

THE IAM STRATEGY TO KEEP OUR WATER SERVICES CLEAN AND FRESH AND RELIABLE

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Abstract

This paper describes the steady progress that the South African Department of Water Affairs and Forestry (DWAF) has been making with formulating a national water services infrastructure asset management (IAM) strategy. A "scan" of the state of water services infrastructure and the state of its asset management, is long complete. This was followed by a process of identifying elements needed for an enabling environment to ensure sound asset management. Since then DWAF, with the assistance of an external team, has been identifying priority strategic actions, taking cognizance of its mandated responsibility and what it needs to do within its own sphere and also in conjunction with others, particularly with other national government departments.

DWAF's efforts complement and are complemented by other national IAM initiatives.

1. INTRODUCTION

"Water clean and fresh and pure -- Viva!" *DWAF slogan*

The first part of the paper outlines the principal national IAM initiatives in South Africa, and how they are complementing the work of the national Department of Water Affairs and Forestry (DWAF).

In 2005, DWAF took the first steps to formulate a national water services infrastructure asset management (IAM) strategy (DWAF 2005). Its first project in this regard was completed early in 2007. A "scan" of the state of South Africa's water services infrastructure and the state of its asset management underpinned the subsequent process (as described in the second part of the paper) of fact-finding, identifying elements needed for an enabling environment to ensure sound asset management.

The third and last part of the paper describes the next water-services-specific initiative (and, at the time of writing, the current initiative), in which DWAF, with the assistance of an external team, is formulating, programming and commencing the more detailed actions, and in all of this cooperating with key stakeholders such as National Treasury and other government departments, and the local government and professional associations.

That increasing attention is being paid to water services infrastructure asset management is timely. 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 national water services IAM strategy, and its urgency.

2. NATIONAL IAM INITIATIVES

Government's integrated approach to macro planning and implementation will in due course cover the following, 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 in all three spheres (national, provincial and local) of government and throughout the public sector.

The aim of national Government is to promote IAM by means of initiatives including in respect of 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.

The IAM initiatives, and in particular the water IAM Strategy described in this document, are among a number of national IAM initiatives planned to complement each other. Principal among these are the "National Infrastructure Maintenance Strategy" (NIMS) (DPW et al 2006 - approved by Cabinet in 2006), the Government-wide Immovable Asset Management Act (GIAMA) (sponsored by DPW – Act 19 of 2007), the "Guidelines for Infrastructure Asset Management in Local Government" (Department of Provincial and Local Government (DPLG) 2006), and National Treasury's several measures over recent years to increase provincial and local government accountability for assets. (For example, National Treasury has published regulations requiring municipalities to do impairment testing at both the asset and network level.)

The national water services infrastructure asset management strategy (hereinafter abbreviated as the "Water IAM Strategy" or, simply "the Strategy") will, in respect of water services, further the aims of all of the above, and will assist water services infrastructure owners and other stakeholders with interpretation and alignment of these initiatives in respect of the water services environment.

The Water IAM Strategy is not an isolated initiative. It will need to synergise with, and will in turn to varying degrees be supported by, many current initiatives, some within the water sector, and some not. Figure 1 shows the context of the Strategy in relation to the most relevant of the national frameworks, water-only national enabling strategies, and local implementation strategies and plans.

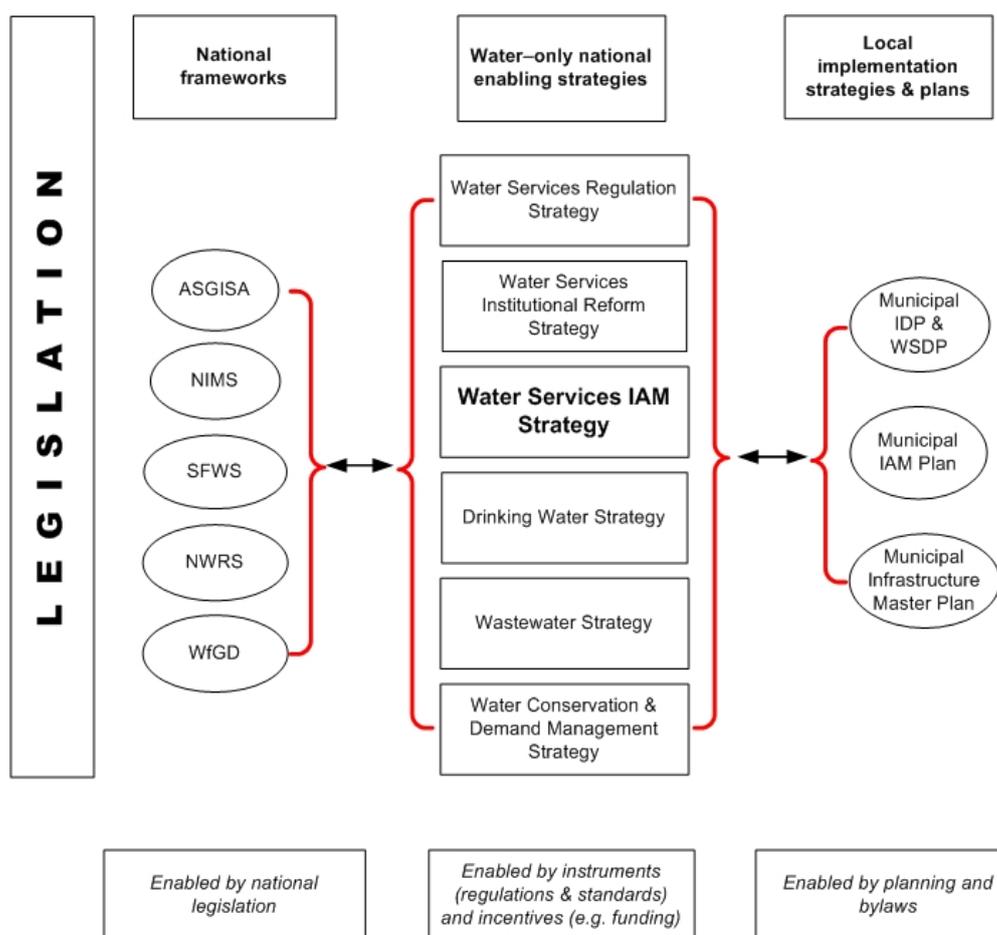


Figure 1. The national water services IAM strategy in context with other strategies and plans

At local level, water services IAM must take cognisance of municipal implementation strategies and plans, and indeed must be implemented as part of the municipal infrastructure master plan and its infrastructure asset management plan for all infrastructure. Municipal plans and priorities, and budget and capacity limitations, determine the extent to which water services IAM needs would be met in the context of a municipality having a range of demands and priorities. Similar requirements, in terms of their specific legislation, pertain to water boards.

Certainly, it is one of the objectives of the Strategy to raise the profile and the priority of IAM, and especially of water services IAM, in the municipal environment.

3. FACT-FINDING TO SOLUTION-IDENTIFYING

The findings of a desktop "scan" of the state of South Africa's water services infrastructure and the state of its asset management (undertaken 2005-2006), and analysis of those findings (undertaken 2006-2007), has been the foundation upon which the IAM Strategy has been built.

Analysis of the scan's findings ("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. 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.

Within the challenge areas, the following priority issues were identified:

- Life-cycle management (service delivery does not end with infrastructure projects)
- Knowing the infrastructure (including asset register)
- Implementing infrastructure asset management processes and procedures
- Clear responsibility and accountability for infrastructure asset management
- Hands-on approach (and also that one size does not fit all)
- Water services infrastructure asset management is a part of total asset management
- Funding requirements and processes for infrastructure asset management
- Infrastructure asset management staffing requirements (number and skills).

Solution Types:

The analysis then proceeded from challenges to the identification of a solution for each of the 400-plus generic challenges. Evaluation and finding commonality of solutions enabled classification of solutions into one or other of nine "solution types", viz:

- Awareness
- Finance
- Guidelines
- HR (i.e. including skills and appointments)
- Legal and procurement
- Monitoring and evaluation
- Management and leadership
- Operation and maintenance
- Technical.

Figure 2 shows the count of solutions per solution type (DWAF 2006):

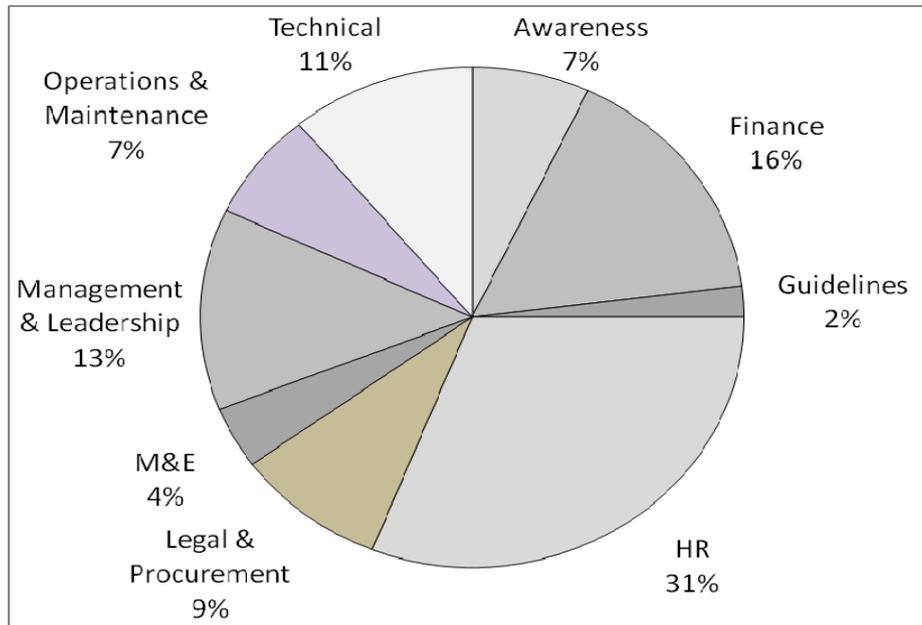


Figure 2. Solutions, by type

The above indicates that much needs to be done on the human resources, skills development and capacity building aspects. While the focus of capacity building is on municipal and other water services institutions' capacity, capacitation must also include DWAF and other national and provincial roleplayers that have to manage the process and regulate effective service delivery.

Management and leadership is another important area. Specific actions need to be taken by DWAF as sector leader, and by water sector managers and their political leadership in general. To make a strategic intervention of this kind, it is essential that politicians and senior managers fully understand, appreciate and support IAM.

Financial solutions came up third in the order of frequency. Necessary measures include, amongst others, improved budgeting and allocations for IAM, financial incentives for effective IAM performance, cost recovery, and various other planning, regulation and administration issues.

Given the way in which the solution types were defined, and that operation and maintenance problems the direct result of skills or leadership problems were counted under "human resources" or "leadership" and not under "operation and maintenance", that "operation and maintenance" as a class of solutions ranked only fifth in frequency is not surprising.

Responsibility leaders:

The way in which the analysis was done also enabled identification of the parties –

- with responsibility to lead the way forward for each solution, and
- that should be involved, or merely informed.

It emerged that water services authorities (WSAs) -- i.e. municipalities or groups of municipalities -- have the leadership responsibility most frequently. WSAs are at the forefront of service provisioning and hence have to take a leading role in the operation and maintenance actions. There is much that many of them can do without outside assistance to improve their skills and institutional capacity and their financial capability.

The next largest number of leadership responsibilities lie with DWAF. DWAF's leading roles relate primarily to:

- high-level leadership and management
- capacity building and support to water services institutions (including technical support, training, monitoring and evaluation)
- the development of IAM systems, guidelines and other tools specific to the water services sector
- specific aspects of awareness, finance (e.g. tariffs & cost recovery) and operations.

DPLG has the next largest number, followed by National Treasury. DPLG has a leading role to play in the various capacity building aspects and the management and oversight of municipal administration. Many of these actions relate to municipality/WSA responsibilities, but DPLG is also key to ensuring integration of the water services infrastructure components with all other assets managed by municipalities. Hence this Department's leading involvement in the management and leadership, and legal and procurement, solution areas.

4. THE WATER SERVICES IAM STRATEGY

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 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 has therefore set out at a high level how this objective will be achieved by DWAF and its strategic partners. In particular, it is on track to:

- Define the practice of IAM, and outline the principles of good IAM, in particular in respect of water services infrastructure.
- Outline 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.
- Outline what will be done to address water services delivery failures in targeted institutions in the short term.
- Outline what will be done to publicise improvements resulting from the above, and to disseminate information.

- Outline what will be done to facilitate the development of a culture of sustained improvement in the water sector in the longer term.
- Identify 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.
- Outline 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.
- Outline 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 identifies the "what and who" that needs to be done (but not the "when") in respect of each important action. The Strategy outlines 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.

The principles underpinning the Water IAM Strategy are:

1. **Systems approach.** IAM planning must look at the entire delivery chain (i.e. delivery of water services), identify the constraints within the system as a whole, and then methodically address these, prioritising the most serious constraints.
2. **IAM is an integral part of ongoing service delivery.** IAM is a continuous process, not a once-off project or an event. It is a process firstly in the sense that improvement must be planned, and improvement must be progressive. It is a process secondly in the sense that improvement is not static – demands, performance objectives, technologies all change with time, and infrastructure is subject to wear and tear and to obsolescence. And it is a process thirdly in the sense that infrastructure management and improvement in infrastructure management is, or should be, a day in and day out duty of the owners of that infrastructure.
3. **Water services focus.** This Strategy addresses improvements in the practice of water services IAM, as opposed to the management of water resource infrastructure or other municipal infrastructure such as roads and stormwater, electricity, solid waste facilities or public amenities.
4. **IAM focus.** Numerous challenges are encountered in IAM, such as the lack of technical expertise. This Strategy recognises the broad array of challenges with which infrastructure managers are presented, but concerns itself with the formulation of priority actions to address IAM-specific issues.

5. **Recognition that water services delivery is both a human right and commodity-based.** Water services infrastructure is utilised to treat, convey or store a commodity – i.e. water. The quality of water services is directly linked to the protection of water as a scarce resource, the quality of potable water and its impact on health and safety, and the quality of discharge into river systems.
6. **Outcomes-based.** Each priority must be outcomes-based and measurable.
7. **An appropriate mix of short term successes and long term sustainability.** Properly managed infrastructure assets have life spans that can be measured in decades, and thus the full benefits of IAM are felt over successive generations. Whereas this Strategy recognises that the full establishment of IAM practices has a medium to long term horizon, it also recognises that short term successes are not only possible but are required to establish credibility, harness support and to improve failing service standards.
8. **Promotion of an integrated, inter-disciplinary and inter-sectoral approach.** IAM operates at the interface of several functional disciplines, some of which include accounting and finance, town and regional planning, and engineering. The role of communities and of political leadership is also important – the latter sometimes of overriding importance. This Strategy promotes appropriate inter-disciplinary and inter-sectoral alignment, and thus an integrated approach to IAM.
9. **Focus on the key challenges, and prioritise.** Numerous challenges present themselves in the management of water services infrastructure. The Strategy recognises that only a select group of challenges can be addressed at any one time, and that the key challenges that impede the adoption and practice of sound IAM must receive priority attention.
10. **Adoption of the Pareto (80/20) Principle.** This Principle states that a small proportion of the full effort required to achieve a particular result may achieve close enough to the desired result, and that further efforts are often subject to diminishing returns. This is sometimes stated as “80% of the full result from 20% of the full effort”, or the 80/20 Principle. It is usually valid for IAM. (Extending this thinking, a “scan” effort, to determine as quickly as possible where the most critical problems lie, followed by the first steps of what would be a longer improvement process, would often be worthwhile. This effort can, quickly and cheaply relative to a more thorough effort, both bring about some rapid incremental improvement and also ascertain the extent of a problem and how much further effort would be required.)
11. **No one size solution fits all.** While the general principles of IAM remain valid for all institutions, the priorities differ from institution to institution, and also change with time – as do the techniques, the technological and non-infrastructure options and other factors.
12. **Start with the basics, and get them right.** The approach must be incremental. Do not attempt to progress further until the basics are right. 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.
13. **Political, management and operational focus.** All levels must commit to IAM in order for it to be successful – from politicians who ensure political will, legislative compliance and community requirements, to planning by management, to implementation at the operations level.

The Strategy comprises the components listed below. These will be defined in detail in the implementation plan. And to emphasise: the foundation of the Strategy is the rigorous process of fact-finding and analysis that preceded its formulation.

The Strategy components are:

- Create awareness. Start with issuing a water services IAM policy statement and with priming the sector.
- 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.
- 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.
- As quickly as possible --
 - # 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.
 - # Also set out the information requirements of the selection process, and create appropriate links to the existing and evolving databases identified for this purpose.
 - # Initiate the selection process, select, and programme the work for the first year or other period decided upon -- also resource it.
 - # Then commence implementation.
- In this --
 - prioritise quick wins (not "prioritise the worst cases" -- not necessarily the same thing, although it could be in some instances)
 - prioritise actions, focused on the specific problems, in respect of a small number of the very worst crisis cases.
- Make it clear to institutions what they are expected to do for themselves, and what they can get assistance with.
- In all these, address the basics first, and get them right. And, in addressing the basics, prioritise attention to the weakest links among the basics.
- 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).
- 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.
- Discover, select, organise, and disseminate good practice in water services IAM, so that the good practice lessons are put to good use. (In almost all circumstances, "good" practice is needed, not "best"!)
- Assess the most frequently encountered 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.

- Review the content of and the relationship between municipal planning and budgeting and IAM, prioritise, and rationalise -- in respect of what government expects in the general case, but also, in the course of time, in respect of each municipality.
- Where unsustainability and/or unviability of institutions is shown to be a significant factor retarding IAM, start the process of addressing this.
- Analyse skills resources in the sector, decide on required actions, and start the process of resolving this.
- Discover, through pilot implementation, the resources that are required for institutions to be able to undertake sound water services IAM.
- Draw up a pro forma recovery plan.

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. (Particularly of interest here are the National Infrastructure Maintenance Strategy programme of actions in respect of: strengthening the regulatory framework governing planning and budgeting for infrastructure management; requiring that skilled staff manage the planning and implementation of IAM programmes; identifying key strategic infrastructure' developing norms and standards for the maintenance of infrastructure; identifying actions to address skills shortages; and building the maintenance sector within the construction industry (and inter alia attending to procedures for procurement). (DPW et al 2006).)

In all of the strategy components, the principles listed above must be adhered to, 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”.

These components of the Strategy 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. (Note that the order of listing is not intended to indicate priority (whether priority of urgency or of importance).)

DWAF does not have the mandate or resources to address all of these. 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.

The Strategy, at the time of writing (May 2008) in final draft, spells all of the above in some detail. (DWAF 2008)

The Strategy acknowledges "that 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 “most important actions” 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.

5. IMPLEMENTATION PLAN

At the time of writing, the implementation plan and programme is being formulated. This is in broad terms identifying not just the “what and who”, but also the “when”, and will indicate prioritisation in terms of both urgency and importance. It will also indicate the “how”, including tactics, culture and incentives, and it will identify key performance areas and will set key performance indicators.

These details of selected aspects of the plan and programme are being formulated with the assistance of an external team and with the involvement of key sector partners such as DPLG, National Treasury, DPW, the South African Local Government Association and the Water Research Commission, and taking into account the roles of the various water services institutions. Cognisance is being taken of the main other national IAM initiatives, and how they are complementing achievement of the objectives of DWAF.

A workshop is due to be held in July, bringing together a large number of municipal and other stakeholders. The deliberations of this workshop, also, will feed into the implementation plan. The workshop will establish a municipal reference group that will support the implementation process.

The result will be an integrated and co-owned implementation framework.

6. 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 draft Strategy, a key milestone signaling DWAF’s determination that increasing attention be paid to water services IAM, is timely.

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.

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