

NATIONAL INFRASTRUCTURE ASSET MANAGEMENT STRATEGY: A RECIPE FOR ACCELERATION TOWARDS EFFICIENCY

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Abstract

The Department of Water Affairs and Forestry (DWAF) has for a number of years been in the process of formulating the numerous layers of a national water services infrastructure asset management (IAM) strategy. Earlier work included: a "scan" of the state of South Africa's water services IAM; analysis of the state of IAM, identifying elements needed for an enabling environment to ensure sound IAM: and the identification of a set of priority strategic actions.

During March 2009 the following key documents were tabled:

- *National Water Services Infrastructure Asset Management Strategy.*
- *National Water Services Strategy IAM Implementation Framework.*
- *The (draft) Municipal Guide on Roles and Responsibilities to Perform Infrastructure Asset Management for Water Services.*

*The role of the **National Strategy** is to guide the sector in its IAM work.*

*The **National Implementation Framework** describes what is required of national supporting agencies (principally DWAF, dplg and Treasury) in appropriately supporting municipalities and other water services institutions to implement appropriate IAM.*

*The **Municipal Guide** is designed to support municipal decision-makers – both political and administrative. It outlines roles and responsibilities for IAM from a municipal perspective.*

INTRODUCTION

The South African Government has prioritized infrastructure asset management (IAM) as a critical element in sustaining services to all citizens.

Responsibility for implementing water services IAM lies principally with municipalities in their role as statutory water services authorities (WSAs). National government departments such as the Department of Water Affairs and Forestry (DWAF), the National Treasury and the

Department of Provincial and Local Government (dplg), are responsible for supporting and ensuring IAM within water services institutions.

The challenge to these national government departments, with DWAF taking the lead, is to ensure that municipalities manage their infrastructure assets adequately in order to deliver services sustainably. Interventions such as this Project are required to build sector-wide mobilization on effective IAM – a slow process that must be spearheaded by political will across all spheres of government.

Municipalities must be held responsible and accountable for their water services IAM. However, where there is an inability to respond, external support must be provided – by provincial and national government, as appropriate.

BACKGROUND

The Department of Water Affairs and Forestry (DWAF) has for a number of years been in the process of progressively formulating the many layers of a national water services infrastructure asset management (IAM) strategy. The results of a "scan" of the state of South Africa's water services IAM were reported on at the 2006 national WISA conference (Wall et al, 2006). Other subsequent work has included a process of analysis of the state of IAM, identifying elements needed for an enabling environment to ensure sound IAM, and the identification of a set of priority strategic actions. (The latter were reported on at the 2008 national WISA conference (Manus et al, 2008).)

Building on the previous work, the next stage commenced at the end of 2006. Early in 2009 this was completed with the tabling of the following key documents:

- National Water Services Infrastructure Asset Management Strategy.
- National Water Services Strategy IAM Implementation Framework.

and the first drafting of:

- Municipal Guide on Roles and Responsibilities to perform Infrastructure Asset Management for Water Services.

The pre-2007 work is briefly described in this paper, whereafter the bulk of the paper describes the National Strategy and the National Implementation Framework.

PROGRESS 2005-2007

A DWAF-appointed team led by the CSIR, in association with Matingi and Associates, Makgoleng Projects and Pula Strategic Resource Management, completed:

- Phase 1: Desktop strategic study on the state of water services infrastructure and the state of its management (completed late 2005).
- Phase 2A: A process of identifying key factors that drive these states, and identifying elements to ensure sound asset management (completed late 2006).
- Phase 2B: The identification of a set of priority actions (completed early in 2007).

Phase 1's findings were the foundation upon which the work of Phase 2 was built.

Phase 2 ("proceeding from fact-finding to solution-identifying") commenced with a process of identifying the key factors that drive the existing state of water services infrastructure and the state of its management, learning this from the Phase 1 work and from meetings with sector experts. This phase involved not just problem identification, but also analysis and classification of problems. It led to identification of elements needed for an enabling environment to ensure improved infrastructure asset management, and also started to broadly identify which institution should be responsible for leading each element of the improvement process.

More than 400 generic challenges were identified. They were then rigorously analysed and classified into "challenge areas". This analytical approach facilitated better understanding of individual challenges, as well as of the bigger picture in terms of priority needs.

PROGRESS 2007-2009

The objective of the next phase, Phase 3, was to build on the work of Phases 1 and 2, and:

- Draft an integrated IAM implementation Strategy in consultation with stakeholders.
- Plan the implementation of the Strategy.

The DWAF-appointed team was led by P D Naidoo and Associates (PDNA), with subcontractors the CSIR, Pula Strategic Resource Management and i@Consulting.

The principal deliverables were:

National Water Services Infrastructure Asset Management Strategy, the purpose of which is to guide the sector in its IAM work. (The section "The Strategy vision, objective and principles", below, describes this further.)

National Water Services Strategy IAM Implementation Framework. This is designed to articulate the full gamut of work required by national supporting agencies (principally the national government departments of DWAF, dplg and Treasury) in appropriately supporting municipalities and other water services institutions in implementing appropriate IAM for water services provision. It has 10 outputs which come directly from the Strategy – each of which will need its own implementation plan. (The section "The key outputs", below, describes this further.)

The (draft) Municipal Guide on Roles and Responsibilities to perform Infrastructure Asset Management for Water Services. This is designed to support municipal decision makers – both political and administrative. It outlines roles and responsibilities for IAM from a municipal perspective – and has a Roles and Responsibilities Matrix as an Appendix. (It is incomplete and requires further work.)

The National Framework and Municipal Guide require extensive engagement with all sector stakeholders to ensure continued appropriate roll out of the National Strategy.

The work done has undoubtedly raised the profile of IAM within government, and contributed towards strengthening the ability of sector stakeholders to participate in developing a common goal and way forward for effective IAM.

THE STRATEGY: VISION, OBJECTIVES AND PRINCIPLES

DWAF's **vision** is that it, together with its strategic partners, will **empower and guide** water services institutions to practice sound infrastructure asset management (IAM), aimed at ensuring optimal utility from public investments in water services infrastructure, and the reliable and sustainable meeting of service delivery obligations.

The **objective** of the National Water Services Infrastructure Asset Management Strategy (hereinafter abbreviated as the "Water IAM Strategy" or, simply, "the Strategy") is to achieve the following **outcomes**:

- Address service delivery failures in targeted water services institutions in the short term, and effect improvements that can be publicised in order to demonstrate the benefits of IAM.
- Develop in the water sector in the longer term of a culture of sustained improvement in IAM.

The Strategy therefore sets out at a high level how this objective will be achieved by DWAF and its strategic partners. In particular, it:

- Defines the practice of IAM, and outline the principles of good IAM, in particular in respect of water services infrastructure.
- Outlines what will be done to support water services institutions in adopting this good practice – inter alia through sector-specific guidelines, skills development and related planning, control and knowledge management tools.
- Outlines what will be done to address water services delivery failures in targeted institutions in the short term.
- Outlines what will be done to publicise improvements resulting from the above, and to disseminate information.
- Outlines what will be done to facilitate the development of a culture of sustained improvement in the water sector in the longer term.
- Identifies major impediments to the application of sound IAM practices, and outline what will be done to engage with strategic partners and other key stakeholders in order for DWAF, together with these partners and stakeholders, to address these impediments.
- Outlines what will be done to raise the profile and priority of IAM, and especially water services IAM, in municipalities and water boards, and in other stakeholders key to water services IAM.
- Outlines what will be done to determine regular milestones for assessment of water services reliability and sustainability, and in particular IAM performance, and what will be done to monitor progress towards these.

The Strategy and the Implementation Framework between them identify the "what and who" that needs to be done (but not the "when") in respect of each important action. They outline a suite of instruments designed to achieve the "outcomes" quoted above – including both a facilitative approach (through empowerment and guidance) and an approach that relies on monitoring and regulation.

While the Strategy is firmly focussed on water services, linkages between the Strategy and water resource IAM initiatives must, in the broader interest of the water sector and

consumers, be forged, and good IAM practices pursued across the whole of the water sector, water resources included.

DWAF is leading the more in-depth determination, and subsequent programming and implementation, of the required actions, taking responsibility for those that are within its power to do so, and working closely with other national government departments where responsibility for the envisaged action is statutorily with those departments. In all of this, DWAF is cooperating with the key stakeholders, which include not just National Treasury and other government departments, but also other spheres of government, and local government and other associations. Overarching that, the context of the Water IAM Strategy described in this document is that it is one of a number of national IAM initiatives, planned to complement each other under the umbrella of the National Infrastructure Maintenance Strategy (NIMS).

The most important principles underlying the Water IAM Strategy and its Implementation Framework are:

- This is a Strategy that seeks to empower and guide water services institutions to improve IAM.
- This is the high-level water sector Strategy, complementing NIMS and the high-level IAM strategies of DPLG and National Treasury, with which it is in harmony.
- 80/20 rules throughout, and “quick and rough” actions are often preferred.
- One size does not fit all.
- Start with the basics, and get them right. Do not attempt to progress further until the basics are right. In almost all circumstances, "good" practice is needed, not "best".
 - Address the weakest links in turn -- and as each is improved and is no longer the weakest link, attend to the new weakest link.
 - Where there is a strength, support it, and build on it.
- IAM is not a once-off intervention. It must become ingrained in the operational processes of the water services institution -- not an external intervention, but part of the institutions' standard operating procedure.

THE KEY OUTPUTS

Ten key outputs constitute a “recipe” for acceleration towards efficiency. The outputs are:

1. Increasing the awareness of IAM in the water services sector.
2. Achieving greater synergy with other services IAM initiatives, for example those not driven by DWAF.
3. Through targeted support from national government, improving IAM in water services institutions.
4. Developing a municipal IAM implementation framework, with a supporting suite of tools.
5. Developing a water services IAM monitoring and evaluation system, and linking it to other relevant management information systems.

6. Defining, and implementing, a regulatory framework supportive of water services IAM.
7. Through outsourcing, supporting water services IAM resources procurement.
8. Developing appropriate human resources for IAM in the water services sector.
9. Increasing the research and development and knowledge dissemination in water services IAM.

The tenth is on-time and within budget management of the implementation of the Framework, with appropriate guidance and support.

These, the most important actions needed, have been identified on the basis of extensive investigation of water services IAM practices and the state of water services infrastructure. Whereas the primary source has been the investigations undertaken for the purposes of Phases 1 and 2, the experience in respect of water services IAM of DWAF itself and its external team and strategic partners has also been taken into account.

To emphasise: the foundation of the Strategy and its Implementation Framework, is the rigorous process of Phase 1 and 2 fact-finding and analysis that preceded its formulation.

In more detail, the key outputs are:

1. Increase awareness. Start with issuing a water services IAM policy statement and with priming the sector.
2. Scan and analyse IAM initiatives other than those of DWAF, and also other initiatives for support to water services institutions, and achieve synergy with these where appropriate.
3. Inter alia, draw up a pro forma recovery plan. Make it clear to institutions what they are expected to do for themselves, and what they can get assistance with. And, as quickly as possible --
 - a. Set out in sufficient detail the criteria for selection of water services institutions for priority attention from DWAF and its strategic partners, and for identification of the specific actions in respect of each -- and prioritise.
 - b. Also set out the information requirements of the selection process, and create appropriate links to the existing and evolving databases identified for this purpose.
 - c. Initiate the selection process, select, and programme the work for the first year or other period decided upon -- also resource it.
 - d. Then commence implementation.
4. Inter alia, identify, adapt if necessary, and prioritise utilisation of existing tools, such as guidelines and systems, that are required for each level of need. Identify the further tools needed, and start the process of developing these, together with means for their use.
5. Review existing water services monitoring and evaluation. Extend monitoring and evaluation coverage before increasing depth. Outline how regular milestones for assessment of water services reliability and sustainability, and in particular IAM

performance, will be determined, and how progress towards these in particular will be monitored.

6. Define and structure incentives for water services IAM. Tighten the regulatory process, and build on existing corporate and individual incentives (such as levying penalties for non-compliance, enforcing skills level requirements, and offering assistance to those institutions willing to improve).
7. Facilitate where advisable bringing needed skills to bear through outsourcing. Assess the most frequently encountered procurement and outsourcing obstacles to bringing the needed resources to bear on improvement, and, where advisable, resolve these. Also assess the advantages and disadvantages of, and opportunities for, outsourcing.
8. Inter alia, analyse skills resources in the sector, decide on required actions, and start the process of resolving this.
9. Inter alia, discover, select, organise, and disseminate good practice in water services IAM, so that the good practice lessons are put to good use.

NIMS identifies many actions similar or complementary to these, as do other national non-water IAM initiatives, and it is essential that all these actions to the same end seek synergy where it would be efficient and effective to do this.

In all of the actions, “the most important principles” must be followed, especially

- “start with the basics, and get them these right -- do not attempt to progress further until the basics are right” and
- “one size does not fit all”.

The outputs listed above constitute a set, the carefully considered final output of an extensive water services infrastructure asset management investigation. All must be proceeded with if water services infrastructure asset management is to improve significantly. None must be omitted or put on hold for an indefinite period. Putting some on hold would jeopardise progress with others.

DWAF does not have the mandate or resources to address all of them. Some of them, entirely or partially, are the responsibility of other parties to resolve -- DWAF should only seek to influence what must be addressed, and its outcome. The issue of procurement, for example, sits squarely with other national government departments (DPLG and National Treasury, in particular). For another example, whereas DWAF needs to assist with the devising of appropriate norms for budgeting for water services IAM, the financial situation of water services authorities, and regulation of their budgets, is the responsibility of National Treasury – not of DWAF. Furthermore, as the Strategy acknowledges, “water services authorities, being municipalities or combinations thereof, have a range of responsibilities other than water services responsibilities”.

It will no doubt assist progress towards improved water services IAM that there currently is:

- growing recognition on the part of national and provincial government of the serious problems facing many water services institutions, and of the necessity for water services IAM improvement – if necessary, through intervention from outside the institutions; and

- increasing public pressure for improvement in service delivery – including for improvement in delivery by existing infrastructure.

Finally, and very important:

- whereas the emphasis of the Strategy, and of the key outputs listed, is generally on practices establishment and improvement, with the assumption that the state of water services infrastructure and the state of its management will as a direct result improve;
- it is acknowledged that in many cases the infrastructure asset decay is so serious that direct intervention by national government, for example of a capital works nature (e.g. complete refurbishment of the asset, or even its replacement), would first be necessary.

RECOMMENDATIONS

Recommendations for taking the work forward as articulated in the National Framework

It is recommended that DWAF take immediate action in terms of the following:

- i. Check all assumptions made in the National Implementation Framework – primarily around capacity – and endeavour to make the Framework implementable. Feedback from both the Municipal Indaba and the Municipal Reference Group meetings held in 2008 on the National Framework was that some capacity assumptions should not be made, and that aspects of the Framework will remain un-implementable. This is a serious issue which should not be ignored, but raised openly in the Reference Groups.
- ii. Determine one, clear IAM programme for the Department, with one vision, a single implementation framework between Directorates, and clarity on roles and responsibilities, budgets, etc. Ideally an IAM structure should be located within DWAF at the highest level. This would ensure that the National Framework developed within this Project (and amended as necessary) does indeed guide the vision and teamwork of DWAF and the sector.
- iii. Strengthen political ownership to set directives and level of importance for IAM – within the Ministry, Cabinet, and wherever else may be appropriate.
- iv. Work with other national government departments to build capacity to implement the National Framework.
- v. Strengthen the Stakeholder Reference Group at the highest level in each of participating organisations in order to ensure:
 - High priority attention is given to the implementation of the National Framework, beginning with finalising the draft indicators in the National Framework through verifiable resource commitments (including budgets).
 - Appropriate strategic oversight and guidance from the Group for national IAM support.
- vi. Strengthen the Municipal Reference Group so that it can take the lead in articulating the need for tools development, communication and awareness needs, etc.
- vii. Ensure ownership of the National Implementation Framework within DWAF, and across the Stakeholder Reference Group.
- viii. Complete the Municipal Guide and ensure ownership within DWAF and across the Stakeholder and Municipal Reference Groups.

Some recommendations for priority actions

Given the vastness of the work, and the need to flesh out the Implementation Framework in bilateral engagement with leading partners, the following are presented as immediate actions for DWAF to take forward:

- Clarify roles and responsibilities as an extremely high priority. This requires political drive and dedication by DWAF, dplg and National Treasury as sector leaders. That some current problems with water quality receive media attention poses an opportunity to use political pressure and leadership to resolve the uncertain roles and responsibilities in the sector. As a start, DWAF needs to ensure that its own institutional structure and capacity has dedicated leadership and capacity to manage the change process and intervene where necessary.
- Establish monitoring and evaluation (M&E) mechanisms dedicated to M&E for IAM (or add to or modify existing mechanisms), in order to empower DWAF, as sector leader, to take charge of the situation at ground level and to be able to react to more pro-actively to challenges to the operation and maintenance of water services infrastructure. Suitable M&E tools have been developed (e.g.P-Systems) and can be implemented as a “quick win”. Such M&E must be integrated with existing M&E functions and tools within DWAF and the sector.
- Address the capacity problem in the sector, which needs specific attention and support mechanisms. This can be supported by the outsourcing and PPP options which have been scoped by this and other projects. DWAF or dplg should dedicate resources to manage these support mechanisms (e.g. PPP Unit at National Treasury).
- Maximise opportunities for leveraging on existing priority projects such as the Wastewater Services Refurbishment Programme and the Accelerating Access to Water Supply and Sanitation Services Programme.

WAY FORWARD

Once approved by DWAF Top Management, the Strategy will be rolled out with the participation of other sector role players. National Treasury has already allocated R1.5billion to DWAF over the next 3 years. This funding will be used to accelerate access to sanitation, water demand management and conservation, and giving priority to failing wastewater treatment works. All of these form an integral part of addressing infrastructure asset management. DWAF will also continue with awareness and training on IAM through the councillor development program and similar initiatives.

CONCLUSION

It is timely that increasing attention is being paid to water services IAM. The recent work by DWAF and others in discovering and documenting the poor state of so much water services infrastructure is serving to underline the importance of the DWAF water services IAM Strategy, and the need that it be programmed and budgeted for, and implemented without delay. The appearance of this Strategy and Implementation Framework, key milestones signaling DWAF's determination that increasing attention be paid to water services IAM, is timely.

Implementation of the National Water Services Infrastructure Maintenance Strategy will promote sound management of infrastructure and facilities across the whole of the water

sector. Measures that will be implemented include strengthening the management and water service performance and governance framework, and requiring infrastructure asset management planning and linking this to budgets. They also include assisting institutions to develop the required maintenance management capacity, and monitoring progress and feeding this into a process of continuous improvement.

REFERENCES

K Wall, A Manus, and A Ottermann. "A desktop strategic study of the state of water services infrastructure and the state of its management". WISA Conference, Durban, May 2006.

A Manus, K Wall, K Moodley, L Boshoff and A Ottermann. "The DWAF water services IAM strategy positioned within the context of other major national IAM initiatives". WISA Conference, Sun City, May 2008.