerships for training of water care facilities operators.

The paper will explore each of these initiatives and will explain how local government can tap into the funds. The issue of capacity and materials being developed to help grow civil engineering capacity in local government is also addressed.

Introduction

The Millennium Development Goals are clear. South Africa has committed to supplying basic water for all schools and clinics by 2005, basic water for all by 2008, basic sanitation for all by 2010 and electricity for all by 2015. The responsibility for this rests with local government and apart from electricity, it is the civil engineering professional who must effect these outcomes.

Lack of Capacity

The recent SAICE survey has highlighted a major problem in terms of capacity to deliver. The civil engineering professional statistics are as follows:

No civil professionals

- 79 of the 231 local municipalities have no civil engineers, technologists or technicians, and
- Four of the 47 district municipalities have no civil engineers, technologists or technicians.

Only one civil technician

- 42 of the 231 local municipalities have only one civil technician, and
- Four of the 47 district municipalities have only one civil technician.

Only young staff

- 38 of the 231 local municipalities employ only technologists and technicians under the age of 35, and
- Six of the 47 district municipalities employ only technologists and technicians under the age of 35.

Only 70 with civil engineers

- Only 45 of the 231 local municipalities have any civil engineers, and
- Only 25 of the 47 district municipalities have any civil engineers.

Furthermore, local and district municipalities which did have civil staff reported that on average 35% of the existing posts were vacant. Others reported that where there had been budgetary constraints, vacant

posts were removed from the organogram to balance the books. Still others advised that over and above the vacancies in existing posts, newly created posts could not be filled. Of concern was the fact that organograms in some municipalities made no provision for technical staff at all. This seems to indicate that vacancies would be in excess of 40%. Metro vacancies ranged from 30 to 50%. The average is considered to be at least 40%.

Table 1: Civil professionals employed in all levels of local government

	Municipalities	Engineers	Technologists	Technicians	Total
District municipalities	47	43	43	154	**240**
Local municipalities	231	98	100	377	**575**
Metros	6	240	226	253	**719**
Totals	**284**	**381**	**369**	**784**	**1 534**

Of further concern is the number of vacancies in elementary and operator positions.

Vacancies

These vacancies impact on daily operations, maintenance and overall service delivery, but more importantly in terms of project management units (PMUs) the shortages of staff impacts on the ability to spend MIG funds allocated to deliver basic services. Many PMUs have only spent one or two percent of their allocations.

The survey carried out at the IMESA Conference in 2004 highlighted the following problems relating to vacancies or inappropriately qualified management:

- No land use planning;
- No building control being done;
- Lack of planning;
- Lack of strategic direction;
- Increase workload on others;
- Unable to meet deadlines;
- Unable to deliver infrastructure;
- No maintenance, or only reactive maintenance when a crisis arises;
- No in-house expertise for design or managing consultants' work;
- No in-house knowledge in terms of contracts and tender documentation;
- No in-house expertise for interacting with contractors and the construction phase; and
- No in-house expertise to assist with practical issues or emergencies.

Given that the major function of a municipality is to deliver services, allowing a huge build up of vacancies is a crime against the people and particularly the poor.

Reasons for Vacancies

A number of factors have contributed towards the current crisis. These include salaries, re-grading, restructuring, lack of career development, early retirement and driving equity targets.

Salaries

In the previous dispensation, salaries were based on the size of the municipality, and that approach is still in place today. Unfortunately, looking at salary surveys of the past, it appears that salaries in local government have been eroded by 18 to 20% relative to consulting since the mid-nineties. This compounds the problem of low salaries in small centres. As a result the smaller municipalities, where the challenge to address poverty eradication is the greatest, are unable to attract suitable staff.

A recent advert called for an Assistant Director of a local municipality, who should have 'six years' experience, be technically qualified, act as Director: Civil Services when required' at a salary of R133 427 pa. This means that the person would have to have a minimum of 10 years education and training (four-year degree or national diploma and BTech and six years experience). The same advertisement called for applications for a superintendent with four years experience at a salary of R121 071. Whilst this may be low for a 'supe', the disparity between the qualifications and two levels of responsibility is such that the salary of the former should be substantially higher. Clearly civil professionals in local government need to be far more highly valued in order to redevelop adequate capacity.

It is time that the concepts of scarce skills and rural allowances be introduced. Looking at advertisements from hospitals, after stating the

salary (eg. Anaesthetist R453 147, with six years experience) the advertisements continue with 'excluding Scarce Skills Allowance of 15% and Rural Allowance of 22%'. The salary for the Municipal Assistant Director quoted above would at least approach R200 000 if scarce skills and rural allowances were added – an improvement, but still inadequate for that level of responsibility.

Re-grading

Given that technical skills are of critical importance, the re-grading of staff nationally is becoming a problem for senior technicians. Grading systems do not place technical competence, responsibility or complexity of tasks handled in an appropriate position on the higher end of their scales. It appears that many experienced technicians have been dropped a level or two; hence they are leaving for greener pastures. The frustration levels in this regard were found to be high, regardless of age, race or gender.

Solution 1

Review conditions of employment
The value of technical staff cannot be overstated. Conditions of employment should be aligned throughout local government and should include alignment with the private sector.

If senior technical staff are correctly graded there would be no complaint about the salaries they command as they would align with other senior staff.

Restructuring and lack of recognition of the need for technical skills

In the past the most senior officials in a municipality were the Town Clerk, Treasurer and the City Engineer. Today the mandatory positions are that of the Municipal Manager, Chief Accounting Officer and Chief Financial Officer. No senior technical staff are mandatory in organisations which exist to provide and sell technical services! Given that some 60% of the municipal budget is spent on delivery, operation and maintenance of infrastructure, this does not make sense. Further in many instances the Technical Director position is also held by a non-technical staff member based on the premise that any one with management experience can manage anything.

This is resulting in less infrastructure being developed in real terms, due to the fact that most new managers are not experienced at conceiving projects, are not able to make decisions, or are often unwilling to take technical advice or listen to the experienced technical professionals in their departments. Many existing technical staff are leaving local authorities out of sheer frustration as they see their good work of the past being undone by those with no understanding or experience. These frustrations were expressed by the full spectrum of technical staff regardless of race or age.

The lack of understanding of the roles played by elementary workers, operators and artisans has also had serious consequences in terms of operations, as many water and sewerage works nationwide no longer comply with health and safety criteria set by the Department of Water Affairs and Forestry.

Lack of career development

The restructuring of local government has meant that in many instances civil professionals can never attain senior positions and have been moved from leadership positions to the 'boiler room'. Given that engineers and technologists have NQF 7 and higher qualifications, they represent some of the most highly qualified staff in local authorities and should be considered of great value in strategic positions and strategic thinking.

Junior staff are equally frustrated as few seniors have time to train them, so they are underutilised and do not build up enough variety of training to be able to register as professionals with ECSA (the Engineering Council of South Africa).

Early retirement

In the mid-nineties, long serving staff at all levels of government were offered attractive packages to take early retirement. At the time there was a worldwide fetish with youth – it was considered that young ideas were needed to change the way businesses were run and thereby improve competitiveness and efficiency. However, the DotCom bubble was to show that business experience was of vital importance and in many countries, seniors are being encouraged to return to the workplace.

In South Africa a further reason for encouraging early retirements was to create positions for black professionals. However, the overall profile of the civil engineering professional team was not understood at the time and there were insufficient numbers of senior black professionals to fill these posts. Not only have these retirements caused a major loss in terms of delivery capacity, but the knowledge that was lost has impacted on the progress of the young engineering staff who would have benefited from the supervision, coaching and mentorship that was in place in the past.

This problem was identified in the UK in the mid-nineties and was captured in a discussion by Kevin Thompson[1], when he cautioned *'...by getting rid of older people, an organisation's KNOWLEDGE is being lost, not just its people...'*

Another alarming phenomenon is now taking place. Terms of appointment are being revised in much of the public sector. Proposed changes in medical aid and retirement benefits will affect many adversely. In local government, staff have been given the option once again of taking early retirement to retain all the benefits accrued to them. Senior staff are therefore planning to leave shortly, and juniors are looking at employment in other sectors, as the relative attractiveness of working in local government will further be eroded.

Solution 2

Encourage staff to remain until normal retirement date or beyond...
Supplementary payments should be negotiated to encourage staff to remain until normal retirement date, and even beyond to act as coaches for young staff.

Equity targets

Despite being critically short of staff, most departments in all tiers of government and parastatals still rigidly attempt to achieve employment equity quotas in all disciplines. This results in one of two problems:

- Inappropriately qualified or unqualified staff are employed;
- Posts remain vacant, despite the availability of suitably qualified and experienced; applicants of all ages.

Considering that slightly less than 600 black civil engineers have graduated from South African universities in the past 40 years and a significant portion is in the private sector, there are few available to assume senior roles in local government.

Whilst the Employment Equity Act calls for selection on the bases of equity, it also calls for efficiency. Making choices purely on equity or representivity and not considering competence is proving counterproductive to the delivery process.

A real contribution towards transformation would be for all tiers of government to appoint the right person for the job, regardless of race, gender, disability or age, and to place responsibility on senior staff to once again supervise, coach and mentor the young so that they can benefit from the knowledge accumulated as a result of years of experience.

Says Mamphela Ramphele[2], the well known activist and World Bank managing director, *'...strict professional competence criteria need to be applied ... to ensure efficiency and effectiveness...'*

By growing organically, the young generation will indeed be able to take their rightful places in time and address the current demographic imbalances.

Engineer to Population Ratios – South Africa and the World

In the industrialised world there is roughly one engineer for every 200 – 400 people. In the developing world one engineer services 500 – 1 500 people, whilst in underdeveloped countries the ratio is one engineer to 5 000 people and more.

In South Africa, there is one engineer to 3 166 people. Clearly the country has too few engineers considering its development ambitions, its need to eradicate poverty and to take its place as a major player in the global village. Reducing job opportunities for those educated and trained in South Africa, as outlined above, and thwarting the opportunities for adequate training in local government is impacting negatively on South Africa's ability to grow.

Cyril Ramaphosa recently mentioned that if he could choose his career over again, he would study engineering, as *'...engineers are trained to work systematically, solve problems and get things done...'*

Solution 3

Employ and utilise all staff available
South Africa has many problems to solve. We are too short of staff to base selections on anything other than qualifications, experience or competence. It is time to utilise the whole skills base to best effect!

Education of Civil Engineering Professionals

Engineers

University training of civil engineers covers one year of basic scientific study, followed by three years of intensive study in all technical fields including structures, water, sanitation, roads, geotechnical and an introduction to environmental engineering and project management.

Technicians

By contrast, the technician receives one year basic scientific training followed by a year on site (known as experiential training or work integrated learning) and returns for one year to study basic structures, water, sanitation, roads, etc. This means that technicians generally perform well at the practical level, but lack the broad perspective in terms of planning and strategy that the engineer develops.

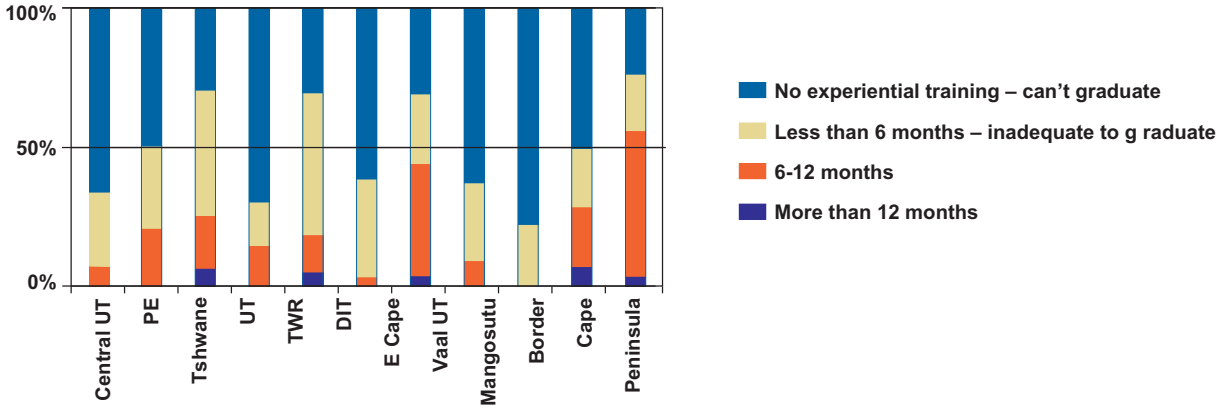
The number of technicians who graduate is generally limited by experiential training opportunities. Figure 1 shows how few final year Univesity of Technology students in 2004 had been able to complete the experiential phase.

Technologists

The introduction of the BTech degree has enabled technicians to choose subjects in which they wish to specialise. They return to universities of technology for a further 18 to 24 months mostly on a part-time basis to specialise.

BTech graduates are highly sought after as they have specialist knowledge in a particular field and become specialist designers or leaders in these fields. A BTech qualification in water and sanitation or in roads is therefore ideal for staff working in specific departments of local government. Registered

Figure 1 : Experiential training status of final year technikon (now called universities of technology) students in October 2004



Solution 4

Stipends sponsored by LGSETA
To address this problem, the LGSETA will support employers who take students on, by paying their stipends for the year. All municipalities are entitled to access these funds. The application form may be obtained from saice@ally.co.za.
For details of students available for selection for experiential training contact Allyson Lawless or Natasha Niemandt on 011-476 4100 or email natasha@ally.co.za

technologists are able to perform well in specialised fields and are considered to be as technically competent as engineers in that field.

At present nationally, 44% of civil engineering professionals are engineers, 12% technologists and the balance technicians. The number of engineers graduating annually has been declining for some 20 years. If the number is not dramatically increased, civil engineers will only represent 31% of all civil professionals by 2020. To address some of these shortfalls the number of technologists need to be increased.

This approach will work well in most municipalities except perhaps the large local municipalities and metros where the complexity of the challenges will require an engineer with comprehensive education and training in all aspects of municipal engineering to make complex or strategic decisions.

Solution 5

BTech bursaries sponsored by LGSETA
To increase the number of technologists in local government, the LGSETA is offering bursaries for high-calibre technicians currently employed in local government to continue with BTech studies.
Application forms may be obtained from saice@ally.co.za.

Training of Civil Engineering Professionals

The process

To register with ECSA as a professional engineer, the graduate must work for a minimum of three years to gain sufficient experience in all facets of the project cycle. After registration, the engineer should have an all-round knowledge of his or her chosen field. Registration is a useful measure for employers of the level of competence developed by the young graduate. Similar workplace training regimes are necessary for registration as professional technologists and technicians.

It was clear from research that there is a general lack of knowledge in local authorities of ECSA's requirements for professional registration and the benefits. In addition, there appears to be a lack of motivation and resources to provide the appropriate workplace training and range of experience required for registration. In particular, the lack of technical staff and high level of vacancies means that those currently employed in local government simply do not have time to train young graduates.

Recognition of the process

Most senior civil engineering respondents agreed that professional registration was important and that registration should be recognised and rewarded by means of a salary increase or promotion. The exact opposite view was held amongst senior non-technical management, councillors, politicians and human resource departments. Only 40% of the local municipalities, 45% of the district municipalities and 55% of the metros indicated that they offered training for young graduates to become professionally registered with ECSA.

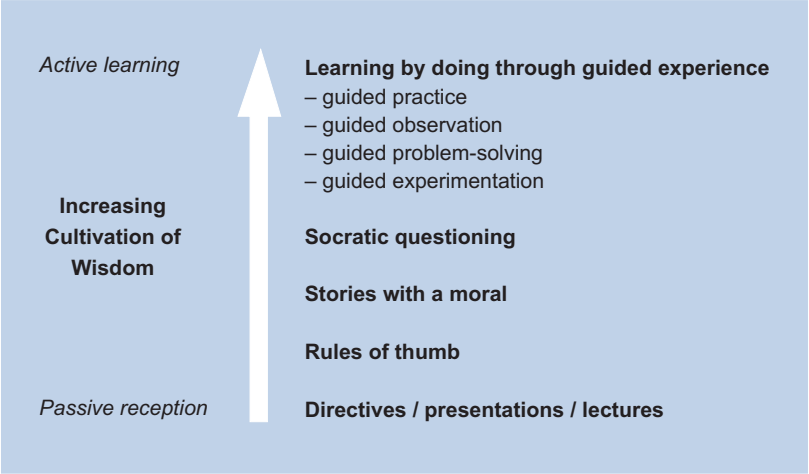
Although nearly 50% said they provided workplace training, only 15 to 30% supervised or checked the graduate's work and provided a mentor, whilst only 16% in local and district municipalities moved graduates from one department to another to gain all-round experience. The metros put much more effort into 'hand holding' and moving staff from division to division.

Knowledge transfer

One thing that all experts have done is to practice. In the book *Deep Smarts* written by Professors Dorothy Leonard of Harvard Business School and Walter Swap of Tuft University[3], it is argued that the amount of practice is not a predicator of expertise, but extended periods of concerted effort with self-reflection builds expertise.

They have coined the phrase 'Deep Smarts', meaning the ability to make smart decisions about complex situations, a characteristic all wish to see in their staff. This cannot be learned from powerpoints or best practice websites, but from 'knowledge coaches' – experts who are motivated to share their

Table 2: Modes of knowledge transfer



knowledge or 'deep smarts' with their protégés. The coach or supervisor acts as a teacher who transmits experience-based expertise.

Their view is that whilst all methods of learning shown in Table 2 are useful, the less interactive modes transfer much less real knowledge than those involving interaction and guided experience. Since the human brain remembers something longer if it struggles with the topic before finding the solution, experiential training under the guidance of an expert, or knowledge coach is far more beneficial than attending course after course.

With the introduction of the SETAs, many organisations are complaining that their staff are always on training, but have not developed the competence required. Table 2 explains why this has happened. The development of deep smarts requires a mix of the above activities and the availability of experts to manage the guided experience process.

The learning process during the candidate phase lends itself to registration as a learnership. This will allow employers to claim funds from SETAs for employing external capacity to train and mentor young graduates where internal capacity is not available.

The seven and ten-year rules

The candidate phase is however, only the beginning. Studying the DotCom bubble, Leonard and Swap conclude that the failure of companies was due to the inexperience of the young technology whiz kids who headed up the numerous hatchling companies at the dawn of Internet trading. They have also traced many other failures and catastrophes to youthful management and inexperienced technical personnel.

Their view is that developing competence in complex processes takes about five to seven years. Expertise, however, takes about 10 years. They state,

'...most evidence suggests that it takes at least ten years of concentrated study and practice to become an expert. The ten-year rule places some inescapable limitations on the development of expertise in management or any other knowledge-based, complex domain, limitations that are frequently ignored or minimized by those trying to accelerate the process...'

From the research it appears that coaching and knowledge transfer is lacking. Even with the best career development plans in place, competence

Solution 6

Candidate training process being registered as a learnership by ECSA

Work is currently being carried out by ECSA to develop qualifications and generic learnerships covering the candidate phases for Pr Eng, Pr Tech Eng and Pr Techni. Discipline specific material will need to be developed for every field as a guideline to both the supervisor to ensure adequate career path planning, and for the graduate to ensure that appropriate training is being given. Volunteers are required to help develop curricula and material for learnerships in local government. Contact allyson@ally.co.za

only comes with technical experience and input. The first major wave of retirements commence in 2009 as the 'baby boomers' reach 63. It is essential that senior, soon to retire staff to be retained and retired personnel be redeployed to carry out the supervisor/coach role where production staff are too busy or not available develop young people. It is a long process and all with knowledge to transfer must urgently be harnessed. SETAs should set funding aside for this type of skills development.

To Address the Lack of Capacity

Clearly not only is delivery of basic infrastructure a problem, but operations and maintenance have now also reached crisis stage. It is essential that civil engineering capacity be rebuilt in local government.

Growing the New Generation

The civil engineering age profile is such that there is a large group of senior engineers nearing retirement age, few production staff in the mid-career age group and many young people requiring comprehensive supervision, training and experiential training opportunities. To transfer knowledge, senior engineers and those who have recently retired need to be deployed as 'knowledge coaches'. Their role will be to initiate projects, delegate the tasks to young graduates and supervise/coach them in the process so that they build up expertise in local government and can eventually register and progress through the ranks. Experienced seniors are needed before it is too late to grow the new generation.

Solution 7

Place at least 500 more civil professionals in local government

Teams need to be constituted to carry out the work per district, municipality or department as follows:

- A senior professional to initiate projects, supervise and coach junior staff according to a structured training programme
- Two graduates requiring candidate training, who will carry out the work under supervision
- Two students requiring experiential training who will assist and learn from the graduates and seniors.
- Funding for students and senior professionals has been committed by among others the LGSETA and the Umsobomvu Youth Fund. More funding is required. If council have funded posts and cannot find suitable staff they should also participate in this project.

Operations

Operations have also become a problem in local government. As with contractors, the number of artisans rising in the ranks have been reduced and there is a dire shortage of adequately trained staff capable of operating essential plants such as water purification and sewage treatment works. Without senior civil engineering professionals in councils to manage these aspects, there is no one ensuring that operators are adequately trained, and no one monitoring the correct operation of these essential services. Some of the roles and responsibilities of the professional engineer in terms of the Health and Safety Act and Regulations include *'...engineers have a legal and moral responsibility and should advise clients accordingly.* They must among other things:

- *Carry out sufficient inspections at appropriate times to ensure compliance with the design*
- *Keep a record of those inspections...'*

With no engineers in place, there is no capacity to fill in for inadequate operators. It is essential that staff be hired and trained to manage the many plants nationwide.

Solution 8

Operator learnerships being developed and funded by LGSETA

Water care learnerships and training material is currently being developed to train a new breed of operators. For more information visit www.lgseta.org.za or contact saice@ally.co.za.

Numbers and Needs

Much of the material presented has been published in the book *Numbers and Needs: Addressing imbalances in the civil engineering profession*[4], which is on sale from SAICE. To develop a specific local government document to give direction to politicians and decision-

makers, and make staff available council by council, more input is needed from each municipality on actual qualifications and level of experience required. Please contact Allyson Lawless on 011-476 4100 or allyson@ally.co.za to fill in questionnaires to assist with the recapacitation process.

Conclusions

Huge gaps have developed in civil engineering capacity in local government. The eight interventions suggested above are a start to addressing the problems. Input will be welcomed on how best to structure these and on any other interventions which could assist with reversing the devastating effects caused by the loss of local government capacity. Please contact **Allyson Lawless** or **Janet Davies** to discuss your ideas.

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1 K Thomson, *Passion at work,* Capstone, Oxford, 1998, p 53.
2 D Herman, Ramphele blasts 'job for loyalists', *The Star,* 14 September 2005.
3 D Leonard and W Swap, *Deep smarts,* Harvard Business School Publishing Corporation, Boston, Mass, 2005.
4 Lawless A, *Numbers and Needs : Addressing Imbalances in the civil engineering profession,* SAICE, Johannesburg, 2005

Municipal Infrastructure and Service Delivery

Human Development and Capacity Building

Discussion

In the discussion, Mr Vishal Ramduny reflected on the governance of public institutions. He remarked that the critical challenge was to turn many of our institutions, government as well as organisations outside government, from inward focused organisations into more outward focused organisations that are more outcome and results oriented. To achieve this, there are simple mechanisms that can be used such as the entire budgeting process - the way we budget, in both local and other spheres of government and between spheres as well. Also, the performance management system continues to be still very silo-based and is not horizontally-based. There also needed to be a focus on ways in which communication between the local government institutions and our communities could be strengthened. On Emotional Intelligence, Mr Ramduny concurred with a view from Dr Dumisani Magadlela from the DBSA on its importance and the need to capacitate management to become more emotionally mature to manage.

Ms Allyson Lawless reflected on the skills shortages, a central issue in her paper. She commented that the country's entire artisan pool was diminishing and there was a huge shortage of artisans. There was a need to sell the whole concept of the artisan level back to the communities because they should be there fixing and solving problems in their own communities.

Vishal Ramduny
(Paper presented: Advancing Human Development to address Poverty, Inequality and Social Exclusion: An Overview of City of Johannesburg Human Development Strategy)
Mr Ramduny is a Human Development Specialist in the City of Johannesburg. After graduating with a Masters degree in Town and Regional Planning from the University of Natal in 1997, he worked in the NGO sector (Health Systems Trust) where he was involved in District Health Systems Development for two years. He subsequently worked in local government (Durban Metropolitan Council) for three years where he was involved in the city's IDP process as well as its institutional restructuring processes associated with the setting up of the Unicity. This was followed by a stint at the United Nations Development Programme in South Africa where he was involved in developing provincial poverty reduction frameworks focusing in particular on the Eastern Provincial Growth and Development Strategy. His areas of expertise include programme development, project management (though the design and implementation of strategic and operational plans), results-based management, development facilitation and consensus building. He is a member of the South African Planning Institute (SAPI) and the South African Institute of International Affairs (SAIIA).

Allyson Lawless
(Paper presented: Growing Civil Engineering Capacity in Local Government)
Allyson Lawless, holds a masters degree in structural engineering from Imperial College, London, and is well known in IT and Civil Engineering, both as a supplier of engineering software and for her involvement in many engineering societies.

In the year 2000, she became the first female President of the South African Institution of Civil Engineering. She is committed to the development of the African Engineering Forum to build Civil Engineering capacity throughout the region.

Since April 2003 she has become involved in capacity research and last year published the book 'Number and Needs', which warned that South Africa will need 3000 to 6000 additional civil engineers, technologists and technicians over the next 5 to 8 years.

The DBSA Knowledge Week

Alternative Service Delivery (ASD) process for Mangaung Local Municipality

George Mohlakoana –
Executive Director: Infrastrucure Services
Mangaung Local Municipality

DBSA
Development Bank of Southern Africa

Alternative Service Delivery (ASD) process for Mangaung Local Municipality

George Mohlakoana – Executive Director: Infrastructure Services Mangaung Local Municipality

Background Information

Changing legislation

Local government transformation began in 1993 with the amalgamation of the previous racially based local authorities. Since then, the sector has seen a complete overhauling of the policy and legislative framework. It has also seen the creation of an entirely new local government system with new boundaries, municipal structures and systems. In 2000, the process resulted in the amalgamation of the Bloemfontein, Thaba Nchu and Botshabelo transitional town councils to form Mangaung Local Municipality (MLM) in the Free State. One of the key pillars of local government transformation which MLM had to deal with has been the provision of effective and efficient services to local communities.

The municipal restructuring ushered in by the December 2000 elections created a number of service-related challenges for municipalities such as MLM. Amalgamating different administrations – and establishing consistent policies and work practices - has proven to be quite daunting. There are also huge geographical service disparities within the municipality. This has meant different service levels, policies, tariffs and municipal by-laws. Incorporating rural areas carries significant challenges of its own, especially since many municipal services cannot be delivered in these areas through traditional financing and delivery mechanisms.

Making sustainable choices

Service backlogs and huge service level disparities have created political pressure to extend services in MLM to underserved areas. New infrastructure carries significant costs, both capital and operational. This puts pressure on departmental budgets and leads to less spending on maintaining existing infrastructure. According to the Integrated Development Plan (IDP) review in 2003, Roads and Storm-water, Horticulture, Water and Sanitation services are all consequently undergoing asset stripping in MLM. This is hardly sustainable.

Exploring new ways to deliver services

In meeting the above challenges, the new policy framework also calls for new ways to deliver services. Legislation is entrusting municipalities with great responsibilities with respect to ensuring that services are delivered to all, whilst at the same time they have to deal with other socio-economic issues such as job creation and non-payment of services. Clearly this service authority responsibility may at times be in contrast to service provider responsibility expected of municipalities. Hence, a need to look at alternative ways to carry out all these responsibilities without compromising constitutional responsibilities of municipalities and sustainable service delivery.

Community-based service delivery has received increasing attention over the past 10 years. This is a new concept and one that the municipalities still need to discover more about. Municipal service partnerships (MSPs) are also promoted as creative, alternate ways of providing services. Despite identifying potential MSPs, MLM still has some way to go in establishing these.

In service of this goal, national legislation has sought to provide a range of options for effective local service provision. The Municipal Systems Act (2000), in particular, asserts that a municipality may provide a municipal service through either an internal or external mechanism. The proviso is that the municipality has to first conduct a Section 78 assessment to decide on the mechanism.

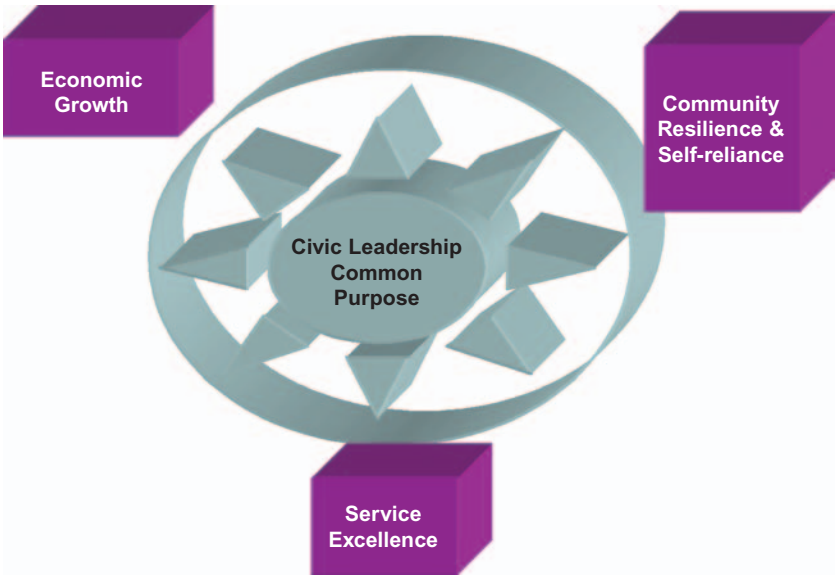
Overview of MLM

Mangaung Local Municipality is found within the Motheo District Municipality in the Free State province. As stated previously, MLM consists of three urban areas – the city of Bloemfontein, and the peri-urban towns of Botshabelo and Thaba Nchu – as well as a vast rural area. Some of the key statistics about the municipality, as drawn from 2004 IDP, are as follows:

Surface area	:	6 363 sq km
Population (2001)	:	740 000
Population density	:	104 people/sq km
% of District population	:	89%
% of Provincial population	:	23%
Unemployment rate	:	35%

In 2002, MLM approved its first IDP which sets out a road map that MLM has to follow to reach the vision of the municipality. In order to simplify the road map, the vision of MLM was expressed in the form of four key thrusts as indicated in figure 1.

Figure 1: MLM Strategic Wheel



The Service Excellence thrust is the one strategic element that is of particular significance to this topic. The aim of this strategic goal is to ensure that MLM sets benchmarks in what it does. Put differently, MLM would like to ensure that its services are performed in the most effective and efficient manner, either from a cost, time or quality perspective.

It was against this background that MLM, in 2002, decided to embark on a process for deciding on a service delivery mechanism to provide municipal services. The process utilised to decide on an appropriate mechanism was derived from Section 78 of the Amended Municipal Systems Act.

The key drivers for embarking on this process, which will be explained in detail later, were identified as:

- Financial and Operational Ring fencing;
- Cost-efficiency;
- Service coverage;
- Quality of service delivery;
- Separation between authority and provider role; and
- SMME development.

The Alternative Service Delivery (ASD) Process

In terms of Section 77 of the Amended Municipal Systems Act, a municipality must review and decide on the appropriate mechanism to provide a municipal service when, *inter alia,* it is preparing or reviewing its integrated development plan or when the municipality is restructured or reorganised in terms of the Municipal Structures Act.

Section 78 of the Municipal Systems Act specifies the criteria to be applied and the process to be followed when deciding on a mechanism to provide a municipal service in all or part of the municipality, or to review any existing mechanism. For convenience the process may be understood as taking place within three distinct phases, each separated by a Council decision:

Phase 1- 78(1) Initial Internal Assessment: Following a review of the internal mechanism, Council must take a decision to utilise an appropriate *internal mechanism or explore an external mechanism.*

Phase 2 - 78(3) Further Assessments:
Following the review of external options the Council must decide on an appropriate *internal* or *external mechanism.*

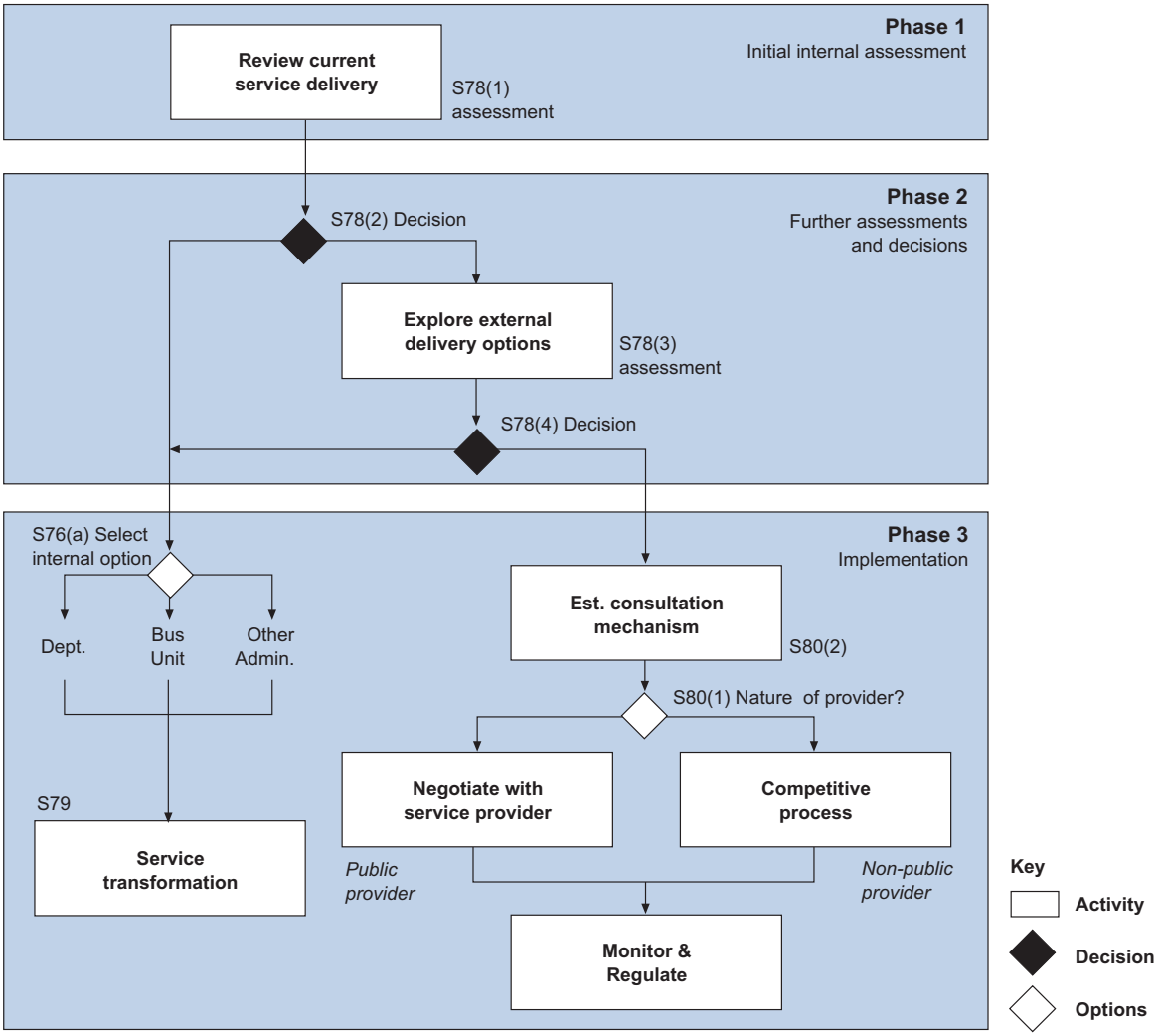
Phase 3 - Implementation:
The above phases may be depicted in Figure 2 overleaf.

Services subjected through ASD and scope of work

MLM identified and subjected the following services through a Section 78 process. All the trading services formed part of the investigation. The other services were chosen on the basis of the potential for achieving the goals of the Service Excellence strategic thrust. It must be noted that not all of these service systems constitute "municipal services" as the term is used in the Municipal Systems Act (MSA).

Therefore, not all are governed by the provisions of the MSA regarding consideration of alternative service delivery arrangements. However, to ensure

Figure 2: Overview of Section 78 process of the Municipal Systems Act.



a fully comprehensive consideration of such arrangements for these services, the provisions of the MSA were followed for all of the targeted service systems.

- Electricity;
- Water and Sanitation;
- Roads and Stormwater;
- Zoo;
- Horticulture;
- Fresh produce market;
- Solid Waste Management; and
- Tempe Airport.

Overview of the Scope of Investigation

Phase 1 – Initial Internal Assessment

- To investigate the status quo of municipal services. This will include information, as appropriate, on service coverage, the level of service provided, the level of demographics, the physical assets, organisational structure, staffing, legal issues and costs of the services;
- To report, as required by legislation, on the implications of continuing with service provision through an internal mechanism; and
- To make a preliminary examination of alternative external delivery mechanisms for the service and to recommend and motivate a short-list of mechanisms to be analysed in detail during phase 2 investigations.

Phase 2 – Further Assessments

The second phase explores the possibility of an external option. It must commence by giving notice to its local community of this exploration. The Act calls for an assessment of the following factors at this stage:

- The direct and indirect costs and benefits if the service is provided through an external mechanism (including the expected effect on the environment and on human health, well-being and safety);
- Detailed financial analysis to be undertaken for evaluation of the different options;

- The capacity and potential future capacity of prospective future service providers to furnish the skills, expertise and resources necessary for service provision;
- The views of the local community;
- The likely impact on development and employment patterns in the municipality;
- The views of organised labour; and
- Feasibility study to assess the value to be added by a new mechanism over a specific period.

Phase 3 - Implementation

- If a municipality opts for an internal mechanism, it must allocate sufficient human, financial and other resources necessary for the proper provision of the service and to transform the provision of that service in accordance with the requirements of the Act; and
- If, on the other hand, the municipality opts for an external mechanism, it must establish a mechanism and programme for community consultation and information dissemination. If the Service Delivery Agreement (SDA) is with a public provider - another municipality, municipal entities, provincial or national organ of state - it can do so without an overly stringent negotiation process. If it opts for a SDA with any other type of institution, it has to go through a competitive bidding process.

Progress to Date

Electricity

After 18 months of investigation and intensive consultation with internal and external stakeholders, MLM took a decision in October 2003 to provide electricity services through a municipal business entity wholly-owned by MLM. The 19th of April 2004 marked the launch of Centlec (Pty) Ltd, a municipal entity wholly-owned by MLM. The official launch was also attended by the then Minister of Minerals and Energy Phumzile Mlambo-Ngcuka. The significance of the establishment of Centlec was to prepare MLM for the REDs (Regional Electricity Distributors) to ensure effective financial and operational ring fencing. It was important for MLM to establish the true value of its electricity business and maximise this through effectiveness before the establishment of the REDs.

Water and sanitation

MLM resolved to undertake a section 78(3) investigation in terms of the Municipal Systems Act to explore an external mechanism, with particular emphasis on the possible establishment of a regional utility based on Bloem Water (a water board) area of supply. The area of supply covers six local municipalities (Mangaung, Mantsopa, Naledi, Mohokare, Kopanong and Letsemeng local municipalities). Due to the number of municipalities involved in the investigation, the process has been complex due to the consultations required. As a result, the investigation has progressed slower than envisaged by MLM and has not yet been completed. The biggest achievement is that the initiative by MLM has been well recognised and is supported by DWAF. The latter has identified this investigation as one of their priority areas in the development and implementation of the Water Services Institutional Reform process as required by the Strategic Framework for Water Services. The above-mentioned local municipalities have similar challenges, but different capacities to deal with these challenges. Furthermore, the investigation by MLM revealed that there are a number of duplications between the municipalities and water boards, resulting in higher water tariffs than what realistically could be achieved. It is therefore the view of MLM that if water services infrastructure from all these stakeholders (municipalities and water board) is consolidated into one, this will result in better integration and would enhance effective management of the assets.

Tempe Airport

MLM recently resolved to undertake a Section 78(3) investigation to consider an external mechanism. Due to the lack of aviation skills internally, and the fact that an airport is not a core business of the municipality, MLM decided to consider an external option, with commercial sale as one of the possibilities. The investigation is still in progress and is expected to be completed by November 2005.

All the other services

For all the remaining services, MLM decided to continue with the provision of services through an internal mechanism, however, in the form of a business unit within the MLM. A financial model was developed for each service after completing a ring fencing exercise to ensure proper cost accounting and identification of cost drivers to be managed as part of performance management. The financial model highlighted excess staff at general worker level and insufficient provision at supervisory level. It also indicated an undesirable downward trend in maintenance budget due to a high salary portion

and increasing capital loan repayment. Ring fencing was extremely useful in identifying the true cost of services.

In addition to the above, business and operational plans were developed to address deficiencies identified for operational effectiveness and compliance to legislation. In addition the plan took into account the possible utilisation of PPP partnerships and the involvement of communities in the provision of services as part of job creation.

Critical Success Factors

Ring fencing exercise

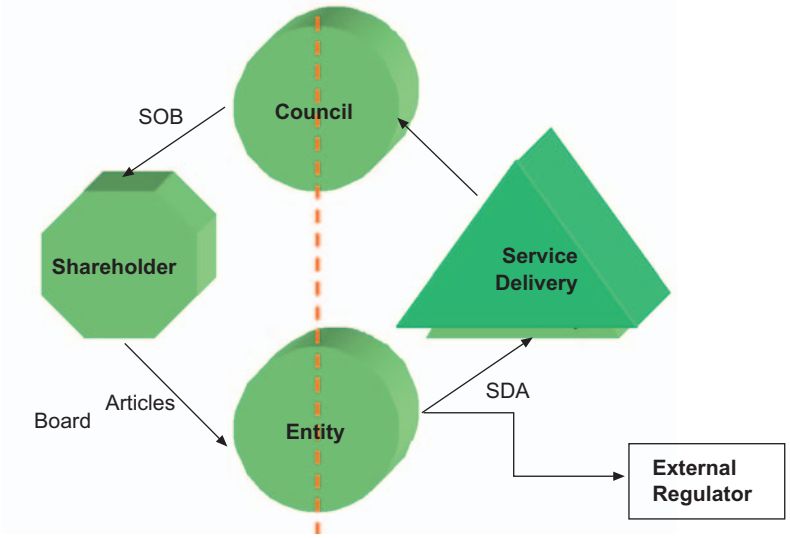
For any well informed decision to be made regarding a particular service mechanism, it is essential to establish, accurately, the true cost of providing a service. In order to achieve this, it is important to identify all the activities that form part of the value chain to provide a particular service. A distinction would need to be made between core utility business, administrative and support functions and non-core activities. It also involves high-level classification of the new structure (primary/support and core/non-core) and proposed degree and high-level cost implications of alternatives like outsourcing. Defining core and non-core elements is very challenging and complex for a number of reasons, including the relative blurring of functions across municipal departments. For instance, meter readers undertake reading for a number of services. If ring fencing is considered in this case, it may not be obvious as to how the allocation between water and electricity should be treated. Clearly from this, any service undergoing Section 78 processes would have to carry out financial and operational ring fencing for a proper assessment and this has to be carried out carefully as it is not a straightforward process. The key challenge lies with the assumptions made in defining what are core and non-core activities.

Once ring fencing is completed, it would then be easier to compile an asset and liabilities register. This information would be incorporated into a financial model for proper financial valuation. In the case of municipal entities, this valuation will assist to determine the most appropriate GAAP-compliant asset accounting policies (eg. depreciation). It must however be stated that asset valuation is a difficult issue, especially in a municipal context due to inaccurate municipal records.

Governance structure

A decision on an appropriate mechanism will generally lead to a separation of roles between a service authority and a service provider function, unless an internal mechanism (with the exception of a business unit) is selected as the preferred option. Considering the decision taken by MLM on the outcome of Section 78 investigation, MLM has a combination of external entities and internal business units, which present interesting challenges regarding governance structures required to manage the relationship between the service authority (MLM) and the service providers (entities and business units). Entities are independent and legally separated from the parent municipalities. Although business units are independent as well, however, there is no legal separation from the parent municipality. Given the dynamic nature of

Figure 3: Governance structure between service authority and service provider



the statutory environment and local thinking on service delivery, MLM expects its role as a service authority to expand over time. MLM has established a service authority function that comprises a shareholder unit and a service delivery unit to manage both the entities and business units. The Joburg model of the shareholder and contract management units established to manage utilities, agencies and corporatised entities was utilised as a reference, in the development of MLM service authority structure. The relationship between the service authority and service provider is illustrated in Figure 3.

The broad roles of the Service Delivery Unit are to:

- Monitor and evaluate the Entities and Business units against the agreed upon Service Delivery Agreements (SDA) and Service Level Agreements (SLA) respectively;
- Provide relevant information to MLM regarding governance standards and other relevant benchmarks;
- Formulate and develop relevant policies, procedures and guidelines that facilitate the operation of the Entities and Business units and the relationship between them and MLM; and
- Report to the municipality with respect to the performance of the Entities and Business units in respect of SDA and SLA performance.

The Shareholder Unit on the other hand, has the following roles:

- Formulation of corporate governance frameworks;
- Negotiation and ensuring of fulfilment of shareholder compacts;
- Facilitating development of policy and communication to boards of directors of municipal-owned entities;
- Acting through boards;
- Corporate governance and risk management; and
- Ensuring financial viability of the Entities and Business units.

The governance structure is relatively new in local government and requires a high level of maturity from all role players for effective management. Typically the entities such as Centlec represent a move away from a purely public terrain to a more private one. For instance, MLM is clearly concerned about meeting its multiple transformation objectives. Centlec, on the other hand, may be more concerned about establishing an effective, viable organisation based on pure business and financial considerations. And whilst these are not mutually exclusive priorities, they do require a high degree of management.

Change Management

Managing change in a fluid environment is always challenging. City councillors and officials found themselves managing a vast range of stakeholders during the investigation process, in particular electricity restructuring. They also found themselves having to address multiple imperatives for transformation.

Managing internal stakeholders

Labour is undoubtedly a key stakeholder. The key concerns of this group during the restructuring process revolved around job security and loss of benefits. Staff feared that the move, especially to a more private sector paradigm, might result in job losses, especially if a new organisation like Centlec wanted to make a good first impression.

Despite these concerns, labour chose to engage with the process. The main forum through which MLM management engaged with labour was the Local Labour Forum (LLF). One of the initial challenges faced by the LLF revolved around the Municipal Systems Act's stipulation to 'consult' around the process. The Act never fully defined what 'consultation' meant. As a result, it was sometimes interpreted as 'negotiation'. However, the process never fully stalled and labour currently feels that worker interests were reasonably taken into account.

It's also important to note that a major change like this conjures up fear and turf tensions amongst staff. This inevitably slows a process down. In this regard, MLM management had to ensure that it communicated well and often, that its messages were consistent and that it displayed strong leadership.

Managing external stakeholders

MLM also had to engage with communities who feared higher tariffs and a poorer quality of service. An important vehicle for communicating with communities proved to be ward councillors and ward committees. This process also highlighted the criticality of getting political commitment for the process from the beginning. Councillors and ward committee members went through a fairly long-term educational process, including the attendance of workshops on service delivery and so forth. As a result, they were able to communicate with community members with more conviction and integrity.

In summary, managing major change processes requires a long-term engagement with key stakeholders and consistent communication, rather than ad hoc interactions.

Communication and negotiation

Any major change process requires effective and consistent communication. Change agents need to continuously engage with staff, political leaders and communities throughout the process. If they fail to do so, misinformation will abound, leading to unfounded fears, unrealistic expectations or low morale amongst stakeholders. In certain circumstances, more may be required – and the change agents may have to actively negotiate with a specific group to ensure that the process doesn't stall.

Staff in particular is a critical success factor in any organisational process. If they do not feel listened to or respected throughout a major change process, they will respond negatively in overt or subtle ways. Over a period of time, this will affect staff morale and company productivity.

Transforming whilst doing 'business as usual'

It is imperative when transforming an essential service industry that the service itself not be disrupted at all during the process. Despite the rigour of the transformation process, MLM ensured that delivery was not affected at all during the process.

Transfer of employees into the new entity

Municipal entities, whilst not fully private companies, are not municipalities either. Consequently, if MLM staff were to be transferred to an entity such as Centlec, they would cease to be municipal employees and would lose significant benefits.

The constitutions of municipal pension funds currently do not make provision for members that are not municipal employees. If MLM staff members were transferred to Centlec, the current pension fund regime would see the move as a resignation. Municipal employees would therefore lose sizeable benefits.

MLM discussions with some of these pension fund schemes revealed a certain amount of reluctance on the part of the latter to change their rules. The municipality therefore decided to 'second' some of their staff to Centlec, rather than 'transfer' them. This innovative solution enables the affected staff to retain their municipal employee status and keep their current set of benefits intact.

Understand the legal framework

Since municipalities are statutory bodies, it is essential to know, understand and apply the legal framework. It is also important to understand that a municipality cannot operate outside that framework. This is not always easy as the legislation is sometimes contradictory or ambiguous. In instances like these, creative, innovative solutions must be sought.

Set up a dedicated project management team

An intense investigation such as a Section 78 process requires a dedicated project management team (PMT) to oversee it. Therefore special attention needs to be paid to ensuring adequate provision of resources that will be dedicated to the project until it is completed.

Conclusions

MLM has demonstrated that the legislation could be used to create a new paradigm for local government that strives to create institutions with strong focus on customer service, effectiveness and high return on investment that is sustainable. The Section 78 process should be seen as a means to end, with the latter being the vision set by a municipality based on its IDP.

The process also assists municipalities in making a clear separation between service authority role and service provider without compromising any of these roles.

As the process affects a number of stakeholders, both internal and external to the organisation, it is imperative that a concerted effort is placed in ensuring that engagements with the stakeholders occur from the planning phase of the process to ensure commitment by all the parties concerned.

In closing, MLM believes that the bottom line in any service delivery option must remain to ensure that the cost to the society is minimised.

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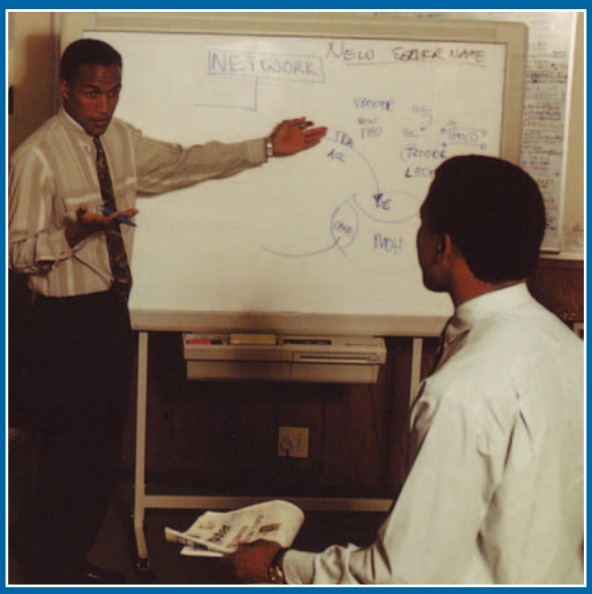

Improved service delivery through small scale risk-reward contracts

Dr Ronnie McKenzie – WRP (Pty) Ltd

DBSA
Development Bank of Southern Africa

Improved service delivery through small scale risk-reward contracts

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Summary/Overview

There is a general perception that public-private partnerships tend to be restricted to large projects due to the costs involved in setting up the project which can often be very high. Many financial institutions are unable or unwilling to provide support to small scale public-private partnerships, especially if there is any form of risk involved. This in turn discourages certain initiatives which can be very effective in improving service delivery in the South African context.

This paper highlights the problems associated with formulating and initiating a small scale public-private partnership and demonstrates that such projects can be successful and provide outstanding returns on investment if implemented properly. A case study involving a small scale risk-reward project: **"The Sebokeng-Evaton Leakage Reduction Project"** is used to demonstrate how a small scale public-private partnership can be implemented and financed through the savings achieved in the form of a simple risk-reward model. The paper documents some of the key issues that were addressed during the project and how various problems experienced by the project team were overcome.

The paper concludes with suggestions and recommendations on how small scale public-private partnerships can be used in South Africa to improve service delivery at the municipal level.

Introduction

Emfuleni Local Municipality is located some 50 km south of Johannesburg and incorporates, amongst others, the towns of Vereeniging, Vanderbijlpark, Sebokeng and Evaton. The area has a long history of political and financial turmoil with the result that it has experienced severe cashflow problems at regular intervals over the past 20 years. This has resulted in low maintenance budgets and generally low levels of infrastructure investment.

As a result of the low levels of maintenance and corresponding low payment levels for services, the water reticulation system experiences very high levels of leakage and wastage in many areas, particularly Sebokeng and Evaton where the wastage was estimated to be in the order of 80% of the water supplied to the area. The high leakage levels led to an annual water bill to the Metro from the bulk water supplier of more than R100 million per year for Sebokeng and Evaton alone.

In 2004, the Metro requested proposals from suitably qualified teams through an open tender process to address their leakage/wastage problems. Several proposals were received and one of the successful proposals involved a small scale public-private partnership in the Sebokeng and Evaton areas. Payment to the project team was based on the savings achieved with no financial risk to the Metro. The project was, in effect, a small scale public-private partnership involving a simple risk-reward project.

The main objective of the **Sebokeng/Evaton Leakage Reduction Public-Private Partnership** was to reduce water leakage (and thereby also reduce pumping energy costs) and levels of wastage in the Sebokeng and Evaton water distribution systems through a partnership between **Metsia-Lekoa (for Emfuleni Local Municipality)** and the **WRP/DMM joint venture.** The project was one of the first of its type in South Africa where the project team (ie the consultant) took on 100% of the financial risk through an extremely complex public-private partnership (PPP) involving no fewer than 12 key role players.

While the technical aspects of the project are clearly noteworthy (since it is currently the largest installation of its type in the world), the project is also unique in the manner in which it was managed and commissioned in a three-month period which few, if any, believed could be achieved. The rapid implementation resulted in huge water savings being achieved at the earliest possible date. Already, there has been massive financial benefits to the water supplier and local community.

The project represents a significant advancement

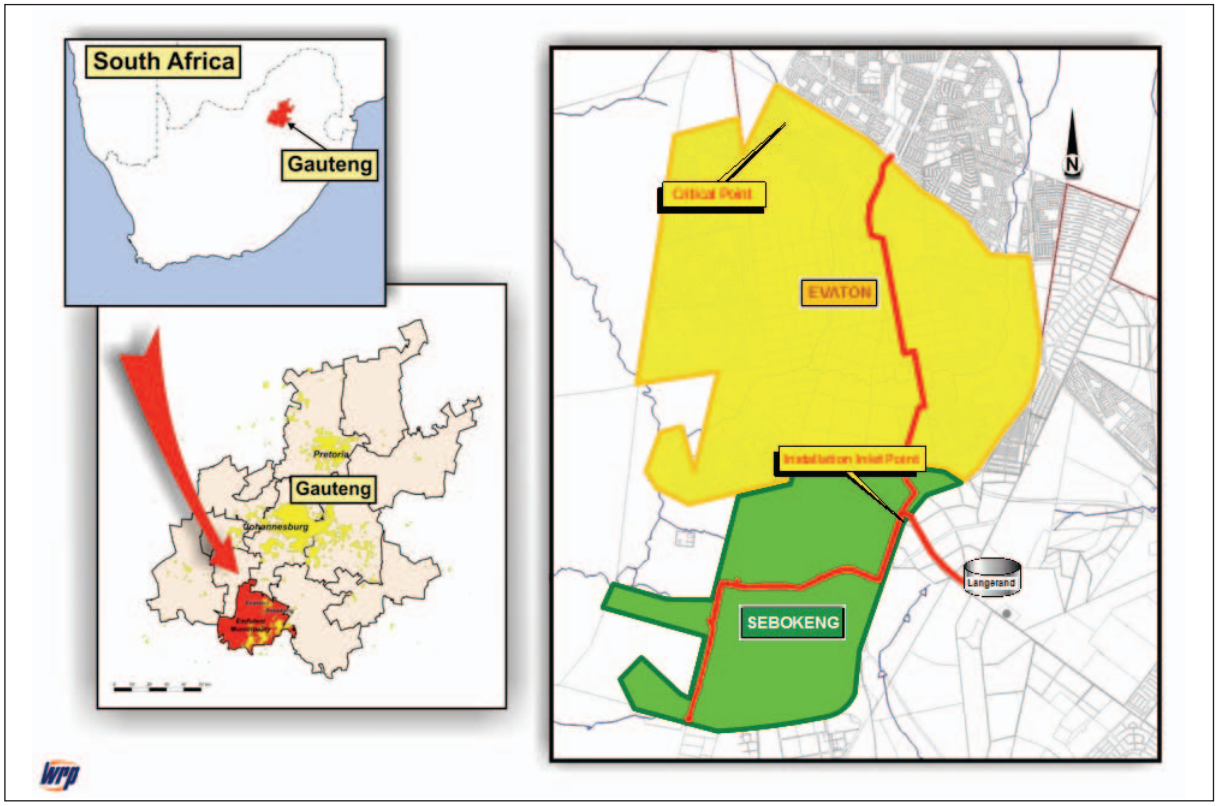
in public-private partnerships (PPPs) and clearly demonstrates that small scale partnerships can be viable despite the general view that this type of project is confined to larger projects. The remainder of this paper provides details of the processes involved in setting up and implementing such a project. The paper concludes by suggesting that the model used by the project team to address leakage in Sebokeng and Evaton can be adapted for use in other areas and other applications to improve service delivery throughout South Africa.

The Project Area

The Sebokeng and Evaton areas form part of the Emfuleni Local Municipality (as shown in **Figure 1**) which is located to the south of Johannesburg – the main industrial centre of South Africa. The areas are predominantly low-income residential areas supporting a population of almost 500 000.

The combination of low income coupled with high unemployment has resulted in a general deterioration

Figure 1: Location Plan



of the internal plumbing fittings over a period of many years. The poor quality fittings cause high levels of leakage which are estimated to be in the order of 80% of the water supplied.

The leakage was clearly evident from the high minimum night flow (MNF) of 2 800 m3/hr (see **Figure 2**) which is one of the highest MNFs recorded anywhere in the world. It should be noted that since most of the leakage was inside the households, the leaking water returned through the sewer network and most of the sewers flow at near full capacity during the night when no residents are using water.

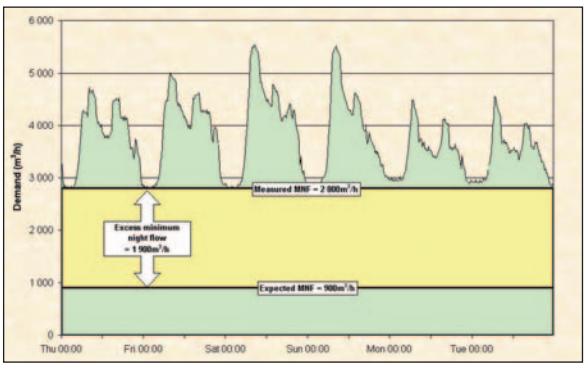


Figure 2: Minimum Night Flow entering the Sebokeng/Evaton areas

The Project

While it is accepted that the most effective method of addressing high internal household leakage is to replace the internal plumbing systems with high quality pipes and fittings, this is often not possible due to the costs involved. In the case of Sebokeng and Evaton, the replacement of the internal plumbing fittings would have cost in excess of R200 million and taken several years to complete. An alternative approach, and the one adopted by the project team, was to reduce the leakage/wastage by first reducing the excess system pressure after which various other interventions could be considered.

The advantage of this approach is that the costs are minimal and the resulting savings tend to be very significant in areas such as Sebokeng and Evaton where the leakage is inside the properties. The method has been tried and tested in many areas and spectacular results have been achieved by the project team in very similar circumstances. The project therefore involved the design, construction and commissioning of a large pressure management installation which could be used to reduce system pressures during off-peak periods – a very simple but effective approach.

By controlling the pressures during the off-peak periods, it is possible to significantly reduce the losses

Figure 3: Typical burst water main at low and high pressure

without identifying or repairing a single leak. After the excessive pressures have been addressed, the other measures such as repairing leaking pipes and/or retrofitting can then be tackled. The significance of water pressure on leakage is clearly highlighted in **Figure 3**.

Project Team

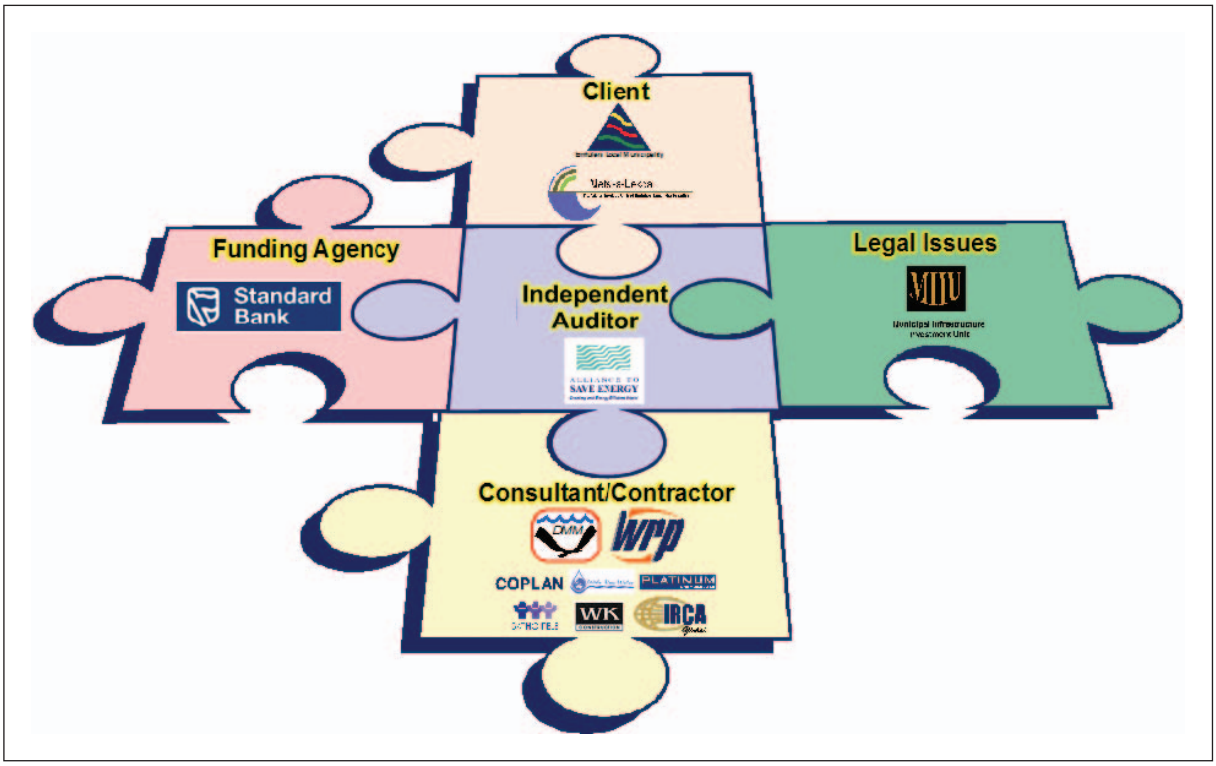
Unlike previous pressure management projects undertaken by the project team, the Sebokeng-Evaton project was completed as a small scale public-private partnership between the consultant (WRP in association with DMM) and Emfuleni Local Municipality. The project involved a complex jigsaw involving no less than 12 key role players as shown in **Figure 4**.

The key role-players were as follows:

- The client was Metsi-a-Lekoa which is the ring-fenced water utility formed by Emfuleni Local Municipality and managed by CEO Mr Sam Shabalala.
- The funds required to complete the project were raised privately by WRP and DMM through Ms Rene van der Westhuizen of Standard Bank.
- The establishment of the contract on which the project was based was funded and facilitated by the Municipal Infrastructure Investment Unit (MIIU) and Metsi-a-Lekoa, with considerable support from Mr Mike Rabe of the Alliance to Save Energy's Watergy Programme.
- The consultant's team comprised the Gauteng based WRP Pty Ltd in association with DMM. Additional specialist support was provided on the structural design by Platinum Consultants, and on the conceptual design by Coplan. In addition Mr Tim Waldron , the CEO of Wide Bay Water in Australia acted as a specialist reviewer. Other team members include IRCA (Occupational Health and Safety), Batho Pele (community awareness company) and WK Construction (main contractor).
- Finally, the overall auditing of the savings on which the payments are made on a monthly basis to the consultant is undertaken by Mr Mike Rabe from the Alliance to Save Energy. The inclusion of

an independent and completely neutral auditor was the missing piece of a complex jigsaw of organisations. Many previous PPPs have failed due to the absence of a technical auditor and in this case the project team was very fortunate to enlist the services of such a person at no cost to the project through the USAID's Watergy programme.

Figure 4: public-private partnership Model developed for the project



The Installation

From the outside, the installation is unimpressive and similar to a large concrete box – 10m long by 10m wide and approximately 5m deep. Inside it contains the various pipes and valves required to manage the water pressures into Sebokeng and Evaton as shown in Figures 5 and 6. Since leakage is driven by water pressure, any reduction in pressure, even if only for a short period each day, will result in lower leakage as well as fewer new burst pipes. If water pressures can be lowered significantly during the off-peak periods (especially at night) then very significant savings can often be achieved.

Figure 5: Plan layout of the Sebokeng/Evaton installation

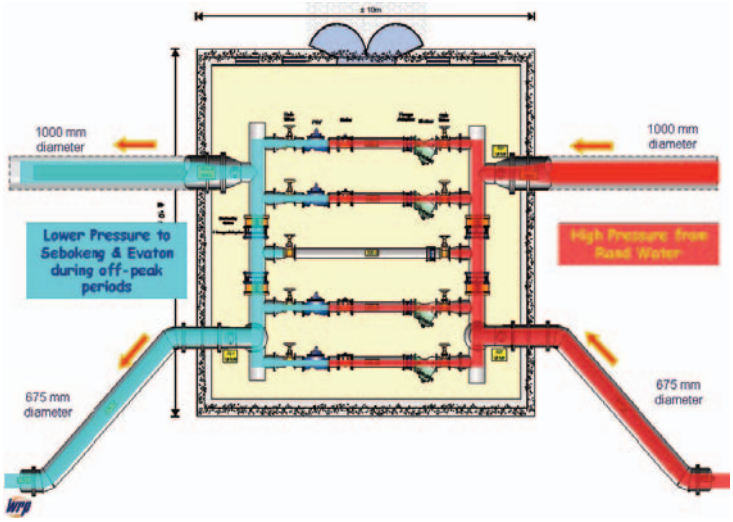
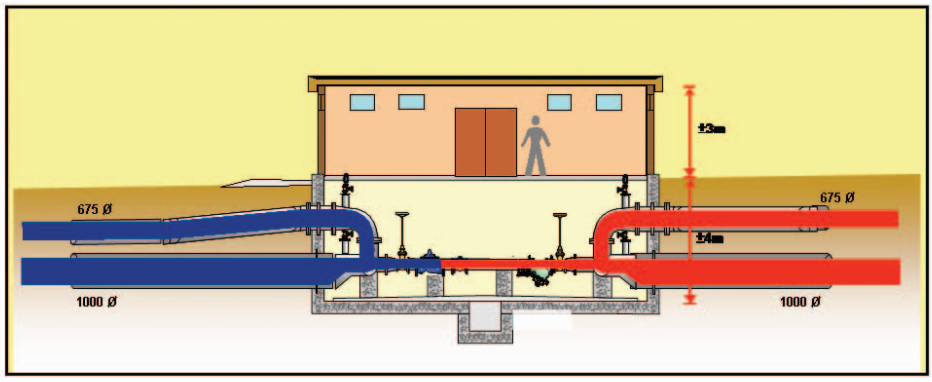


Figure 6: Elevation layout of the Sebokeng/Evaton installation



Financial Model

The funding for the project was provided by the project team through normal bank loan sources from Standard Bank. This is an unusual approach but one which was effectively forced onto the project team due to the inability to secure any form of development funding from other institutions. Once again, the size of the loan (R5 million) was considered to be too low for any of the large funding agencies to consider and the project team was faced with the option of cancelling the project or funding the project in a private capacity.

While the key members of the consultant's team (WRP and DMM) funded the complete project (capital works and professional fees) on a personal basis, payment is made by the client to the consultants on a monthly basis and in accordance with the savings made. If no savings are made, the client has no financial obligation of any nature. From the client's viewpoint, this project was completely free from risk since even the capital costs were covered by the consultant's team.

In this particular case, the payments made to the consultants team are based on 20% of the savings achieved with an additional safeguard to the client of a monthly "cap". The "cap" is specified in the contract to ensure that the total payment to the consultant's team does not exceed an agreed limit – in this case, the "cap" was set at 20% of the total water use. In other words, the maximum payment that can be made to the consultant's team is 4% (ie 20% of 20%) of the total water bill. This formed the basis for the financial model which was considered both fair and equitable by both the client and the consultant's team.

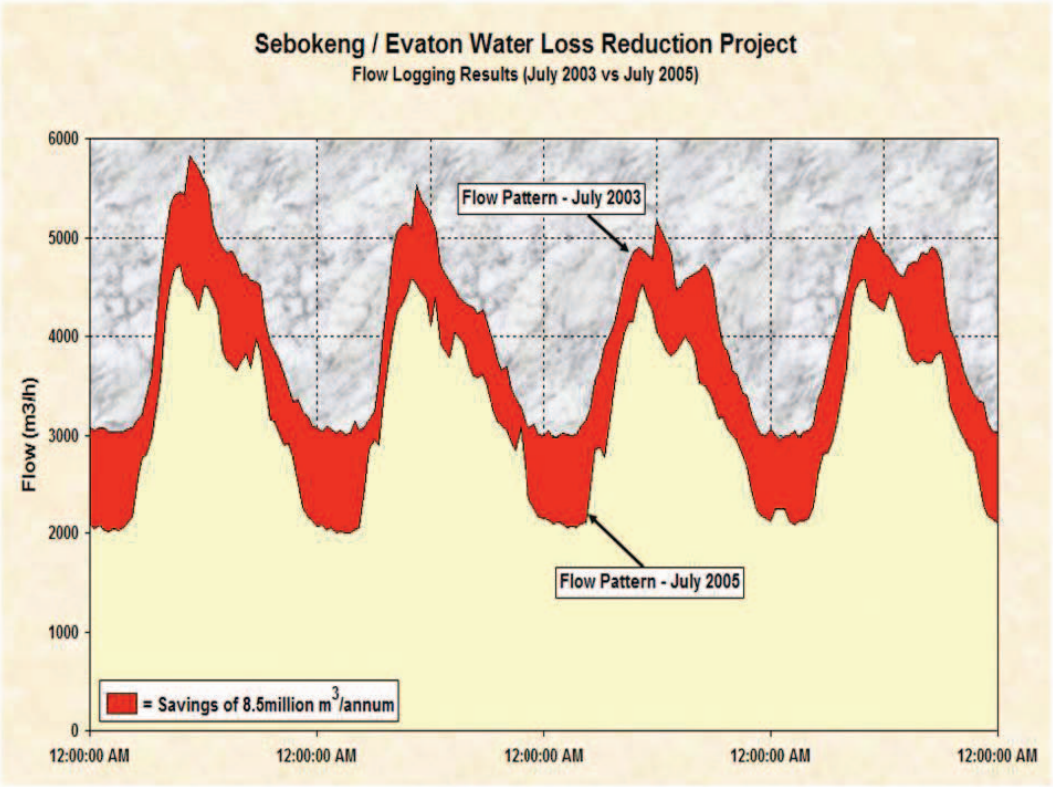
It should be noted that based on expected savings of approximately 15%, the installation will have an effective pay-back period of only than four months based on the total savings and the total costs. The pay-back to the consultant's team will be between 15 months and 30 months depending upon the savings achieved as well as the maintenance costs and prevailing interest rates. It is important to note that the consultant's team must operate and maintain the installation for a period of five years and that the savings paid by the Metro will cease after the five-year period has elapsed.

Results to Date (December 2005)

The project started on 1 April 2005 and was operational by 30 June 2005 – only three months later. The actual construction was only finalised in September when the installation was officially

Figure 7: Opening of the Installation by Director-General of DWAF and Mayor of Emfuleni

Figure 8: Initial savings from the Sebokeng/Evaton Project



opened by the Mayor of Emfuleni (The Honourable Peter Skosana) and the Director-General of the Department of Water Affairs and Forestry (The Honourable Jabulani Sindane) as shown in **Figure 7**.

The extremely short construction period was to some extent forced upon the project team by a very stringent legal contract which included severe financial penalties if the project was not operational by 1 July 2005 – the metro was very anxious to achieve savings at the earliest possible date.

The savings achieved in the initial five-month period up to the end of November 2005 represent a reduction in water purchases by Emfuleni Metro from their bulk water supplier of R8.5 million as audited by the independent auditor. It is anticipated that the annual savings will exceed R20 million once the installation has settled down and is functioning at maximum efficiency. The savings are reflected in **Figure 8.**

Conclusions and Recommendations

The Sebokeng-Evaton public-private partnership has exceeded all expectations and is a clear example of what can be achieved when the public and private sector work together in an environment of mutual trust and respect. Both parties have learned many lessons from this project and the results clearly justify the efforts that were required to make the project a success. Some of the key aspects of the project are outlined below:

- Public-private partnerships can be small scale projects and need not be the typical "mega projects" normally associated with PPPs.
- Funding for such projects remains a key constraint and one that has not been addressed. Very few consultants will be willing or able to take on financial risk for such projects. Those who are able to do so may only be able to find appropriate security for one such project and may have to wait until the first project has been settled before tackling another project. This may result in delays to future projects simply because the consultant cannot source appropriate funding.
- The "Red Tape" associated with the funding of such projects is horrendous and delays new projects by many months if not years. Even with a normal bank loan, the funding for the Sebokeng-Evaton project took more than five months to secure.
- It is important that the lawyer drafting the legal contract takes the interests and concerns of both parties into account. If the lawyer is only representing one of the parties, then the process will take longer than expected to complete as the

other party may have to enlist the services of a second lawyer. Once again it is important that there is a high level of trust between the client and the consultant or the project may fail.

- Risk-reward contracts need not be 50/50 type projects and the example discussed in the paper was an 80/20 project in favour of the public entity. Without such a weighted distribution of the savings, the Emfuleni Metro may not have considered the project to be in the interests of its customers. The selection of the split in savings is a critical element of any risk-reward contract and requires very careful planning and preliminary investigations. Both parties must be completely satisfied with the outcome for the project to be successful.
- The inclusion of a "cap" on savings is an essential element of any risk-reward contract to provide the client with the security that the consultant will not be overpaid for its services.
- The use of an independent auditor is a key element to any risk-reward contract. To date there have been no disputes or concerns from either side and the independent auditor has been a critical component to the success of the project.
- By introducing a five-year operation and maintenance period, the client effectively ensures that the savings will be maintained. The consultant must ensure that the savings continue throughout the contract period or it will receive no payment. In effect, the client is paying approximately 10% per year of the savings to ensure that the savings are sustained and that the other 90% (plus) continues to accrue to the Metro. After the five-year period has elapsed, it is likely that a new contract may be awarded for another few years – the savings are so large that it would be foolish to risk losing 90% in an attempt to save 10%.
- The installation became the property of the client on the date of its commissioning. There would be no sense in the installation belonging to the consultant since 90% of the value could not be dismantled and taken away. By passing the ownership over to the client on commissioning, the client has greater trust in the consultant and there is no risk to the client that the consultant will try to decommission the installation for any reason.
- Both client and consultant must have mutual trust and respect for each other. In the case of the Sebokeng-Evaton Project, the consultant proceeded with the detailed design and tendering process although the legal document had not been completed.
- The legal document took approximately six months to complete while the installation took three months to commission.
- Under normal circumstances, such an installation would have taken significantly longer to commission. In this case, due to the pressure of the legal document and the fact that the consultant could select the contractor without having to accept the lowest tendered price, it was possible to use the best contractor and not necessarily the cheapest.
- The greatest risk to the consultant is not necessarily that the savings are not achieved but rather that the client does not pay the agreed savings. In the case of the Sebokeng-Evaton project the support and honesty of the client has been key to the success of the project.
- The project is the first phase of a long-term plan to reduce wastage to normal levels and improve the overall level of service to the community. One of the unexpected benefits from the project has been the identification and repair of many water network problems which were previously not identified. As the pressures were lowered in some areas, problems were experienced by some residents which should not have occurred and were due to missing or blocked water pipes. As these problems were identified and addressed, the water supply system now operates in a more efficient manner and many residents now receive higher pressures and a more reliable supply. This is an additional and unexpected benefit from the project.
- Care must be taken when considering such projects to ensure that the consultant does in fact carry some risk as was the case in the Sebokeng-Evaton project. Had the funds been provided by a development institution as opposed to a normal bank, the risk component may have been removed which would have resulted in a "reward-no risk" type project. The risk component is required to ensure that the consultant remains fully committed to the project.

Acknowledgements

As mentioned previously the project has been a true team effort involving many organisations and individuals. The success of the project is largely due to careful planning and design, proper execution and mutual trust between the client and project team. In particular, the following individuals contributed significantly to the project:

Name	Organisation	Involvement
Astrup, Brad	WRP Pty Ltd	Project documentation, site supervision and contract management.
Brown, Paul	WK Construction	Contract manager on behalf of contractor.
Duvenhage, Hennie	Emfuleni Local Municipality	Technical support from client.
Fourie, Niel	Platinum Consulting	Structural design including reinforcement details.
McConville, David	Coplan	Mechanical design.
Mckenzie, Ronnie	WRP Pty Ltd	Project conception, development of risk-reward contract.
Magugumela, Danai	MIIU	Support for legal contract.
Mngune, Darius	DMM cc	Environmental impact assessment as well as co-ordination and implementation of public participation process.
Mohajane, Potso	Emfuleni Local Municipality	Management and coordination of all public participation and information aspects of the project on behalf of the client.
Mostert, Hein	WK Construction	Contract manager on behalf of contractor.
Neethling, Dries	WK Construction	Construction manager for all structural work.
Nolte, Hugo	Rand Water	Technical support on shut downs of main pipelines.
Rabe, Mike	Alliance to Save Energy's WATERGY Programme	Support on development of project contract plus continuing support as overall project auditor.
Shabalala, Sam	Emfuleni Local Municipality	Initiation of project and overall project leader for client.
Van der Merwe, Ben	Emfuleni Local Municipality	Technical support from client.
Van Niekerk, Louis	IRCA	Site safety monitoring and reporting.
Van der Westhuizen, René	Standard Bank	Facilitation of bank loan to WRP for the project.
Wegelin, Willem	WRP Pty Ltd	Detailed design, project management and commissioning.

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Towards the application of Infrastructure Asset Management for sustainable communities

Nigel Lowe – Technical Analyst, DBSA

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Development Bank of Southern Africa

Towards the application of Infrastructure Asset Management for sustainable communities

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Abstract

The municipal sector, in providing services for their communities, is grappling with many challenges as well as continuing change. Are those challenges being resolved and are changes being made in optimal ways? Even internationally this has been questioned and practices have been developed. Practices such as those offered by 'Infrastructure Asset Management' (IAM) can contribute to making sound decision-making. Coherent long-term IAM Planning (and plans in particular) could greatly contribute to better management. Such practice is not yet broadly applied in South Africa.

This paper is aimed at raising awareness and offering the basic IAM 'tools' to promote its application, especially as a useful tool towards sustaining services for local communities.

Introduction

Sustainable communities depend on the sustained provision of effective essential public services especially water, electricity, roads and stormwater infrastructure, waste disposal etc. The key public authorities for such local services are municipalities. Most people are all well aware of the seemingly increasing vulnerability of municipal services besides all the other demands and challenges they have to face as well. Service sustainability is definitely in question, things are changing and fortunately international practices exist that can contribute.

Traditional practice allowed municipal service departments to provide new infrastructure (assets) with some level of consultation but to operate those to a large extent at their own discretion. They could operate such assets and or services with little input from interested and affected parties. That is no longer the case or preferred practice. Even beyond municipalities, public service authorities and providers are required to be much more visible and accountable. They need to rather for instance communicate their situation, the implications of problems, the scope and impact of proposed solutions. They must also motivate and compete for resource allocations, as well as show that optimal use is being made of what assets and other resources is available to them, etc. This trend is also concurrent with current public sector (and associated professions) reform and transformation. The notion of the 'Integrated Development Plan' (IDP) and other sectoral plans, like for water services, is also consistent with this.

Therefore municipal service delivery will also not escape this trend. But are service departments really integrating themselves into such new practices of service management? The lack of operational integration into the IDP is a clear indication that there is a long way to go. Municipal responses still tend to be short term, isolated and fragmented. At the same time, 'Infrastructure Asset Management' (IAM) practices can give visibility, focus, ownership and wider effective support to the wide range of significant challenges facing municipalities, their service departments, their customers and even their stakeholders like the Development Bank.

Broad interest in IAM from many quarters seems to confirm that this international 'best-documented' public sector management practice not only fits the above situation but offers the approaches, principles, processes, tools and techniques that will help municipalities. IAM has been appropriately recognised internationally as the 'public sector's boot-straps (self-help) management solution'. That seems to have been confirmed – how about a public utility, one of the originators of IAM, being 'forced' to declare a 'public dividend'! Granted though, it took them more than 10 years to get there – IAM is not a 'quick fix'. But even so, the South African public sector and related professions seem to be bound up in current transformation to give IAM due high-level attention. IAM is not theory but practice. The primary problem seems to be around application of IAM. So the express aim of this paper is to promote a basic understanding towards wider application of the IAM.

The purpose of this paper is therefore;

- To share those insights and illustrate how IAM could be applied within municipalities;
- To sensitize more people including DBSA colleagues to appreciate IAM themselves; and
- To promote more the South African application of IAM.

To achieve that, this paper firstly introduces IAM, engaging the subject at an operational level by offering 'Some Basic IAM Elements and Processes' in quite some detail. It then confirms 'IAM's contribution towards Sustainability' followed by illustrating its application with 'a typical municipal example'. It then offers a section on 'getting started' and ends with 'conclusions'.

Some Basic IAM Elements and Processes

The information about IAM is primarily available through access to the 'International Infrastructure (Asset) Management Manual'[1], which is a 300 odd page, very well structured, modular, loose-leaf manual. The secondary source for IAM is an Advisory Note compiled for the World Bank called 'Strategic Municipal Asset Management'[2]. These are based on the experiences largely from New Zealand. Our South African situation suggests that we do not have the same capacity and need to find simpler ways to introduce IAM in a more diverse and challenging municipal environment. A first very useful tertiary locally developed source is the ASALGP 'Managing Community Assets' Handbook[3] provided as a guideline for provincial and municipal staff particularly towards amongst others, improving asset ownership and maintenance.

These sources have been studied by the author and an understanding developed and indirectly tested through ongoing interactions with a range of officials and municipalities in the last three years. A basic point of entry for, and approach to, IAM has thus been identified, comprising the following IAM elements and processes for further attention and proposed application.

The structure of the subsections that follow is also intentional. The 'basic elements' are firstly related to operational levels, perhaps the most vital, broadest level of necessary appreciation. These are dealt with in some detail. Secondly, the underlying basic process is re-emphasized. Thirdly, those related to 'cyclical management processes' and the final fourth subsection exemplify the 'directing and reporting process'. None of these can be exhaustively described in this paper. If necessary, readers are referred back to the above references.

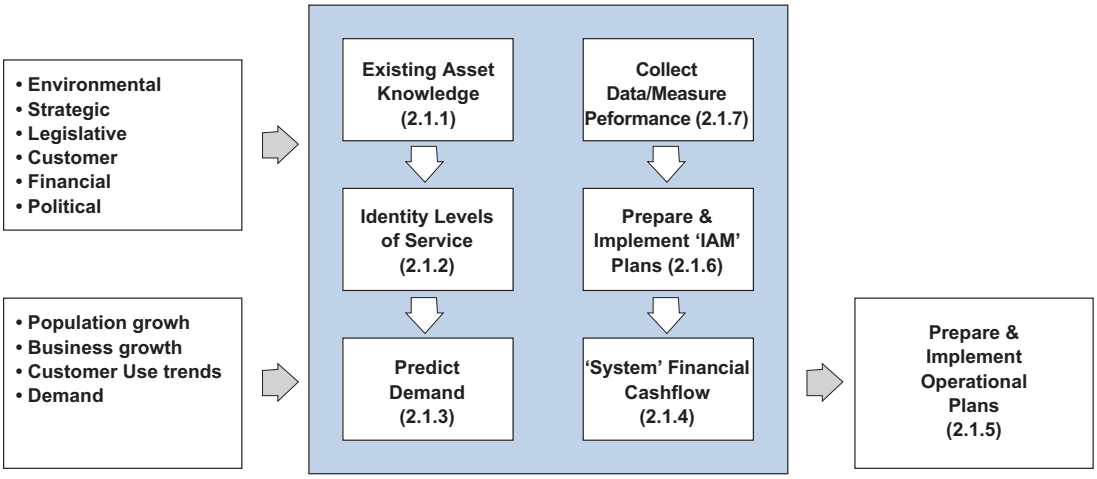
Basic Elements to Apply IAM

Seven basic elements are firstly identified and concisely described thereafter and the particular subsection numbers refer. It is vital to apply Infrastructure Asset Management in a coherent form. The main intention is to merely illustrate the content and logical connection of the basic elements (see Graphic 1 below).

The elements of the Basic IAM Process are described as follows;

Knowledge of asset and service responsibilities: Any municipal service department must have a sound knowledge of its responsibilities linked to its existing infrastructure assets and the services

Graphic 1: The basic IAM process



supported as well as, especially in the South African situation, the outstanding backlogs of access to such services. It is argued that the latter cannot be ignored or sidelined otherwise we are guilty of perpetuating the artificial divide between development and management, expectations and affordability, etc. These inputs are usually represented in the form of a fixed and moveable asset inventory and backlog service schedules. The latter, for instance, are usually tallied on a household basis.

Appreciation of asset needs and service offerings as well as key determinants:
In a wider sense than the last element, existing assets require a broad appreciation by the responsible service department. This informs them of their operation, maintenance, and condition relating to anticipated rehabilitation, replacement, etc as applicable. This is an area for ongoing attention and is tied up with the institutional memory and the accumulation and maintenance of records of any municipality. Particular existing fixed assets, as complete functional systems, will accordingly offer particular services to customers that can be similarly appreciated. In the situation of backlogs for access to services, various key determinants (for example, population, consumption figures, affordability levels and limits, etc.- where possible based on actual supply and demand records) also need to be appreciated. These inputs should enable any municipal service department to appreciate the impact and implications of potentially providing that service.

Ability to predict 'demand' and forecast 'supply' (access to free services):
The information from the previous two elements provides the inputs for the technical department to consciously predict demand for 'paid' services as well as forecast the obligation to supply for 'subsidised' services. This is quite contrary to conventional practice which merely assumes or allows estimates for demand to be made on global figures and gross assumptions. Those types of practice are now believed to be outdated, inefficient and too costly in terms of consumption of all sorts of resources but there are clear related management implications. For example, such new practices will not be welcomed by slack officials, or on the other hand, ease unrealistic management expectations on understaffed departments.

Ability to generate income and required expenditure cashflows of physical systems:
The previous demand inputs generate the income cashflow. While this is an arithmetic exercise, this element portion 'shifts the management gear' further, in that it relates to explicit interlinkages between at least technical and financial departments. Demand might be somewhat predictable but it is not entirely within the control of any officials. Technical officials can develop scenarios of demand and then apply tariffs to generate income cashflows. To validate their appropriateness, however, access to and some interaction with financial officials is essential.

The second part of this element is rather the expected optimal requirement of the physical system to consume financial inputs itself – these are the predicted expenses required to operate, maintain and sustain the assets and services themselves. Scenario management and validation as just mentioned are also applicable but this time on the actual cost side.

It is at this stage that significant deviations between such 'rough modeling' and 'actual' quantities, might receive particular attention to firstly highlight potential input errors. Once errors are excluded, then such deviations do rather reflect particular valid systemic challenges, identification of causal factors and with further investigations and confirmation, the root problems worthy of specific IAM attention. Obviously the skill is for municipalities to design such analysis in line with accessible key information, and to conduct that analysis as simply as possible. It is then also useful to recognise the significance and therefore the priority of all valid challenges. Large infrastructural fixed-asset systems are not, and never will be, fine tuned systems like those in industry or manufacturing but that does not remove the need to account, minimise losses or wastage and optimise assets or service delivery returns.

Preparing and implementing operational plans:
All challenges (including issues and problems) can now in this element receive particular appropriate planning attention. Some challenges, by their inherent nature, might be quite distinct and relate to a particular traditional discipline - be it technical or financial (for example physical losses or billing errors respectively). It is however highly likely that many solutions might more appropriately be multi-skilled such as those that lie in the domain of communities (eg. non-payment). Other challenges might naturally

involve more than one party, or be of such prominence and significance (eg. service delivery outsourcing) that stakeholders as well as just customers might need to be actively involved. There is a potential spectrum of responses from simple to complex, with coordination and integration becoming increasingly important for the latter.

This possible range calls into question, and will challenge, the ability of the municipality to mobilise, organise and assign its resources to take potential solutions from an idea to necessary levels of planning. If planning is done well, execution is then easy and can rather be delegated, assigned or even outsourced. Related to this is the composition, leadership and oversight of that planning.

Planning is expected to produce at least traditional operational (capital and operating) plans including:

- Physical and financial plans; and
- Organisational and human resource plans.

There is a general indication, however, especially from the author's experience, that too many of the current municipal solutions are being restricted to this domain by omitting other sorts of plans at other levels. For example, capital projects being planned whereas root problems are rather internal, like changes in management of operations. For an extreme but increasingly common example, challenges within many municipalities are so acute that service disruption is no longer an isolated occurrence. Solution options must therefore include things like multi-year operational recovery plans or tariff increases (financial plans) or service delivery changes (institutional plans).

Ability to prepare and implement IAM plans:

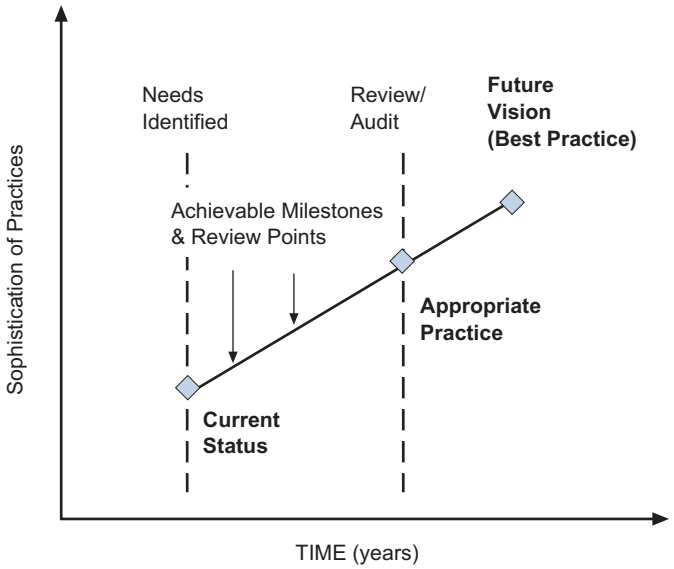
Sound, appropriate, effective planning is a critical element for IAM. IAM Planning offers a way to systematically deal with such a wider range of solutions – as alluded to in the previous subsection – including strategic and tactical levels. It is these that are unique and receive special attention in Graphic 1, besides typical traditional operational plans. Three particular types of somewhat interrelated IAM plans can be identified as follows:

- Infrastructure Asset Management Plan;
- Infrastructure Asset Management Communication Plan; and
- Infrastructure Asset Management (Practice) Improvement Plan.

The first is a long-term strategic level plan. The latter two are more at a tactical level and can be seen as components of the first but are separated for purposes of ease of explanation.

The primary output of IAM Planning – the Infrastructure Asset Management Plan itself – is a unique and powerful instrument. Critically, it involves concepts of distinct asset identification, valuation, condition and performance as well as how those change over time – the age, effective life or life-cycle of the asset. These are complex concepts and while they are recognised as long-

Graphic 2: The IAM Improvement Plan



term desired asset attributes, they are all suggested to be open to simplification and qualification in order to make IAM more accessible and less demanding, especially in our South African context.

For instance, International IAM gives particular prominence to development and use of life-cycle strategies as key components. While this is an appropriate long-term goal, it is suggested that only a due sensitivity initially to asset lifecycle issues, could be sufficient until IAM is more established. That sensitivity would be to particularly avoid inappropriate actions. Similarly, assets do not need to be initially detailed beyond major components. Neither does asset valuation need to be initially rigorous but rather should take due cognisance of inherent value that might only be initially crudely estimated. Asset conditions and performance determination are particularly demanding and therefore, service (rather than asset) performance is rather initially suggested to be indicative.

Secondly as an instrument of communication, the secret of international IAM experience seems to be intricately linked to the effectiveness and efficiency of communication with all interested and affected parties. Some form of communication plan for stakeholders and users (customers) is called for. One New Zealand source states unequivocally that an IAM Plan is primarily a (strategic) communication document as it must necessarily summarise all other internal plans. The power of such a document should not be understated. One incentive to local government is that this type of approach to reporting and communicating might just help satisfy other spheres of government to make them "let municipalities be and do" as they are mandated in the country's constitution.

Thirdly, another particularly useful concept is the IAM (Practice) Improvement Plan – see Graphic 2 which illustrates and describes it. In applying this concept municipalities are able to:

- Define the targeted activities;
- Establish current status;
- Confirm appropriate practice;
- Identify business priorities for each activity;
- Identify tasks to close the gap; and
- Set the improvement programme and assign resources and responsibilities.

Planning without implementation is only a dream – so what is planned must be implemented – implementing plans whether strategic, tactical or operational is no different. This applies to particularly this and the former subsection. Implementation will most likely reveal how appropriate and good the planning was. But municipal service planning can never be 'set in concrete' – there will always be unknowns and variables to be dealt with, together with their implications, adequate supervision, therefore, is essential.

Ability to measure results and collect data:

This is a second critical element for IAM after 'Planning and Implementing'. Beyond effective communication, IAM promotes and is built around good governance principles so that accountability,

transparency and credibility are also implicitly desired outcomes. What can be reported, what can be managed, if there is no effective measurement?

Critically also - to reconnect to the original starting point in this paper - what do those measures indicate of what might need to change further in the first element identified above? Of note, how do those compare to other municipalities? What might that reveal? This is making use of benchmarking.

The importance of this basic element to applying IAM is that the whole approach is based on continuous refinement – hence the importance of collecting data and continuing to do so. It is only in filling the information gaps over time with more and more factual information, that there can be increasing confidence in IAM and in what analysis of that data is indicating. This is taken further in subsection 2.3 and Section 3.

The Basic IAM Process

The above elements are logically and sequentially linked in Graphic 1. It is the coherency and systemic interconnectedness of the elements that is another key point. Rather than inconclusive linear functional planning, the inherent objective is to ultimately relate and reduce any inputs to measurable outputs. One can thereby identify the effectiveness and efficiency of fixed, often hidden, large and extended physical supply, reticulation and as appropriate collection systems (for example, waste water). Such complex service systems depend on the utilisation and performance of all the asset components and associated resources underpinning such services.

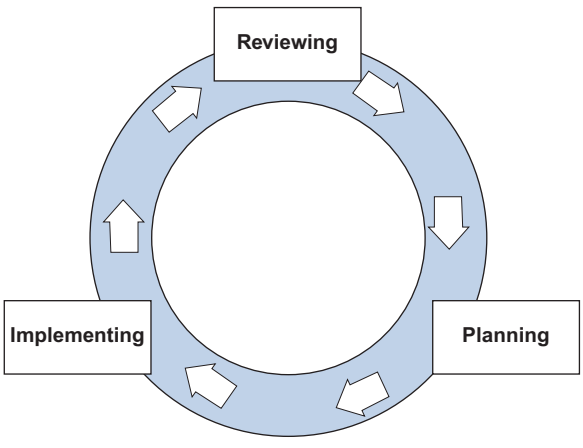
IAM should be based on sound information but this is a critical initial constraint in most municipalities. Rather than this being a 'fatal flaw' such 'gaps' illustrate, as but one example, the inherent alternative approach that should rather be followed. This is where the process comes into its own at least at two levels. Firstly, without sound information, particular judgment and discretion is initially called for to make broad assumptions as necessary, to be tested and validated thereafter. This could happen for instance, through development of control infrastructure and management systems to gather, record, monitor and manage complex technical systems. Secondly, confidence in key information and or related assumptions within particular basic IAM elements should be exposed and fully tested in the course of completing and applying this sort of cyclical process. If after collating and compiling, any apparent challenge is still not standing up to scrutiny, there is every reason to complete further validation processes until the challenge is either refuted or there is 'sufficient' necessary confidence to act upon.

Another key point is that with a basic IAM cycle like this, there are no predetermined particular starting or ending points. These depend on orientation and position of initiation of IAM. The cycle can in theory be entered from any element. For instance, but somewhat unlikely - in an absolute crisis, if a sufficiently high-level communication gave an explicit commitment to implement an IAM approach to respond to that crisis, it might secure sufficient confidence to proceed thereafter with the rest of the elements. The author as a technical analyst would suggest the order as described in the previous subsection to be most appropriate. A financial person would probably choose to start from their point of comfort - probably financial inputs. As good a starting point as any, is probably where a challenge is first confirmed.

The Cyclical Management Process

The logical connectedness of the Graphic 1 can be taken further. IAM is underscored by the ability of municipal service departments to manage their responsibilities and continue to improve their own performance of their assets and related services. The following Graphic 3 refers.

Graphic 3: The Cyclical Management Process



All elements of IAM including all plans, implementation and operational activities can follow this type of cycle. This applies to all management activities and relates to the 'action learning' approach of 'plan, do, review and reflect and then re-plan'. Progressive learning and incremental

improvement is an inherent characteristic for IAM. It also applies to the concept of the IAM Improvement Plan in Graphic 2 where targets might continue to be refined and reset over time.

The positioning of IAM plans in the context of other South African plans (for example Integrated Development and Water Services Development plans) is one that must still sort itself out. This is not viewed as a conflict issue but rather an incorporation and / or alignment issue. The way forward is suggested to concentrate on the management of assets and services rather than the mere name of any particular plan.

The Directing and Reporting Process

The final graphic which brings this all together is the Directing / Reporting Process in Graphic 4. What is particularly represented in this graphic is;

- The need and willingness of municipalities to engage and report to all interested and affected parties;
- The strong role of municipal leadership; and
- The pivotal role of a specifically constituted IAM team.

What is particularly notable is that this parallels the formulation and implementation of a municipal Integrated Development Plan. There should accordingly be little problems to making IAM an inherent component of that process particularly on a service centred basis. Also notable from Graphic 4 is the broad inherent visibility and accountability that IAM then facilitates and enables within asset and service management.

3. IAM's Contribution Towards Sustainability

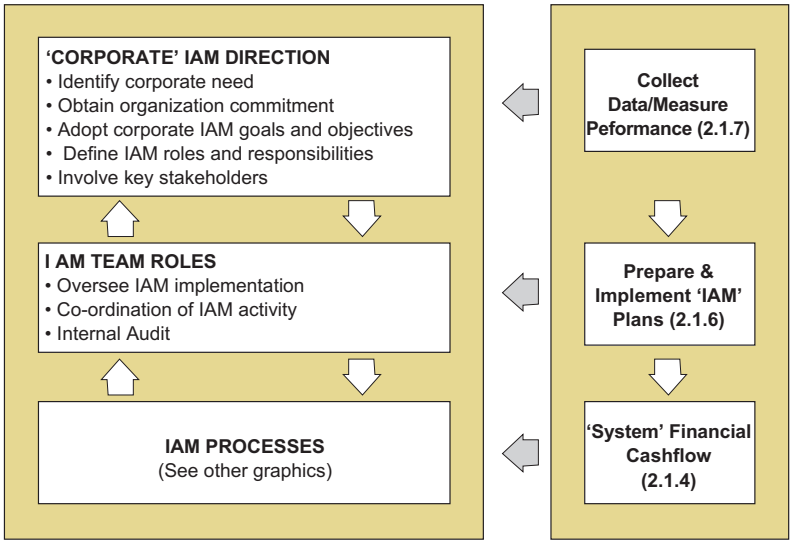
Having identified and given an explanation of IAM, there are still some additional connections to be explicitly made as to how IAM contributes to sustaining communities. For those familiar with provision and management of services and assets and achieving sustainability, this section could be superfluous.

Firstly how does IAM sustain infrastructure assets? In short, it doesn't – directly that is. Rather IAM clearly acknowledges that every asset has a finite life and gives visibility to the age, condition, performance, care and remaining life in which that asset can be reasonably be expected to support the service it provides. As such it completely overturns a broad general public presumption that significant fixed assets once provided will continue to perform their function just about indefinitely. Rather IAM fills out that beyond mere infrastructure provision, the life of an asset might, depending on its type and nature, be extended through additional care and protection (particularly effective maintenance), periodic 'rehabilitation' (rebuilding) or replacement of some its components. But ultimately even such large assets cannot merely continue to be viably sustained and probably warrant their complete replacement. In some case, such defunct infrastructure can be scrapped or abandoned or if essential for other reasons, be removed and disposed of. Large service infrastructure like roads, dams, etc is expensive to provide in the first place. What IAM does is it augments the traditional limited view of merely those provision costs together with all the others as expected in the remainder of the asset's life, as well as all the choices and decisions that can and should be made along the way, in the duration of that life.

IAM rather gives focus and attention to the reason for the existence of that infrastructure – that is the service it provides and the way that such a service can and should be sustained. As was indicated earlier, services in general generate a return and in some way or another some kind of income (or revenue) is also generated. What it clearly establishes is that local service authorities (often municipalities) have to recognise (as the asset owners) is that all their infrastructure asset responsibilities (and costs) are being adequately recognized and provided for into the future if their public services are to be sustainable. All income and all costs have to be identified and arrangements put in place so that most service eventualities can be reasonably covered. Then there can be confidence that essential public services should be sustained into the future. As such assets and services are nearly inseparable and the two words are just about synonymous in this context.

Also it is not realistic and reasonable to have an expectation of those arrangements being static, stable and secure and all laid out into the longer term. Services need to be as adaptable to the changing needs of the communities they serve and therefore the word 'management' within IAM is key. IAM therefore really helps to underpin and assist with sound decision-making in the course of ongoing management of services. Because it is users or customers that are effectively paying for services and municipalities are custodians and stewards of public assets and resources,

Graphic 4: The Directing and Reporting Process



sustainability is also enhanced in the way that IAM is aligned to good governance and to strengthening democracy. In other words, enabling people to, where possible, influence and exercise their own choices relating to services. The point to be made is that there are many decisions to be made in the course of an asset's life. Some could for instance, be significant enough to lead to marked service tariff increases. IAM then provides the basis to effectively engage stakeholders and users to lead the way to making tough decisions potentially a bit easier.

All the above presupposes a somewhat different orientation to all those wishing to utilise IAM. The most important of these are stated (and or even re-stated) hereafter. Infrastructure Asset Management will promote sustainability because it;

- Has a long-term view but with short-term results;
- Is motivated by unique situations - municipal, community, asset, service, etc;
- Presupposes municipality management is actively 'shaping its own destiny';
- Implies more intensive management as well as broad effective teamwork is essential;
- Is not just 'supply' but also confirmed 'demand';
- Promotes simplicity without immediate perfection (80/20 planning principles);
- Facilitates good governance and broader, sound decision-making; and
- Is additional, incremental, seeking after excellence.

4. A Typical Municipal Application

An example can be any municipality with significant physical basic service development plans (eg. housing programmes) but insufficient funding related to organisational and human development as well as sustaining other existing asset and service responsibilities. Considering the above IAM elements and processes, particularly the basic elements and processes in graphics 1 and 2, there are imbalances creeping in with long-term potential consequences. Examples of those imbalances would include for instance:

- A further immediate drain on available municipal income if contribution to income and demand on expenditure is not analysed, monitored and managed appropriately. Issues include for example – 'where are funds to come from?' and 'who pays?';
- Increased service responsibility and administration/pressure on existing management, staff, other municipal assets and resources such as bulk infrastructure and sources; and
- Increasing difficulty to absorb additional operation and maintenance demands, more deferred maintenance, less effective and efficient services, and the likely sacrificing of an expected asset life.

If such a scenario is sustained, then asset and service performance can be jeopardised and income will also be directly affected, making recovery even more difficult and extended. The key contribution of IAM is to rather consider assets and services systematically, help maintain balances and through measurement, to benchmark and improve performance and resource utilisation.

5. Getting Started

If an interest exists for a municipality to apply IAM, then the following is suggested as one way to mobilise and look for early results around which more might then be established and developed.

Firstly, start from where the municipality actually is. Start with either water and sanitation or electricity services as most appropriate services for IAM first application. To be even more cautious, IAM might also be confined to a particular spatial locality such as one town's service provided that all related information can be similarly isolated from an entire municipality. But this is not encouraged. Then benchmark where those assets and services actually are then:

- Measure what can be measured to establish as far as reasonably possible the effectiveness and efficiency of services;
- Concentrate on 'gaps' – closing or bridging those;
- Complete an initial elementary but complete a 'business-based' review or assessment to conservatively pinpoint initial potentially most valuable applications of further IAM activity; and
- Set some initial potential application targets – short and longer term.

Secondly, win over 'the others' and resources needed to 'make a start'.

- Even if it is only just measuring asset and service performance to factually report service and asset trends.
- Keep firming up, motivating and communicating the best initial application until an IAM initiative can be started.
- Ensure there is a political champion and make IAM Planning a strategic (multi-year) development project of your IDP.

Thirdly, do it, prove it. Develop and implement a simple IAM Plan. Get a review or audit of the Plan once it is implemented, preferably from an independent source. Communicate success and failure, strengths and weaknesses, opportunities and constraints. Then improve incrementally towards targets and from appending further IAM applications with greatest returns. Keep going.... improving, re-planning, implementing and reviewing probably on an annual cycle.

But here are a few contrary 'tips' – IAM shouldn't get started this way...

- Don't source what will not be used. For example, only get and use the information, IIM manual, external experts and funds, if and when you really need them.
- Don't sustain external dependence especially where it is management related.
- Don't outsource what cannot be defined, overseen or managed. For example - develop IAM IT-based systems only as essentially needed.

6. Conclusions

Following on and in conclusion of all of the above, IAM is appealing and is worthy of more application as it is:

- Sound, logical and objective;
- Coherent;
- Systematic yet can still be basic;
- Defines municipal asset and service performance;
- Promotes and is advanced by 'benchmarking';
- Helps identify the full range of service delivery issues including incentives and service management options; and
- A key tool towards supporting sustainable service delivery.

References

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3. Australia South Africa Local Government Partnership's 'Managing Community Assets' Handbook (Nov 2004).

The DBSA Knowledge Week

The local government resource centre

A DBSA response to the developmental challenges of municipalities

Graham Tate – Manager:
Information and Technology Services, DBSA

DBSA
Development Bank of Southern Africa

The local government resource centre - A DBSA response to the developmental challenges of municipalities

Graham Tate – Manager: Information and Technology Services, DBSA

I. Introduction

Much has been done by national government in terms of policy formulation and new legislation to steer and regulate the normalisation and development of local government. However, many challenges remain.

As a development finance institution, the DBSA recognises the centrality of local government in development. As such, it believes together with its partners the Department of Provincial and Local Government (DPLG) and the South African Local Government Association (SALGA), it can assist the municipalities to meet the challenges they face to fulfil their developmental responsibilities and duties. It further believes that the establishment and operation of the Local Government Resource Centre (LGRC) can contribute significantly towards the achievement of this goal.

2. Current Challenges

It is generally accepted that local governments are facing numerous challenges, especially in respect of the implementation of their development obligation placed on them by the Constitution. Research indicates that if municipalities are to become the country's primary development agents, which are able to meet the challenges while reducing poverty and clearing the backlogs, they must be supported and strengthened.

In this respect, the President has expressed himself as follows regarding municipalities during the launch of Project Consolidate at the National Council of Provinces at Kwazulu-Natal: "Before the launch of the project, an audit was done on municipalities, focussing on their capacity for service delivery and implementation of policies. This audit found that 136 of the 284 municipalities have little or no capacity to service their areas and therefore need urgent support to improve their delivery mechanism".

The poor perceptions of certain municipal residents have resulted in various civil actions in a number of provinces against poor service delivery. Newspapers are constantly drawing attention to the precarious state of some municipalities by for instance reporting that in one province the provincial government had to intervene in 68% of municipalities to improve service delivery and the competencies of officials.

2.1. How can municipalities be supported further?

Numerous initiatives are taking place, all with the same objective of improving the functioning of municipalities. This is taking place at all spheres and especially at the national sphere to steer and regulate the normalisation and development of municipalities. Many initiatives, often in conjunction

with donor organisations, are in the process of being planned or implemented at national, provincial and local levels. In addition, a number of other stakeholders such as the DBSA are also active in the area of capacity building.

However, a source of concern is the fact that in the process substantial duplication is taking place with the resulting negative implication on scarce resources. Initiatives are being planned or implemented at various levels without knowing or taking into account that something similar already exists or may be in the process of being developed by other institutions who also have the better functioning of municipalities at heart. To complicate the situation even further, it is sometimes unbelievable to learn of the many islands and silos of information and data on local government that exist all over the country and that no sharing of such information takes place.

As a result of interaction with numerous local government stakeholders it became clear that it would be of tremendous value to local government if **sharing of knowledge, pooling of resources** and **better cooperation** between local government stakeholders could become a reality. The DBSA and its partners believe that the establishment of a Local Government Resource Centre can contribute significantly to this ideal while at the same time considerably intensifying support to municipalities.

3. Project Objective

The objective of the **Local Government Resource Centre is to establish a one-stop support centre for municipalities that is directly accessible to all municipalities and other local government stakeholders through a virtual private electronic network.** In the process, a local government e-community has been established that will pool resources, share knowledge and cooperate to assist municipalities to function better. **The LG-Net is the network that, *inter alia,* carries the LGRC to the various municipalities and local government stakeholders.**

4. Project Description

Results of work and research that has been done and that could be of value to other local government stakeholders, are made available on the LGRC from where they could be accessed and used by others. This implies that it would not be necessary that people be paid or resources used over and over again to do the same work at different places. Furthermore, it would be possible to share information and data that the various stakeholders may have which would obviously prevent duplication.

The approach followed with the LGRC is a **practical** one. Instead of telling municipalities what to do, it rather focuses on **how** municipalities should do their day-to-day functions. Municipalities know to a large extent what to do, but the **how** is a major problem with many municipalities.

This implies that all major functional areas of municipalities are dealt with. Subject areas ranging from **administration** to **financial management** and from **procurement** to **performance management** form part of the LGRC.

The LGRC will ultimately have a wide array of functions that will be phased in over a period of time. Initially the outputs of the LGRC are the following:

- Results of research and work that has been done and which has worked, will be made available for utilisation by other municipalities.
- Support material, manuals, guidelines etc. that will assist senior staff and councillors to perform their tasks.
- Advisory services supported by specialist service providers to assist municipalities with problems they experience.
- Support with capacity building such as project/programme design and monitoring as well as supervision of capacity building interventions.
- The processing and provision of socio-economic data and information.
- The provision of models to assist municipalities with decisions regarding service delivery.
- Up to date news and developments that municipalities should know about.
- Management Information Systems including GIS.
- A chat room that will enable direct communication between municipal role players.
- Staff e-recruitment.
- Access to best practice guidelines and standard documents.

An area that creates a lot of interest is the provision of GIS layers of information that municipalities can access from the LGRC. A pilot project is being implemented in eight municipalities with the view to, *inter alia,* identifying with these municipalities what needs exist at local government level in this respect. A further partnership has been established with the CSIR, the Satellite Application Centre, the

State Information and Technology Agency and a number of other institutions, with a view to making layers of specialised information available that municipalities can use. This includes satellite imagery, ortho photos and aerial photographs as well as other information such as cadastral maps and topographic scanned images.

A panel of municipal experts are also on standby to support municipalities with anything that is not yet on the LGRC. This e-mail-based "live" **advice service** is known as the **Muni-Expert.** The support by the specialist service providers will be provided within 48 hours.

5. The Project Implementation Approach

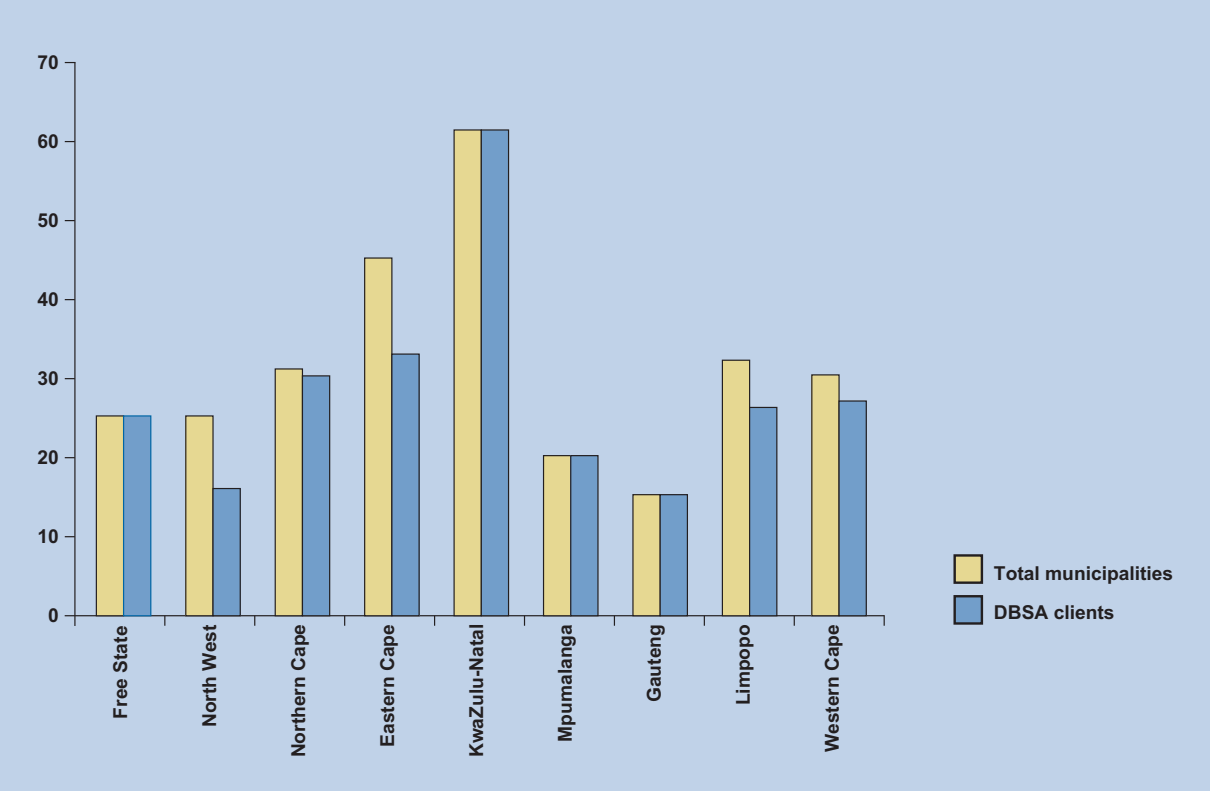
As a result of the development finance role of the DBSA and the fact that municipalities are the most important implementing agents as far as infrastructure development is concerned, local government is, as we know, an extremely important element of the client base of the DBSA. The following graph depicts the municipal clients of DBSA in the various provinces.

All Category A municipalities, some 88% of Category B and some 94% of Category C municipalities are clients of the DBSA. With a loan exposure to local government of R10,5 billion, it is from risk mitigation and an asset maintenance and management viewpoint, in the direct interest of the DBSA to support municipalities to enhance their functioning to become effective and efficient entities.

As a result of the emphasis on sharing, pooling and cooperation, partnerships amongst stakeholders are essential to ensure optimum support to municipalities. This has resulted in extensive interaction between stakeholders. These stakeholders include national government departments, provincial governments, the Municipal Demarcation Board, SITA and numerous others. Due to the fact that all stakeholders are extremely concerned about the well-being of municipalities, all stakeholders are interested to participate in the process of supporting municipalities.

A total of 21 municipalities were originally identified as pilot municipalities that have been connected to the LGRC. These municipalities are representative of the South African situation in the sense that they include small and bigger ones, those with strong capacity and ones with capacity constraints. The pilot provides for rural and urban municipalities as well as municipalities from all provinces. The pilot municipalities will be consulted

Municipalities as clients of DBSA



during the development phase and will also afford Telkom, who is a major partner in the network development, the opportunity to train technicians in all areas when these municipalities are connected.

6. Projected Developmental Impacts

Some 142 municipalities have been connected to date and are utilising the content that is already available on the LGRC as well as the additional benefits that the LGNet is providing. Apart from municipalities, 19 other municipal stakeholders such as the Municipal Demarcation Board, provincial governments and the SA Local Government Bargaining Council have also been connected.

An extensive training programme commenced during August 2005 in terms of which municipalities that have already been connected, were trained in the usage of the LGRC and LGNet. In addition, two staff members from each municipality were trained as administrators. These administrators were trained to load content on the municipality's own portal under its name. Apart from the opportunity to help other municipalities by sharing things like good policies, by-laws etc, municipalities can share anything about their municipalities with other municipalities and stakeholders.

7. Conclusion

Although this brief discussion has only touched on some elements of the LGRC, it is trusted that it has given an indication of what can be done through partnerships to intensify support to municipalities. At the same time, it hopefully serves as a means of sharing the good news that all major stakeholders are extremely interested to work towards the goal of sharing information, pooling resources and finding means and ways of cooperating to serve local government and South Africa better.

Through new legislation and policy frameworks, South Africa has given itself the opportunity to transform its municipal environment. What is required now is political leadership and commitment from those involved in local government to make municipalities successful development agents that will significantly improve the lives of the local people in whose service they stand. And to that end, the LGRC will make a significant contribution.

The DBSA Knowledge Week

CIDB Infrastructure Delivery Management Toolkit

Dean Barnes – Programme and Project Manager:
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DBSA
Development Bank of Southern Africa

CIDB Infrastructure Delivery Management Toolkit

Dean Barnes – Programme and Project Manager: Construction Industry Development Board (CIDB)

Abstract

Following the first democratic elections of 1994, South Africa has been faced with significant transformation challenges including delivery of infrastructure to meet the backlog of past inequity and the promotion of governments socio-economic transformation objectives.

Accelerated delivery of infrastructure is driven by increasing levels of investment and is impeded by inadequate delivery systems and capacity. This paper discusses an initiative by the Construction Industry Development Board (CIDB) in cooperation with public sector partners within South Africa to develop a comprehensive model for improved public sector delivery management. Supported by appropriate and sustainable capacity building, the model is developed around a **"toolkit"** that addresses the full cycle of infrastructure delivery, from the identification of need, infrastructure planning and project prioritization, followed by infrastructure programme management, project design, procurement, implementation and finally project commissioning.

Assembled in generic modules, the IT-based toolkit can be adapted to the specific needs of each sector (education, health, etc) and will equip all public sector clients with common guidelines and templates for each stage of the delivery cycle.

The toolkit forms the backbone of the Infrastructure Delivery Improvement Programme (IDIP) currently being implemented within provincial departments of Education and Public Works through a partnership between the National Treasury, Development Bank of Southern Africa, national Department of Public Works and the CIDB.

Keywords: *delivery management, public sector, infrastructure, toolkit, capacity building, programme management, project management.*

Introduction

Nature of the Challenge

The challenges facing South Africa in the delivery of infrastructure services are immense.

Decades of apartheid and centuries of colonialism have resulted in massive backlogs in the provision of basic services to the majority of citizens. These include portable water, sanitation, housing, electricity, clinics, schools and most estimates indicate that it will take many years to address these backlogs. Infrastructure plays an essential role in improving the quality of life, education and productivity of a nation. In addition, economic infrastructure can drive a country's industrial, commercial and technological base, thereby contributing to the improved competitiveness, wealth and wellbeing of the whole population: (Hodgson, Hughes & Gasa 2003).

The construction industry's current contribution to GDP is about US$ 7 billion per annum and is expected to increase. Government is committed to increasing levels of infrastructure investment and the public sector accounts for approximately 40% of annual investment. Efficient and effective public sector spending is therefore fundamental to infrastructure delivery, government's development and empowerment objectives, and the sustainable growth, improvement and transformation of the construction industry: (National Treasury 2003; Turner and Townsend 2002; National Treasury 2002).

A Transforming Public Sector

The responsibility for infrastructure delivery within the South African public sector is divided between three spheres of government and a number of state-owned enterprises. Since the 1994 democratic elections, post apartheid government has undergone extensive restructuring, including the addition of five new provinces and the amalgamation of previous so-called "self governing" administrations. In the nine provinces, at least four departments are responsible

for infrastructure and there are now 284 municipalities responsible for services at a local government level.

Perhaps most significant is the total restructuring and creation of a local government "wall-to-wall" across South Africa to ensure the provision of services to the nation as a whole, as opposed to the apartheid era municipalities which focused parochially on the needs of a minority white population. This exercise was only completed in late 2000. In many instances the new municipalities have had to be established from scratch. In addition to restructuring, the public sector inherited a rule-bound and outmoded procurement and delivery system. Government has only recently introduced the Supply Chain Management Regulations to the Public Finance Management Act (2003) and more recently promulgated the Municipal Finance Management Act (MFMA) (2003) and its associated Supply Chain Management (SCM) regulations (2005). Concurrently, the Construction Industry Regulations have been promulgated mandating the Construction Industry Development Board (CIDB) to establish a Register of Contractors and Projects as well as a Standard for Uniformity within construction procurement.

Summary of Current Constraints

Public sector expenditure of available infrastructure budgets is currently constrained by:

- An extensive public service in which capacity is thinly spread;
- Poor documentation of business processes within public sector organisations coupled with a loss of institutional knowledge as departments are transformed;
- A plethora of tender and contract documentation, much of which is outdated and poor, leading to adversity and litigation, and disempowerment of the emerging sector;
- The introduction of Supply Chain Management and related Construction Industry Regulations requires the public sector to reform their construction procurement which places additional demands and requires new expertise within the public sector particularly within municipalities. This has an effect on the delivery of infrastructure;
- Inability of departments to introduce contracting strategies which embrace state-of-the-art technology and know-how;
- Poor infrastructure planning resulting in hasty and inadequate design and documentation, poor contract administration, claims by contractors, budget over runs, delayed completion and poor quality control;
- Poor tendering criteria and procedures which emphasise lowest contract price rather than value for money, quality and lifecycle costing. This in turn results in poor profitability of contractors resulting in unsustainable businesses;
- Delays in the award of tenders caused by regulation and the non-value adding controls;
- Ineffective management of post award delivery, resulting in delayed payment to suppliers, which impacts negatively on the sustainability of industry; and
- Inability to monitor efficient and effective delivery of infrastructure.

(Turner and Townsend 2002; Construction Industry Development Board 2001; Development Bank of South Africa 1998).

A Macro Framework for Improved Delivery

Several initiatives to transform the Public Service are positive and essential to improved infrastructure delivery management and provide a logical framework for the transparent and accountable management of public funds and provide a framework for improved delivery management capacity. These include:

- The introduction of performance contracts for public sector managers;
- The development of the Medium-Term Expenditure Framework (MTEF) by the National Treasury, which allows for a rolling three-year forward planning cycle;
- Public sector procurement reform through the Public Finance Management Act, Municipal Finance Management Act, associated Supply Chain Management and Construction Industry Regulations;
- Introduction of improved infrastructure planning (through the requirement for provincial departments to utilise standardised best practice infrastructure planning tools contained tin the toolkit).

Discussion

The Public Sector Capacity Building Strategy

The South African Government has committed to increased infrastructure investment in order to address both the backlogs and new economic infrastructure. At the same time government has acknowledged the capacity constraints to achieving

this expenditure (National Treasury 2003). Against this background, and in support of improved delivery, a partnership has been forged between the National Treasury, Development Bank of Southern Africa, National Department of Public Works and the CIDB to formulate and implement a capacity building strategy (Infrastructure Delivery Improvement Programme – IDIP) that will unlock public sector delivery. The CIDB Delivery Management Toolkit forms the backbone of the IDIP programme.

Role of the CIDB

The CIDB was established as a statutory body "to provide strategic leadership to construction industry stakeholders to stimulate sustainable growth, reform and improvement of the construction sector" and "to promote the contribution of the industry" and stakeholders in achieving industry development goals (Construction Industry Development Board ACT 2000). Stella Sigcau, the Minister of Public Works, has expressed the relationship between industry development (industry in its broadest context) and delivery as follows: "*delivery and industry development should be inseparable - they are two sides of the same coin*" (Construction Industry Development Board 2003).

As a result of this relationship and the immense impact of delivery management and procurement on the construction industry, the CIDB is mandated by legislation to promote construction procurement improvement and delivery management competence in both the public and private sectors. *Inter alia,* this includes the promotion of best practice procurement methods and models, ethical standards and greater uniformity in the application of procurement practice.

The CIDB is further equipped with regulatory instruments to drive both client and supplier performance improvement. Such instruments provided for in the CIDB Act include a national Register of Contractors, a national Register of Projects and a Code of Conduct, which will further support these objectives (Construction Industry Development Board ACT 2000).

Core Components of the IDIP Capacity Building Strategy

The public sector capacity building strategy conceptualised by the CIDB and developed in collaboration with National Treasury, consists of three core components. These include a delivery management system that comprises an electronic "how to" toolkit of guidelines and templates, which form the basis for focused training and capacity building of public sector officials, supported by private sector expertise support at provincial level.

The IDIP and toolkit were piloted during 2004, within all nine provincial departments of education, two provincial departments of Health and of Transport. On the basis of this successful implementation, the toolkit has been enhanced from the lessons learnt and the IDIP will now be rolled out to all the provincial departments of Education in conjunction with Provincial Department of Public Works. This paper focuses on the nature, structure and potential of the toolkit and reflects on the challenges of implementation.

The Toolkit for Infrastructure Delivery Management

The IDIP capacity building programme is developed around the toolkit which addresses the full cycle of infrastructure delivery, from the infrastructure planning phase (including identification of need, supply, gap and options analysis, budgeting and project prioritisation), programme and project design, right through to procurement, implementation and commissioning of projects. Although the toolkit focuses on public sector delivery, many of the core processes, particularly those associated with project delivery and some of the supply chain management functions are equally applicable in the private sector.

The development of the toolkit responds to the challenges identified within the public sector which impede effective delivery of infrastructure. The toolkit has drawn on the experiences and procedures successfully implemented in a number of major infrastructure programmes in South Africa since 1994. It has also drawn on international project management best practice, particularly "The Project Management Body of Knowledge" (Project Management Institute 2000).

Promoting Good Governance

The toolkit includes a detailed framework for definition of the entire business and work process requirements within delivery management and includes the key milestones and deliverables to be achieved within each process as well as the approvals required for the sign-off of the major milestones. Simply stated, the toolkit defines what activities need to be done, by whom, when and how the activities should be performed, the results and deliverables to be achieved and the approvals required. This is an essential component within the delivery management process as often the business processes are either non-existent or poorly defined resulting in

confusion, duplication and poor management procedures. Furthermore, business processes can only be incorporated into a system if they are adequately defined on paper.

This framework provides an excellent platform for specifically defining delegations and accountability as well as the key approval "gates" within the delivery management processes. Thus, good governance, including internal audit, can be achieved through the system by linking performance to specific activities, delegations and accountability, which can in turn be effectively monitored. Furthermore, the work process and key approvals required can be audited for compliance.

The IT-based system provides electronic linkages at specific points in the work process to templates, guidelines, relevant policy and legislation. The toolkit is module-based and designed to equip public sector organisations to achieve the following:

(a) **Infrastructure plans** - formulation of infrastructure plans in support of the service delivery mandate of the organisation, for a specified financial term that identifies required infrastructure delivery programmes and priority projects including project life cycle costing;

(b) **Programme management** -overall management of the infrastructure programmes by the client department utilising best practice programme management plans

(c) **Programme Implementation Management** - establishment and implementation of infrastructure programmes in line with best practice infrastructure programme implementation plans, which contain the necessary programme objectives and scope, methodology, institutional arrangements, procurement and contracting strategies, budgets, timetable planning, management controls, risk, quality and communication management plans, monitoring and reporting;

(d) **Project Delivery** - implementation of priority projects in accordance with the Infrastructure Programme Implementation Plan, including the procurement, project planning and design, construction and completion processes; and

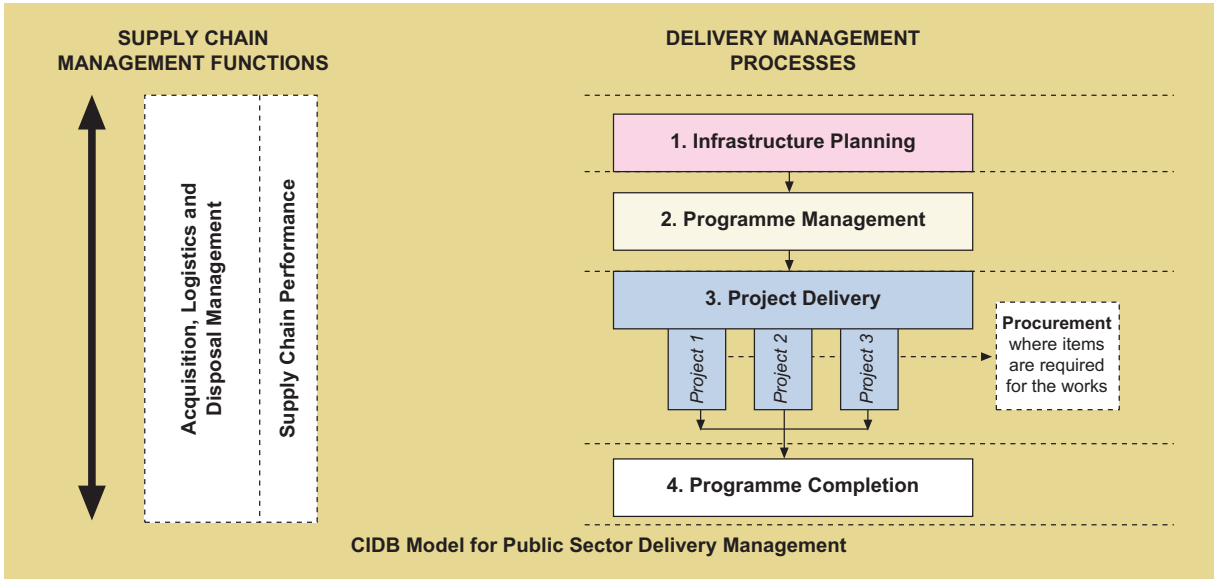
(e) **Programme Completion** - formal completion and independent evaluation of the programmes (normally on an annual basis in line with the fiscal cycle) in order to report the outcomes against the objectives and incorporate recommendations for improvements into future programmes.

Delivery management therefore, is a very broad concept and field. The CIDB toolkit provides a synthesis and fusion of strategic and infrastructure planning, programme management, project management and supply chain management, as summarized in Figure 1 below and described thereafter.

Infrastructure Planning

Public services are delivered in line with the policies, strategic objectives and programmes set out in the strategic plans and annual performance plans and budgets of the respective government departments,

Figure 1: Summary of core processes within the CIDB Public Sector Delivery Management Model
(Source: CIDB Toolkit Infrastructure Delivery Management Guidelines)



as required in terms of the Public Finance Management Act (PFMA). The toolkit supports the strategic and infrastructure plans that form the basis for annual budgets and for projections within the three-year Medium-Term Expenditure Framework which is updated on a continual rolling basis.
Public sector budgets serve three macro aims:
(i) introducing the relevant tools of accountability;
(ii) improving on management processes; and
(iii) developing relevant economic policies.

Approved budgets identify programmes that must be implemented by the accounting officer of a national or provincial department. The toolkit will support the accounting officer to put in place the infrastructure plans which support the service delivery objectives of the department as well as required procedures, processes and controls that will allow the infrastructure programmes to be implemented, monitored and achieved in line with the PFMA.

The intention behind the PFMA reporting requirements is to ensure that the strategic programmes and projects identified for public sector organization are implemented and that their respective objectives are being achieved. The PFMA is applicable to both national and provincial departments, and state-owned enterprises. Likewise the Municipal Finance Management Act stipulates similar requirements for municipalities.

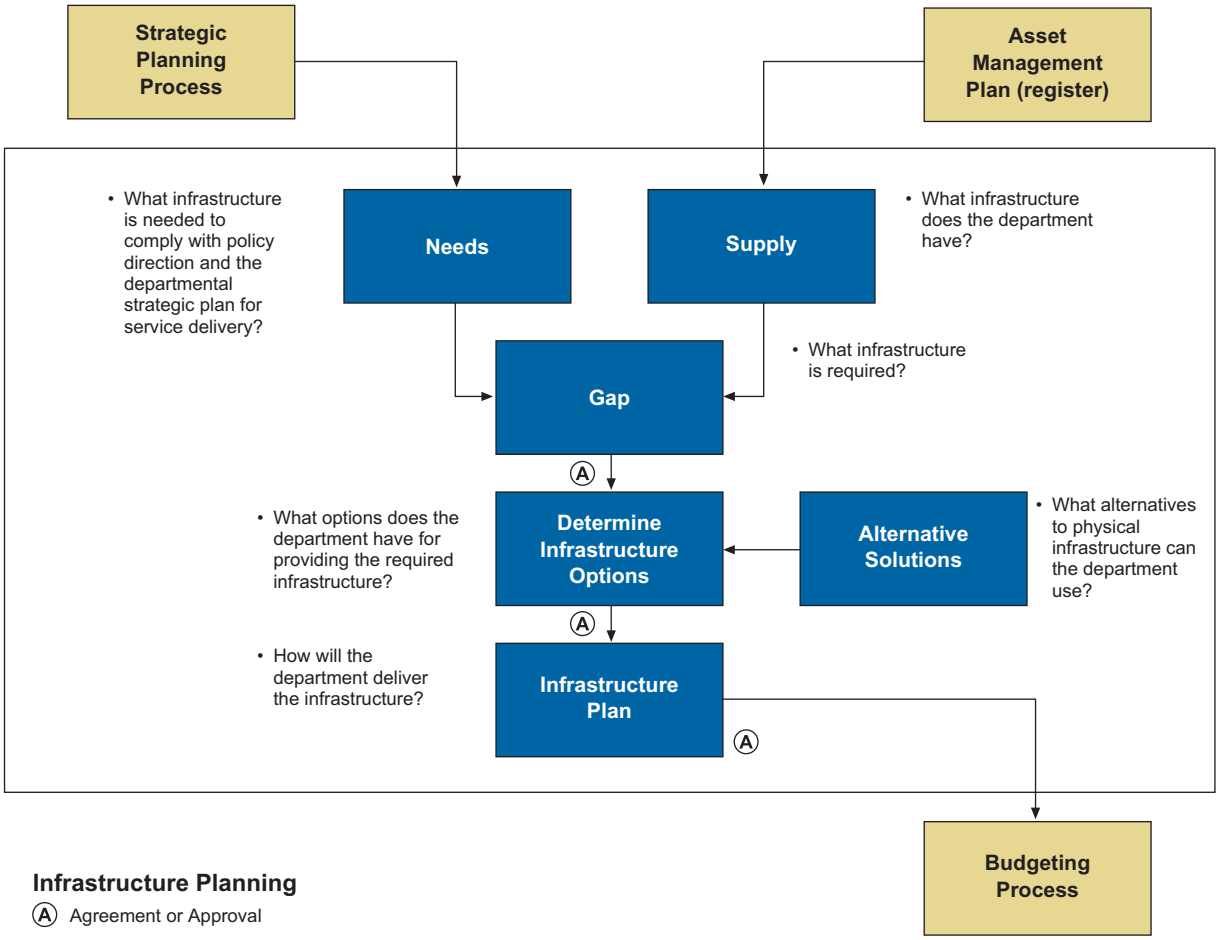
National Treasury has further strengthened the requirement for proper infrastructure planning by stipulating with in the division of revenue at that provincial departments responsible for infrastructure delivery have to formulate infrastructure plans in line with the templates provided in the toolkit.

The planning model adopted within the toolkit is set down below in Figure 2 below which shows the inputs for the assessment of needs and existing supply, the gap analysis, assessment of options resulting in the infrastructure plan of a department.

Programme Management for Infrastructure Delivery

The toolkit provides integration between the strategic planning, infrastructure planning and program management processes as the initiators and drivers for delivery. Without the proper "front end" planning and integration of strategy with the respective public

Figure 2: Infrastructure Planning Model within the toolkit



sector institution's objectives, that institution will not succeed in delivering the required services or in spending its allocated infrastructure budget.

The Programme Management Module supports the formulation of programme management plans by departments with corresponding infrastructure programme implementation plans by their implementing agents, in line with the institution's strategic objectives and infrastructure planning requirements. This involves aspects such as the identification of procurement strategies appropriate to the programme, definition and allocation of budgets to the programme, definition of the programme work processes, institutional and contracting arrangements, programme management responsibilities, and includes the nature and scope of projects within that programme. Once the individual projects have been identified, their scope, timetable and budgets are clearly defined. The programme planning culminates in the preparation and approval of an overall program management plan by the client department as well as an infrastructure programme implementation plan by the implementing agent.

Project Delivery

The Project Delivery module comprises the planning and implementation of the individual projects approved for implementation within the infrastructure plan. It defines the manner in which a project is initiated, planned, implemented and completed and is broken down into three main processes, namely the Project Initiation, the Project Implementation (including planning and design) and the Project Completion processes.

The Project Initiation process includes the formulation and approval of the project scope and the feasibility of the project. With these parameters in place, the most appropriate procurement strategies are determined and approved so that authorisation for expenditure can be made. The procurement strategy that is adopted dictates the nature of the engineering and construction works contracts that are entered into and the sequencing and responsibilities for the principal activities. The typical procurement strategies which are considered include, *inter alia* the following options:

- Option 1 – Design by Client – this is the approach currently most often used by the South African public sector in which the client takes responsibility for design and specification of the project and depending on availability of internal resources, may outsource the design, specification and tender documentation to professional service providers. The client then procures construction contracts to construct the designed works.
- Option 2 Design & Construct – in which the contractor takes responsibility for the design and construction of the works.
- Option 3 public-private partnership – in which a partnership is entered into between the public sector and the private sector to deliver infrastructure in terms of an agreed assignment of responsibilities between the partners.
- Option 4 Construction Management – in which a construction manager is appointed on a management basis to manage the construction on behalf of the client.

Project Implementation proceeds in terms of the project scope and procurement strategy defined in the Project Initiation stage and comprises planning, formulation of design details, specifications and procurement of professional and construction contracts. The contracts are then administered in accordance with the scope and terms of the contracts.

Project Completion comprises the post-construction phase of the project and includes completion of the project defect liability period, production, approval and archiving of "as built" drawings, production of operation and maintenance manuals. It also comprises commissioning and the handover of the project preparation of the project completion report and final sign-off.

Procurement

Within the government's supply chain management system, procurement forms one component of acquisition management. Procurement activities support and are essential to infrastructure delivery management processes. Procurement can take place anywhere in the delivery management process, whenever resources external to the institution are required to deliver services. This module can be readily accessed at each stage. For example, if an institution does not have the internal resources to facilitate activities within the infrastructure planning process, a service provider needs to be procured to assist in this.

The South African constitution and legislation provides a framework for procurement. It sets very stringent requirements for the system, namely that it should be fair, equitable, transparent, competitive and cost-effective and requires accounting officers and accounting authorities with the responsibility for ensuring that the procurement systems in their institutions are compliant with these requirements.

The National Treasury is, however, entitled to issue instructions and regulations regarding the determination of a framework for an appropriate procurement and provisioning system.

This approach is in sharp contrast to many other countries where procurement procedures are prescribed in legislation or are regulated by statutory tender boards. The approach whereby the overarching framework is established and accounting officers and accounting authorities are required to develop their own procedures, allows each institution to establish a system that satisfies their needs and requirements within a common value system.

With the new legislative framework in place to allow organs of state to manage their own procurement needs, there remains only the procurement capacity within the institutions to be developed and the skills base to be enhanced. Given that the abovementioned procurement frameworks have recently been introduced to replace the historical arrangements, the challenge to capacitate officials cannot be underestimated.

The toolkit will allow for the introduction of procurement best practice as promoted by the CIDB in compliance with the new supply chain management and construction industry regulations.

Programme Completion

Programme objectives can only be declared as having been achieved if all the projects within the programme have been completed and have met their objectives. At this stage, the toolkit enables the programme to be evaluated and a completion report to be compiled indicating the successes and failures of the programme as a whole. Such a report should also incorporate lessons learnt from the implementation process of the programme, in order for the same problems to be avoided, or at least anticipated in future strategic and programme planning activities.

Programme Monitoring

The toolkit enables performance monitoring at all stages of the delivery cycle and comprises the reporting and monitoring of progress, achievement of targets and milestones. Regular checkpoints are incorporated in order to facilitate such monitoring to take place, especially at the critical milestones of individual projects. This provides the institution with a consistent management tool for determining the likely outcomes of the programme.

There are a number of control points provided in the toolkit procedures. These control points (or "decision gates") allow key deliverables, milestones or project performance to be reviewed, decisions to be made as to whether or not the project should continue to the next process or sub-process, and refinements in expected deliverables to be made.

It is important to constantly monitor individual projects, to ensure that the objectives are being achieved, and to forecast the possible outcomes at the end of each project, as this will guide the institution as to how to intervene to ensure that the objectives of the programme as well as the institution's objectives can be met.

Work Flow and Business Processes

The core of the toolkit is a delivery management system which defines the workflow, business processes, approval gates, delegations, inputs and outputs and applicable templates. The definition and documentation of the workflow and core business processes is an essential element in creating an effective infrastructure delivery management process. The core workflow within the toolkit is summarised in Figure 3. This workflow provides the framework for the detailed work processes, activities and control points defined within the toolkit.

Key Implementation Challenges

The implementation of the toolkit within the South African context faces a number of challenges. The key challenges are identified below together with proposals on how these should be addressed.

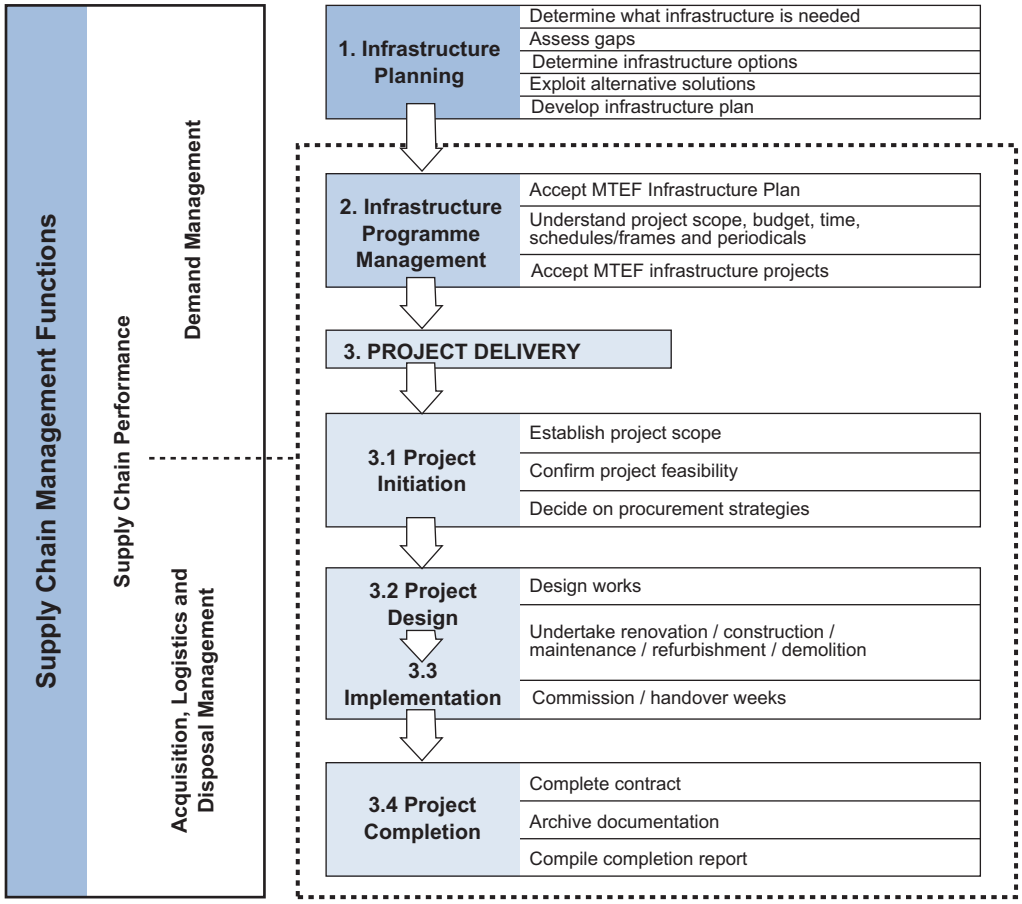
Challenge 1: Commitment to Improving Infrastructure Delivery Management

This is the overarching challenge. Unless there is a commitment from the senior management within public sector organisations, to embrace improvements and to then back that commitment up with adequate leadership, resources, funding and support, then the introduction of the toolkit will not succeed. In order to overcome this challenge the toolkit will only be introduced once there is commitment at the highest level to adopt the system and to mobilise the resources (both internal and external) needed for successful roll-out of the system.

Challenge 2: Resistance to Change

It is only natural that there will be resistance to change within organisations. Attitudes in this regard are complex resulting from many diverse reasons including such things as poor current working environments, leadership discord, previous bad experiences in the introduction of new systems,

Figure 3: CIDB Toolkit Model Summary Workflow
(Source: CIDB Toolkit Infrastructure Delivery Management Guidelines)



Core Processes within Public Sector Delivery Management for Construction Works

Note:
Services may be procured to provide specialist inputs or overcome capacity constraints within any process.

misconceptions (ie ignorance regarding what the system is and what it is not), resistance to clear responsibility and accountability linked to performance (ie some people thrive in chaos because they can "hide" in the confusion and not be held accountable). In order to overcome this challenge, a thorough change management strategy will be implemented in order to "win the hearts" of the delivery managers who will be implementing the system.

Challenge 3: Clashes of Management Cultures

There are myriad management cultures and management buzzwords used and misused. On top of this there are systems and processes specific to a particular organisation - "we do it this way". It is proposed that in order to overcome this challenge, it should firstly be ensured that the principles and terminology are grounded within the South African legislative framework and "government speak" ie translating management jargon into the colloquial names for systems and processes and as far as possible not introducing new jargon unless absolutely essential to define a new paradigm, principle or process not already in use. Secondly, it must be ensured that the underlying principles are understood and embraced. It is interesting that in most debates on management processes the underlying principles are rarely questioned, but the majority of debate is over the terminology used. Therefore the challenge is to ensure that the principles are understood and embraced and the terminology fits the organisation's management culture. Thirdly, the toolkit should be tailored to fit

with and into the systems already in use within the organisations and only replace existing systems on the basis of a high-level mandate from the users.

Challenge 4: Confusion

This is closely linked to challenges 2 and 3 above. Introducing a new system often results in confusion within an organisation, particularly on the basis of hearsay and rumours, when people are not properly informed. The confusion in turn leads to anxieties and negativity towards the new system. It is therefore essential to ensure that the introduction and phasing of implementation is logically defined, realistic and is clearly communicated to the users and that they embrace the implementation plan before it is implemented. During implementation they need to receive constant, relevant feedback and be involved in "owning" the roll-out process.

Conclusion

The CIDBs toolkit Infrastructure Delivery Management system has been designed to provide the public sector (including state-owned enterprises and municipalities), with an integrated approach to delivery management so that infrastructure delivery can be improved. Supported by the National Treasury, this initiative will be driven by organs of state who are willing to adopt the methodology proposed in the CIDB toolkit. Unless government establishes instruments to measure core accountability, good governance and oversight, delivery management reforms that have been designed will remain ineffective. The intention to build functional public sector teams that are able to do total programme management should be at the forefront of government's endeavours.

The introduction of the toolkit will face several challenges which will need to be managed and which will necessitate commitment and a thorough change management process

Introduction of the system will provide a common basis for public sector capacity building. The IT-based system will support easy updating of guidelines and templates as well as the introduction of electronic document management and e-procurement.

It is considered that the toolkit can be replicated internationally within other countries wishing to improve their infrastructure delivery management, as the principles are based upon best practice programme and project management principles and yet comprises a simple yet effective work process which is easily adaptable to specific circumstances and easily integrated within existing systems. The system is equally usable within the private sector to define and manage the work processes involved in delivery management.

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The DBSA Knowledge Week

Impact assessment of sanitation services and facilities

Nationwide sustainability audit of sanitation facilities implemented by sector departments from 1994 to 2003

Arno Ottermann – PULA
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DBSA
Development Bank of Southern Africa

Impact assessment of sanitation services and facilities

Nationwide sustainability audit of sanitation facilities implemented by sector departments

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Abstract

The Department of Water Affairs and Forestry conducted a nationwide sanitation sustainability audit in 2004 to assess the sustainability of sanitation delivery since 1994. The audit, being the first of its kind, also established suitable assessment processes and tools to assist with such audits. Important findings have been carried forward into policy reviews, the MIG programme and municipal services planning and operations.

Acknowledgements

The study acknowledges the various sector departments (eg DWAF, DPLG, Health, Education, Housing), national sector institutions (eg. SALGA, WRC, Mvula Trust), provincial departments of local government, participating district and local municipalities and their appointed project implementing agents and design consultants, for their constructive participation in assessing sanitation projects on the ground (site visits) and through institutional interviews.

Introduction

Since the first democratic elections of 1994, the focus of the South African Government has been to address the imbalances caused by apartheid polices and to create an equitable society with equal opportunities and sustainable socio-economic development.

The highest priorities of the Reconstruction and Development Programme have been to provide each household with all the basic human needs, including safe housing, access to basic services, good education and job opportunities.

Sanitation is one of the basic services, which is inadequately provided or unsafe to use in many of the previously disadvantaged communities and households. However, due to various reasons, the development of sanitation services has lagged the progress of other basic services.

Urgent attention needs to be given to accelerated provision of effective and sustainable sanitation services.

Sanitation Challenge

Since 1994, the number of people without access to basic sanitation services has declined from 20,4 million to 16,1 million. Government has committed itself to eradicate the remaining backlog by 2010 but is currently considering further acceleration of the programme to finish by 2009. This can only be achieved if the sanitation implementation capacity and investment levels are increased substantially.

The above backlog population and costs will, however increase if current projects are not sustainable thus bringing "served" people back on to the "needy" list. DWAF therefore initiated a nationwide sustainability assessment to review the condition and functionality of all on-site sanitation facilities provided by sector departments between 1994 and March 2003.

To achieve the backlog in basic sanitation services, government must accelerate infrastructure delivery. At the same time, government must ensure that the service provision is effective and sustainable.

One of the mechanisms to accelerate delivery is the MIG programme, which consolidates the funding from the various national programmes into a single capital fund, directed towards local authorities. In support of the MIG programme, it is also essential to consolidate the policies and standards of the various national programmes and to apply the lessons learned from completed projects into recommendations for future projects to ensure sustainable sanitation services.

It is furthermore a legislative requirement that DWAF, as the sector leader and regulator, monitors the performance of service delivery and takes the

Sample DMs (and their LMs)

Province	District Municipality
Eastern Cape	Amatole OR Tambo
Free State	Motheo Thabo Mofutsanyane
Gauteng	City of Tshwane Metro Ekurhuleni Metro
KwaZulu-Natal	Ugu Zululand
Limpopo	Greater Sekhukhune Vhembe
Mpumalanga	Ehlanzeni Gert Sibande
Northern Cape	Frances Baard Kgalagadi Namakwa
NorthWest	Bojanala Southern
Western Cape	Boland City of Cape Town

necessary actions to ensure that sanitation services remain sustainable. To this end, DWAF has to introduce effective monitoring, evaluation and auditing processes and systems.

Definition of Sustainable Sanitation

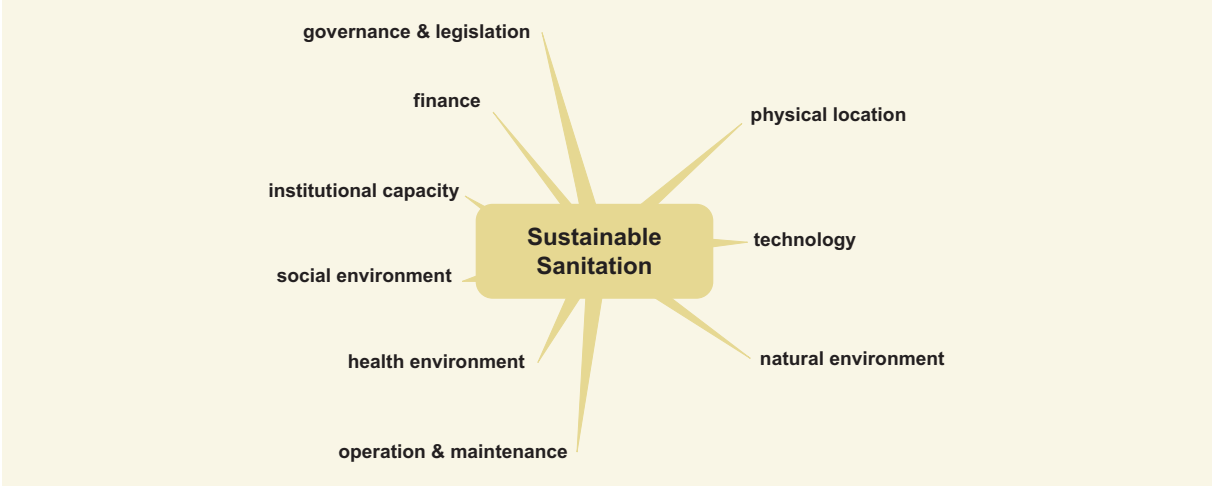
The study started by identifying the various requirements to achieve "Sustainable Sanitation". The diagram (Figure 1) highlights the main sustainability aspects that were identified by the work sessions and which have then been taken into consideration in the design of the study questionnaires and assessment process.

Due to the fact that the different sector programmes were not applying the same development approach, levels of services, funding criteria and design standards, the "auditing" and comparison of the individual sector programmes was specifically excluded from the terms of reference of the study, thus focusing the investigation on the sustainability of onsite facilities on the ground, as "outcome" rather than the implementation processes preceding it.

Key Definitions

Term	Definition
Sustainability	Sustainability in this context means that the sanitation services and infrastructure are to function and meet the needs of the users over the planned life span. Sustainability has an environmental, institutional, financial, technical and social dimension.
Environmental Sustainability	Provision of sanitation services should take into consideration protection of the environment against adverse impacts such as groundwater pollution due to seepage from pit latrines.
Institutional Sustainability	Sustainable sanitation service delivery requires the establishment of an effective institutional framework that supports the delivery of sanitation services in an efficient and cost-effective manner.
Financial Sustainability	Financial sustainability includes capital investments in sanitation infrastructure for households without access to basic sanitation services and also financial requirements for ongoing operation and maintenance including future infrastructure replacement costs.
Technical Sustainability	For sanitation technology to be sustainable, it must be affordable and acceptable to the end users. Users must be able to operate and maintain their sanitation facilities with limited assistance from external agents, especially in rural areas.
Social Sustainability	Access to adequate sanitation services should provide personal benefits to households in the form of improvement in health, privacy, convenience, safety and dignity. Sanitation services should also contribute to poverty alleviation by improving the health of children thus saving women's time so that they can participate in economic activities.

Figure 1: Main Sustainability Areas (detailbreakdown is contained in report)



As illustrated in the above diagram, the sustainability factors can be grouped into different functional areas (roles and responsibilities):

- Governance and legislation;
- Institutional arrangements;
- Social environment;
- Health environment;
- Natural environment / physical location;
- Technical / infrastructure environment; and
- Operation and maintenance activities.

They can further be grouped into "hard" and "soft" aspects:

"Hard" aspects (right side)

- Sanitation infrastructure (onsite and off-site);
- Operation of Infrastructure (including maintenance action); and
- Physical and natural environment (geology, drainage, climate, pollution).

"Soft" aspects (left side)

- Governance (policy, legislation, politics);
- Institutional capacity (resources, skills, capability to manage);
- Social aspects (sanitation practices, perception, culture, gender, age, disability, etc); and
- Health aspects (personal hygiene, cleaning of health facilities, sanitation illnesses).

Alternatively, they can be grouped around institutional responsibilities:

- National and provincial responsibilities
  - Policy, strategy, norms and standards
  - Funding and institutional support
- Water services authorities' responsibilities
  - Planning and implementation of projects
  - Customer service and cost recovery
- Water service provider responsibilities
  - Operation and maintenance of infrastructure
  - Technical aspects (appropriate technology, upgradeability, refurbishment)
- Community responsibilities
  - Health workers
  - Project steering committees
  - Councillors and tribal authorities
- Household responsibilities
  - Operation and maintenance of onsite facilities
  - Sanitation health practices and hygiene.

To have a full understanding of the definition, it is necessary to also look at the sub-elements of each sustainability area.

Survey Tools

To ensure objective assessment of the various sustainability factors, the study adopted a combination of research instruments.

The study therefore adopted the following survey instruments (see Appendix G for detail):

- National interviews of sector departments (focusing on the policy, strategic and programme information);
- Institutional and technical questionnaires to WSAs and their project implementing agents (focussing on institutional capacity, design standards and implementation); and
- Household questionnaires (focusing on the actual situation on the ground, including social aspects, health practices, condition of sanitation facilities, operational performance and problem identification).

They are targeted at all levels of involvement from national government to local authorities, to community organisations and individual households.

The final measure of success is found at the households and their individual family members. Successful sanitation is measured in healthy and satisfied people and a continued healthy environment.

The study conducted field investigations on a sampling basis representing the different sanitation service levels in typical urban and rural areas of 2 DMs per province.

The following survey instruments were applied:

- Nine national interviews with sector departments
- 40 institutional questionnaires to all WSAs of sample projects
- 160 technical questionnaires to implementing agents on each sample project
- 11 520 household questionnaires, interviews and site investigations to individual households who received toilets.

Analysis Tools

Different analysis tools were applied to ensure that conclusions are objective and accurate.

- Statistical Analysis
  (this analysis contains counts and percentages for each answer of the four questionnaires, thereby assessing the importance of the answers)
- Photograph Analysis
  (the site surveys also captured electronic photographs of all problem situations and successes to enable independent analysis by specialists across a wide range of field visits)
- Comments Analysis
  (interpretation of national, provincial and local interview comments, including problem identification, household perceptions, customer requests and satisfaction)
- Sustainability Analysis
  (development of suitable analysis tools to combine the information from the above surveys into a measurable sustainability indicator which enables combined evaluation of all the sustainability areas, both "hard" and "soft").

Sustainability Analysis

The sustainability analyses indicated that:

- 34% of toilets have a low sustainability risk
  (none or 1 of 7 sustainability areas at risk)
- 38% of toilets have a moderate sustainability risk
  (2 to 3 of 7 sustainability areas at risk)
- 20% of toilets have a high sustainability risk
  (more than 3 of 7 sustainability areas at risk)
- 8% of the toilets are not sustainable
  (one or more sustainability areas failing completely).

Above findings indicate that up to 28% of toilets could fail in the short to medium term resulting in 0,46 million households (or 1,9 million people) reverting back onto the backlog list before 2010.

Sustainability Problems

The study identified various sustainability problems when investigating the previously completed projects of sector departments. The most common sustainability problems relate to:

Governance

- The norms and standards of the different sector programmes need to be consolidated under MIG;
- Although most municipalities are familiar with sanitation policies and guidelines, only 48% have developed their own by-laws to effect the sanitation policies; and
- National and provincial sanitation strategies need to give better guidance on the implementation of higher service levels.

Institutional aspects

- Low institutional priority to sanitation (only 60% of municipalities have a sanitation unit)
- Inadequate technical capacity to implement projects and supervise construction (65% of municipalities - this becomes critical if delivery has to excel)
- Inadequate O&M capacity at local level (53% of municipalities have adequate capacity whilst 73% of municipalities only do reactive maintenance)
- A lack of monitoring and evaluation systems (48% of municipalities have a M&E system for sanitation)
- A lack of operation and maintenance guidelines for VIPs (78% of municipalities have no O&M plan for VIPs).

Social aspects

- Low social acceptance and satisfaction of toilet quality (65% of households are satisfied)
- Inadequate involvement of communities and households in the planning and implementation of sanitation services (<50%)

- Low household affordability and willingness to pay for initial sanitation infrastructure (29%), upgrades (66%) and future replacement (68%)
- Inadequate health and awareness to ensure that households use on-site sanitation facilities appropriately and apply health and hygiene practices (32% of households).

Health aspects

- 66% of households indicated that they did not have a sanitation health and hygiene education programme
- 14% of households indicated that they did not have access to a hand washing facility
- 90% of households indicated that they wash hands after using a toilet
- 76% of households indicated that they clean their toilets on a regular basis.

Environmental aspects

- Only 44% of projects conducted water quality impact assessments, thus making it difficult to assess the pollution impacts. Nonetheless, 12% of projects indicated surface water pollution and 9% groundwater pollution
- The assessment of soil types indicated that up to 40% of toilets are located on loamy or clay soils thus posing a risk of poor drainage
- Most toilets (>77%) are not correctly orientated towards the dominant wind direction, thus resulting in reverse ventilation and smells.

Technical aspects

- Few projects have conducted a feasibility study prior to implementation and only 44% undertook a water quality impact assessment
- The majority of VIPs (53%) were build with brick walls, thus complicating emptying of pits and disabling relocation of top structures onto new pits when the pits are full
- 34% of top-structures were not adequately designed for wind forces and many got damaged or blown over (mostly zink structures)
- 47% of toilets were constructed with material that is not optimal for climate conditions (eg rusting)
- Although it was not measured by this survey, it was reported that many pits were dug too small, are mistakenly fully sealed (conservancy tank) or are misused as a waste dump and therefore fill up more quickly.

O&M aspects

- Few municipalities have a maintenance programme for onsite dry sanitation systems and few municipalities perform dislodging of pits.
- Most smaller municipalities also lack the skills to conduct effective operation and maintenance of waterborne systems.
- Most designs of the toilet structures do not provide for an access hole in the slab through which the pit can be emptied. Alternatively, the top structure should be designed for dismantling and relocation onto a new pit in order to free the filled pit for emptying or sealing.
- Currently, most communities do not accept the concept of composting and therefore find labour-based removal and use of human compost as unacceptable.
- Many wet systems were leaking or flushing continuously due to broken taps or ball valves

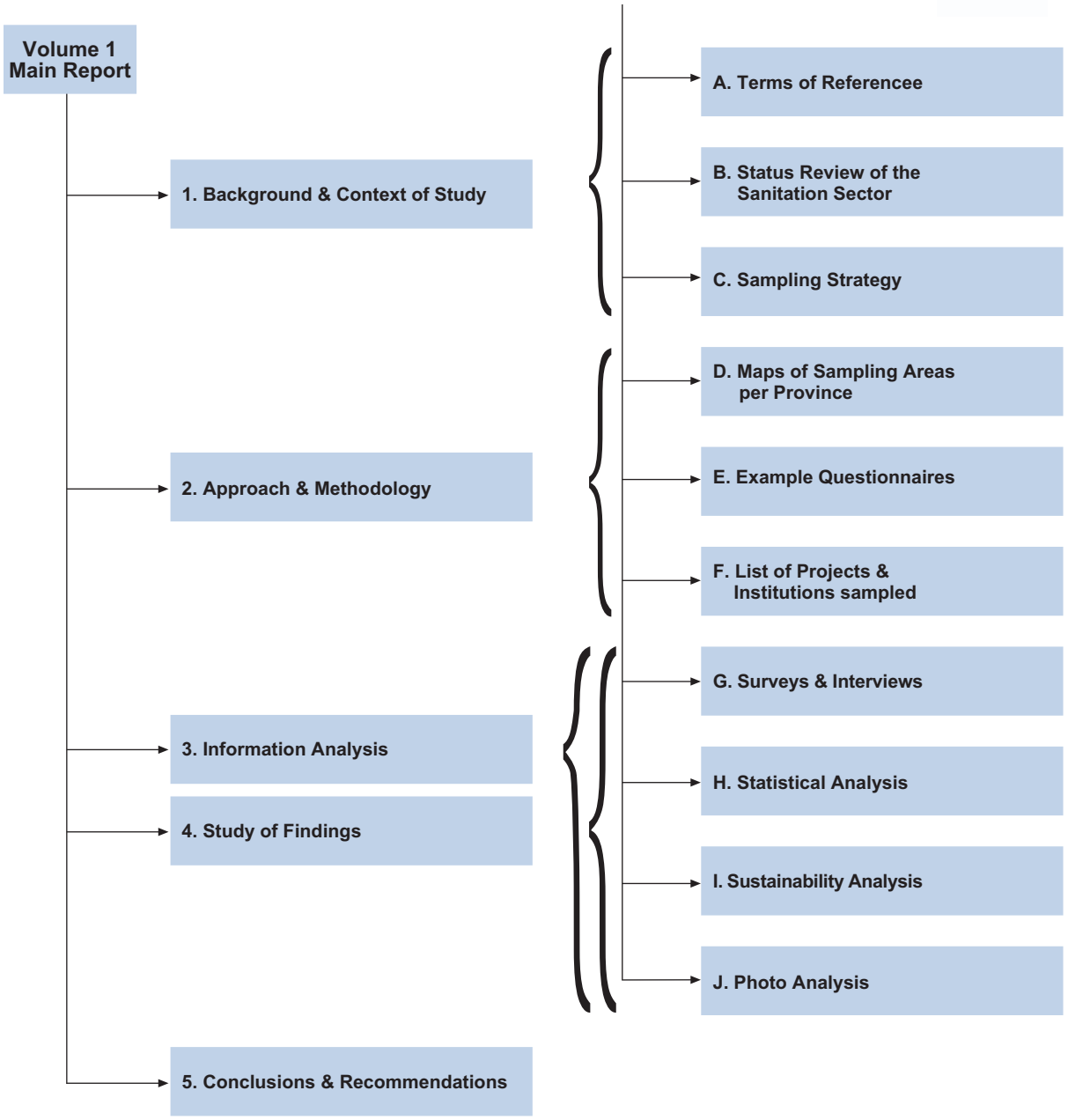
Detailed Study Reports

More detailed information on the study approach and findings is contained in the following two study reports.

Way Forward

The following points highlight some of the critical issues to be addressed in order to improve sustainable sanitation.

1. Develop a common sanitation policy and implementation plan jointly with SALGA and local government to ensure that the accelerated sanitation delivery can succeed.
2. DWAF, DPLG and Department of Housing must develop a common approval process to avoid the current situation where waterborne sanitation projects are not sustainable due to lack of water availability. Proper feasibility studies and water resource studies must support this.
3. DWAF and the Water Research Commission (WRC) should jointly promote alternative sanitation technologies in order to assist municipalities in broadening sanitation choices, with specific attention given to water use, maintenance and affordability.
4. DWAF and SALGA to hold a joint road show to promote alternative sanitation technologies to municipal councils and decision-makers. There is also a need to support municipalities in planning for O&M during the IDP/WSDP processes.
5. Clarify the responsibilities for O&M of public institutions with municipalities.
6. Mass mobilisation of people to build their own toilets to optimise job creation and poverty alleviation. The role of government should be



to initiate, support and facilitate the process and to ensure compliance to minimum safety and construction standards.

7. Provide subsidy options for different socio-economic groups (Housing subsidy model) with special reference to those households who can afford higher level services. Subsidy policies and their implementation should be communicated widely to all relevant role players to achieve a uniform approach.
8. Sanitation specific skills base should be increased to qualify more people for project implementation. Develop targeted training programmes and capacity building.
9. Standardisation of sanitation facilities should be addressed by the sector departments in consultation with municipalities and communities to take into account aspects such as location in relation to wind direction (for ventilation), access to facilities by the disabled and children, and materials to suit climatic conditions as well as functional requirements.
10. It is acknowledged that the operation and maintenance on household sanitation is the responsibility of the household owners. However, it is desirable that the municipalities develop and apply dedicated support systems.
11. It is vital that the ground water protocol and geotechnical assessments are applied at all times. To this end, it is also important that O&M of the schemes includes water quality testing on a regular basis.

12. To ensure sustainability, all sanitation programmes and projects must prove that they are considering all areas of impact, including the technical, social, health, and natural environment and governance issues.
13. Formalise the sustainability auditing process and tools to ensure that future assessments are cost and time-efficient and can be compared to previous audits for trend analysis.

Conclusion

In conclusion the study found that service level choice and affordability is critical to the overall sustainability of sanitation facilities. Innovative financing mechanisms need to be developed to assist households in "climbing up the service level ladder".

Many of the smaller municipalities lack the capacity and procedures to effectively operate and maintain sanitation facilities. National government needs to support these municipalities through effective planning, monitoring, evaluation and interventions.

Lack of construction supervision is responsible for sub-standard toilets being built. With the introduction of MIG funding municipalities must be capacitated and supported to ensure proper site supervision and quality control. This is furthermore critical with the introduction of labour intensive construction methods being introduced through the Extended Public Works Programme.

Maintenance of sanitation infrastructure is inadequate for both dry and wet systems and urgently needs effective guidance and management. All projects should ensure that there is a proper O&M plan in place with clear distinctions between household, community and municipal responsibilities.

Although the rate of sanitation infrastructure delivery has increased substantially during the last two financial years, a further doubling to tripling in the delivery rate is required. This will further place pressure on the "soft" sanitation aspects of sustainability.

There is a need to market *sustainable* sanitation to municipalities and communities. By-laws and O&M procedures need to cover all areas of sustainability to ensure that the growth in delivery does not jeopardize service delivery.

Sector departments and programmes need to be restructured and aligned under the IDP and MIG processes to ensure that programme transformation to local authorities takes place effectively and without unnecessary delays. This includes a review of the monitoring, evaluation and regulation functions under the sector leadership of DWAF, Department of Health, Department of Housing, DPLG and SALGA.

To achieve the sector target of 2009/2010 in a sustainable manner, the country needs dedicated institutions and a participating public. All stakeholders must have a common understanding of the sustainability elements affecting sanitation services and must be in agreement on their respective roles and responsibilities to achieve and maintain sustainable sanitation services.

Sustainable Sanitation = "Sanitation for All Forever"

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Department of Water Affairs and Energy, 2005: Nation Wide Sustainability Audit of Sanitation Facilities Implemented by Sector Departments between 1994 and 2003, Volume 1 and 2.

Approaches to Local Service Delivery

Planning and Supporting Municipal Infrastructure

Discussions

Mr Graham Tate highlighted that rollout problems with the LGnet had more to do with municipalities than the actual network itself. Often when municipalities were approached for the facility, the municipal commercial manager or the mayor could not understand why it is free. This represented the biggest yet strange hindrance. He further stated that it required two or three visits to the municipality to actually force the issue and actually get them connected.

Mr Dean Barnes drew attention to the fact that the IDIP is going into full rollout and has already been piloted in the health and transport departments. A lingering question has been how the programme should be extended to municipalities although it must complement existing initiatives to avoid duplication.

Mr Arno Otterman, stressed the need for community involvement in the rollout of sanitation projects as only 34% of the projects that were assessed had proper community involvement. There was also a need to build industry capacity as often there are few contractors doing all the work. He suggested that each project must provide for mentorship whether from the sector partners like water affairs, consultants or PSPs. He also announced that the department has launched a job creation programme specifically on sanitation which is intended to provide more opportunities to local communities.

George Mohlakoana
(Paper presented: Alternative Service Delivery (ASD) Process for Mangaung Local Municipality)
George Mohlakoana is an Executive Director: Infrastructural Services at the Mangaung Local Municipality. He is also a non-executive director of the Bloem Water board. He serves as a member on two national task teams on Water Services that are led by DWAF. At MLM, he was part of a project team which developed and implemented a strategy for preparing MLM for the electricity distribution industry restructuring process. George holds a BSc in Mechanical Engineering degree from University of Cape Town and a Masters degree in Engineering Management from University of Pretoria.

Dr Ronnie McKenzie
(Paper presented: Improved Service Delivery through Small Scale Risk-Reward Contracts)
Ronnie is well known as a leading specialist in Water Demand Management, Hydrology and Water Resource Planning, with more than 20 years of experience in these fields. He has been involved in the analysis of many water resource systems, particularly in southern Africa. He was a key member of the Vaal River System Analysis team which pioneered the water resources techniques now used throughout South Africa and many other parts of the world. Other major projects in which Ronnie has been involved include the Orange River System Analysis, the Namibian Central Area Water Master Plan and the verification of the Lesotho Highlands hydrology for royalty calculation purposes.

He has developed and presented more than 100 papers, courses and workshops in many parts of the world, and was responsible for introducing the internationally recognised Burst and Background Estimate (BABE) water demand management techniques to South Africa and numerous other countries.

Nigel Lowe

(Paper presented: Towards the Application of Infrastructure Asset Management for Sustainable Communities)

Nigel Lowe is a Technical Analyst within the Operations Cluster of the Development Bank of Southern Africa (DBSA). A registered professional civil engineer, he is a member of the South African Institution of Civil Engineers (SAICE) and of the Institution of Municipal Engineering of Southern Africa (IMESA).

After graduating from University of Natal with a degree in Civil Engineering in 1983, Lowe worked as a contractor, consulting engineer and for the last 15 years as a programme manager and most recently a Technical Analyst at the DBSA. He also holds postgraduate diplomas in Development Engineering and Urban Engineering from the universities of Witwatersrand and Pretoria. He is currently completing an MSc in Urban Engineering at the University of Pretoria.

Graham Tate

(Paper presented: The Local Government Resource Centre - A DBSA Response to the Developmental Challenges of Municipalities)

Graham Tate is a Manager: Information Technology and Services, Development Bank of Southern Africa. He attended the University of Natal and obtained a BComm degree in 1980. After completing of his Articles of Clerkship, had acquired a distaste for Auditing and made a career shift to computing. As a programmer, Graham remembers one of the very first iterations of the Personal Computer - the Commodore 64 and the first iteration of Notebook computers -the Osborn. He later became a director and shareholder of DB Consultants, a bureau offshoot from the accounting practice of Peat Marwick and Mitchell of Pietermaritzberg, Kwazulu-Natal.

Graham joined the Development Bank of Southern Africa in March 1984 and started the Bank's IT function from scratch. He has seen the Bank evolve from simple systems to large mainframe based systems. During the Y2K era, Graham was responsible for the development of an Enterprise Architecture Plan for the Banks information systems to overhaul and consolidate the Bank's transactional information systems. Recent achievements include the conceptualisation and implementation of a Virtual Branch Wide Area Network (LGNet) for the Bank which has been extended to become a national e-community for local government to share information and collaborate to improve the effectiveness of this sector.

Dean Barnes

(Paper presented: Infrastructure Delivery Management Toolkit)

Dean Barnes (Construction Industry Development Board) is a professional programme and project manager with extensive experience in public sector infrastructure, housing, community job creation and industrial development. He commenced his career in geotechnical engineering and migrated to infrastructure and housing programme management and strategy development. Dean is recognised as a national expert within South Africa in

relation to housing, infrastructure delivery and management of national infrastructure programmes.

He was appointed to establish and managed the government's post-apartheid housing programme in KwaZulu-Natal. Mr Barnes was appointed by the national Department of Public Works as a national programme manager for the Community Based Public Works Programme. He is the principal author of the "Infrastructure Delivery Management Toolkit" a joint initiative between the SA National Treasury and Construction Industry Development Board, which is currently being rolled out by National Treasury to all provinces through the Infrastructure Delivery Improvement Programme. He has working experience in South Africa, Botswana, Mozambique, Zambia, Zimbabwe, Malawi, Egypt, Germany and the USA and has written many strategy and technical papers.

Arno Ottermann

(Paper presented: Impact Assessment of Sanitation Services and Facilities)

Mr Arno Ottermann is an associate at PULA Strategic Resource Management. He has extensive experience in integrated strategic planning, rural development, feasibility assessments, conceptual design, project management and the development of appropriate technology.

He started his career as research engineer in 1985. Career highlights include managing a national drought relief disaster programme in 1991 and leading major water projects whilst working for Hinham Shand Consulting Engineers for a period of six years. In 1999, he co-founded PULA Strategic Resource Management where he is currently a managing director.

He has published various papers and documentation on critical water topics such as the national basic services programme, the functionality of water services in South Africa and a South African Water Report to the United Nations.

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