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URBAN AND RURAL: INFRASTRUCTURE

The National Infrastructure Maintenance

The National Infrastructure Maintenance Strategy (NIMS) was approved by Cabinet in 2006. This Strategy sets overarching policy for sector-based initiatives and describes the framework for a coordinated programme of actions. It is an essential part of government's vision of delivering infrastructure services to all. The simultaneous infrastructure investment and maintenance that will result from this Strategy will not only improve infrastructure performance and underpin the sustainability of services, but will also contribute significantly towards national and local economic growth, and create long-term jobs. Background to it, and progress with its implementation, are described in this article

ALL THREE SPHERES OF government, together with the state-owned enterprises, manage major portfolios of immovable infrastructure assets. Although there is much emphasis on the 'delivery' of infrastructure, delivery does not in fact end with the commissioning of the infrastructure asset. After commissioning, various activities are necessary for continued performance – such as the allocation of necessary budgets and the retention of appropriate staff to operate and maintain the asset over its whole design life.

Despite the good performance in some sectors, there is strong evidence that in other sectors much of the infrastructure, of both pre- and post-1994 vintage, is not being properly maintained. Older infrastructure is often not being refurbished and renewed when it needs to be, and there is inadequate planned preventative maintenance on new infra-

structure. (In this article, 'maintenance' is used as a generic term to include planned maintenance, repair, refurbishment and renewal, and provision for replacement of the infrastructure.)

Generally, the larger institutions, e.g. Eskom and DWAF water resources, are performing the best with regard to maintenance, but some services in rural-based municipalities have already failed.

It is evident that a holistic national infrastructure maintenance strategy is needed, without which many institutions are unlikely to be able to improve their maintenance policies and practices. With this in mind, the National Infrastructure Maintenance Strategy (NIMS) was formulated, and presented to Cabinet, which approved it in August 2006. (DPW et al. 2006) Its aim is to promote sound maintenance of infrastructure and facilities across the whole of the public sector. NIMS was launched by Minister Thoko

Didiza in May 2008.

Infrastructure maintenance must be regarded as a strategic tool to promote improved service delivery, to unlock funding to extend infrastructure to historically disadvantaged communities, and to support the nation's economy. Maintenance of existing infrastructure should not be seen as of secondary importance to the apparently more attractive prospect of creating new infrastructure.

REVIEW AND ANALYSIS

The findings of the sector-by-sector review of the state of infrastructure and facilities, the state of their management, and current initiatives to enhance maintenance undertaken for the purposes of the Strategy, remain valid (DPW et al. 2006; Construction Industry Development Board (cidb) 2007).

The review indicated that all public sector institutions could be placed in one of two broad categories described below and set out in Table 1:

- **Category A.** These institutions have sound asset management plans for most of their strategic infrastructure, maintenance budgets are adequate, capacities and skills are adequate, and their leadership has a strong maintenance ethic. Or they are largely missing one or more of the elements listed above but this is recognised and improvements are being programmed.
- **Category B.** These institutions are not as strong in each of the elements as the institutions of Category A. This situation is not improving and might even be deteriorating. Or they do not have

Mountains near Gordon's Bay and is also an embankment dam.

This was a landmark project for both Shands and the City of Cape Town, whose R60 million investment was to prove an extremely good one by creating significant savings in the cost of power purchases from Eskom, as well as providing additional capacity for water supply to the ever-thirsty city.

With the usefulness of the pumped storage principle having been established through the Steenbras Scheme, Eskom in conjunction with DWAF took the matter further and constructed the 1 000 MW Drakensberg Pumped Storage Scheme. This was followed by the Palmiet Pumped Storage Scheme, adjacent to Steenbras, where the firms of Ninham Shand, VKE and Electrowatt formed the SVE consortium to undertake the design and contract administration of the project.

BERG WATER PROJECT

When Ninham passed away prematurely in 1969, his son Mike joined the firm and in due course became a nationally re-

spected water engineer. One of his most significant achievements was to lead the team which compiled the Western Cape System Analysis of 1992, highlighting the state of local water resources – Cape Town's water resources were once again in a precarious situation.

This eventually led to the implementation of the Berg Water Project where Shands joined forces with Goba and Knight Piesold to form the Berg River Consultants to win the design and supervision contract for the scheme, which has a gross storage capacity of 130 million cubic metres.

It is quite remarkable that one man could have had such an influence on the water supply of a city. Ninham Shand accepted the challenge to continue where Tom Stewart had left off, and he and his colleagues have served Cape Town with great distinction. Their work is not yet complete, as Cape Town seeks to exploit new sources of water in the 21st century.

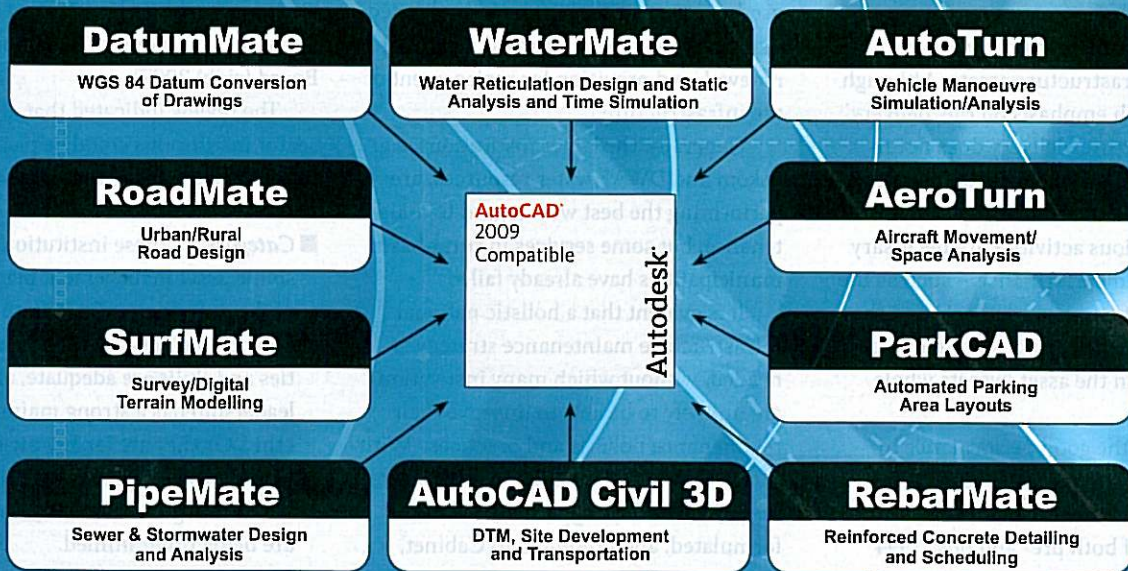
This article is based on the book "Ninham Shand – the Man and the Practice", edited by Tony Murray, which is due to appear early in 2009

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Strategy, and its implementation

asset management plans, maintenance budgets are not adequate, they lack capacity, and their leadership does not regard maintenance as very important. Other significant differences between Category A institutions and Category B institutions relate to political and senior administrative emphasis on maintenance, design and construction quality; and, sometimes, external forces requiring that maintenance be attended to (e.g. regulatory and safety requirements) etc.

Many of the Category B institutions are not able to improve their maintenance practice without some level of the assistance and regulation that implementation of the Strategy will provide. Although the Category A institutions are not the target of the Strategy, it is likely that the infrastructure maintenance of many of them will also benefit from some of these measures.

It is important to identify which Category B infrastructure and facilities sectors constitute the greatest problem regarding issues such as effects on human health and economic growth, lack of effective countermeasures in the event of failure of the service, etc. For example, wastewater treatment works are often problematic. These sectors must be the main focus of efforts to assist the Category B institutions.

ACTION PLAN

The four thrusts of the NIMS are:

1. Strengthening the regulatory framework governing planning and budgeting for infrastructure maintenance
2. Assisting institutions with non-financial resources
3. Developing the maintenance industry
4. Strengthening monitoring, evaluation and reporting, and feeding this into a process of continuous improvement.

Specific actions follow within each thrust area.

Strengthening the regulatory framework governing planning and budgeting for infrastructure maintenance

An effective way to address the needs of institutions that have not adopted sound infrastructure maintenance policies and practices would be to strengthen the performance requirements.

- **Action 1.** Review, strengthen and harmonise the strategic planning regulatory framework so that it includes requirements for planning and budgeting for maintenance, especially of infrastructure of a strategic nature.
- **Action 2.** Create links between the capital budget, the operating budget and the infrastructure asset management

(IAM) plan of each institution to ensure that financial provision for maintenance is specifically linked to currently owned strategic infrastructure and to decisions on investment in new capital infrastructure. Also create mechanisms to monitor this and to apply corrective action where necessary.

- **Action 3.** Treasuries (national and provincial) plan for increasing global allocations for maintenance over time (based on adequate motivations) until such time as maintenance funding approaches an optimal level.
- **Action 4.** Gazette regulations requiring adequate planning for prioritised maintenance (including organisational structures and skilled staff) especially for infrastructure which underpins the core economic and social development of the country.
- **Action 5.** Incorporate in the regulatory framework requirements for identifying key strategic infrastructure, specifically budgeting for its adequate maintenance and for reporting performance.
- **Action 6.** Audit heritage sites in order to identify work to make them compliant with government policies and regulations.

Assisting institutions with non-financial resources

Improving human resources capacity and providing better-practice guidelines are measures that will assist institutions to improve maintenance. To this end, norms and standards for the maintenance of different types of infrastructure (roads, water, sanitation, etc.) need to

Table 1: Public sector institutions by their state of maintenance

Category	Brief description	Institutions
A	Adequate and/or improving maintenance	SANRAL, national government public buildings, DWAF, ACSA, Eskom, Telkom, Transnet, some provincial roads, some provincial health and education, some municipalities, some water boards
B	Inadequate and/or deteriorating maintenance	Some provincial roads, some provincial health and education, most municipalities, some water boards

be developed, and appropriate capacity-building, mentoring and direct support programmes put in place. Budgeting norms will also be developed to facilitate accurate long-term maintenance budget forecasting, taking into account the type, age and condition of infrastructure.

The norms will also take account of reliability, which will be determined by what constitutes 'failure', what the consequences of failure are, and mitigation plans. For example, if the downtime of the asset must not exceed, say, 1% of the time, the maintenance norms need to be a lot more stringent than if downtime as high as, say, 10%, could be accommodated.

■ **Action 7.** Develop and promote guidelines, norms and standards for the maintenance of infrastructure – covering financial, technical and skills aspects. Extend the cidb "Toolkit for Infrastructure Delivery Management" so that it will support public sector officials to improve the delivery and maintenance of infrastructure.

With regard to human resource capacity, a Joint Initiative on Priority Skills Acquisition (JIPSA) initiative through the cidb is an audit of existing technical skills in the construction and maintenance industry, together with projections of the skills requirements over the next 15 years.

■ **Action 8.** Carry out a study of the non-technical human resource capacity requirements for improving infrastructure maintenance, and identify actions to address the identified skills shortages.

■ **Action 9.** Identify the Category B institutions, and build targeted capacity within them, through the Infrastructure Delivery Improvement Programme (IDIP), Project Consolidate and other capacity-building programmes. In particular, assist them directly to prepare IAM plans.

Developing the maintenance industry

Appropriate infrastructure maintenance also creates jobs since it can only be done, or can best be done, by labour-intensive methods, and it is thus important that government's plans for employment creation and the Expanded Public Works Programme (EPWP) give prominence to maintenance.

Given the skills shortages and equity imbalances in the infrastructure maintenance and construction industry,

there is a need for the government to play a role in developing the maintenance industry, particularly with regard to skills development, SMME development and the promotion of BBBEE in the maintenance industry.

■ **Action 10.** Build the maintenance sector within the construction industry, including developing models, guidelines and procedures for procurement of maintenance services, particularly ongoing long-term maintenance contracts that will promote SMME development, involvement of women, local employment, etc. Also build capacity in the industry – the EPWP will play an important role in this regard.

Strengthening monitoring, evaluation and reporting, and feeding this into a process of continuous improvement

Monitoring and evaluation processes must be strengthened and implemented – with mechanisms for feedback to result in the necessary improvements. In this way performance change can be measured and the attention of the institutions concerned can be drawn to non performance. The annual reporting requirements and the forthcoming GIAMA regulations provide the framework for this.

■ **Action 11.** Strengthen and implement monitoring and evaluation processes.

IMPLEMENTATION PLAN

Recognising the importance of infrastructure maintenance within government and the role that effective maintenance will play in support of service delivery, Cabinet approved the NIMS two years ago. The Minister of Public Works was given the responsibility of providing political oversight of NIMS within Cabinet, and the national Department of Public Works (DPW) was appointed to lead implementation of the programme.

Membership of the broad-based Programme Steering Committee, established to oversee implementation of the NIMS programme, will include the Presidency, national DPW, National Treasury, Department of Provincial and Local Government, Department of Public Enterprises, and Department of Water Affairs and Forestry.

In addition, an Advisory Group is to be constituted in order to provide specific inputs and insights to the Programme

Steering Committee and task teams. Membership may include institutions such as DBSA, SALGA, IMESA and SANRAL.

A number of Task Teams have been or are being established:

- Task Team 1 – Strategic Planning and Regulatory Framework
- Task Team 2 – Non Financial Resources
- Task Team 3 – Developing the Maintenance Industry
- Task Team 4 – Monitoring and Evaluation

The cidb will provide overall programme management for the NIMS.

PROGRESS

The NIMS is only one (admittedly, one of the most significant, if not the most significant) of a number of national IAM initiatives, planned to complement one another. They are all part of the process of promoting sound maintenance of infrastructure and facilities across the whole of the public sector, and setting parameters for the performance of public sector institutions.

NIMS is not an isolated initiative. It will need to synergise with, and will in turn to varying degrees be supported by, many current initiatives. To emphasise – it is not a separate programme, but implementation is to be across all spheres of government, and within departments.¹

Thus, in terms of NIMS, national Government's integrated approach to IAM macro planning and implementation is "work in progress" in respect of the following initiatives, among others:

- Define an adequate IAM strategy and policy for government, which will strengthen government's role to oversee and enforce compliance
 - Information sharing within or across sectors that will help avoid duplication of efforts
 - Promote IAM, as a tool to help meet regulatory requirements
 - National support initiatives to promote IAM throughout the public sector
- Reflecting the four thrusts of NIMS, Government's aim is to empower and guide public sector institutions responsible for infrastructure, and to promote IAM, by means of initiatives such as the following:
- Legislation
 - Guidance: strategy, policy and tools to manage IAM

- Training: educational material
- Implementation: hands-on technical assistance
- Continued improvement: sharing of information and research

Much progress has already been made.² The following is a brief summary:

- The Government Immovable Asset Management Act (GIAMA), tabled in Parliament by DPW, has been law for the best part of a year. GIAMA makes it obligatory for public sector institutions to draw up sound multi-year infrastructure asset management plans. Regulations are currently being drawn up by DPW.
- The Public Finance Management Act is being amended to incorporate stronger provisions on IAM.
- National Treasury, with cidb, is continuing to develop and improve IAM guidelines. (These emphasise that their purpose is “to provide [public sector owners of infrastructure with] a start to improving budgeting for infrastructure maintenance”, and they are not “a substitute for proper infrastructure asset maintenance, which should be the ultimate goal in supporting the service delivery improvement.” “It is essential to treat each infrastructure asset as a separate element and plan the infrastructure maintenance accordingly.” Therefore these guidelines provide “indicative minimum budgets” only.) (“National Infrastructure Maintenance Strategy: infrastructure maintenance budgeting guideline”, cidb, in course of preparation. Similar sentiments are expressed in “Local government capital asset management guideline”, National Treasury, in course of preparation.)
- National Treasury has begun a process to amend the Standard Chart of Accounts, which apply to all government departments, by the inclusion of appropriate line items relating specifically to IAM. This will enable budgeting and expenditure against these line items to be tracked, thereby providing an important monitoring tool.
- Other measures that National Treasury has taken to increase provincial and local government accountability for assets include the regulations that it has published requiring municipalities to do impairment testing at both the asset and network level.

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- Department of Provincial and Local Government (DPLG) in 2006 released guidelines for IAM in local government, and during 2008 formulated a guideline for Comprehensive Infrastructure Plans. The latter will incorporate maintenance and total life cycles costing principles.
- The IDIP, at present targeted within selected provincial departments, has been revised in order to strengthen the maintenance requirements.
- The cidb is identifying current norms and standards for IAM, with a view to reviewing and re-issuing these.
- The National Water Services Infrastructure Asset Management Strategy is in an advanced stage of preparation by DWAF.

The latter is one of a number of “sector strategies” on infrastructure maintenance that, it is intended, will be prepared by the appropriate national government department in respect of each infrastructure sector – all of these under the ‘umbrella’ of NIMS.

Finally, it is one of the objectives of the NIMS to raise the profile and the priority of IAM right across the public sector.

NOTES

1. As an important aside – National Treasury has made it clear that implementation of the provisions of NIMS is not going to attract additional funding. The Department’s attitude, as expressed forcefully by the Minister of Finance on numerous occasions, is that many public sector institutions are not able to spend their budgets, and therefore should have no difficulty in reallocating capital funding to maintenance purposes.
2. From October a progress report will be available on the cidb website (www.cidb.org.za).

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