

6. WATER CONSERVATION / DEMAND MANAGEMENT

Water conservation and demand management is related to the wise use of water, such that the inefficiencies within the bulk and reticulation system that result in water losses are minimised and controlled, and that the wastage of treated water either within the network or by the consumer is reduced. Through education and appropriate tariff structures the ZDM may reduce the water services demand and provide effective water conservation.

6.1 Targets for reducing unaccounted for water and water inefficiencies (MI/year): urban

Actual data for leaks and illegal connections in the urban areas still needs to be obtained. However, indications are that in some areas this information does not exist. Nevertheless, proper maintenance of the entire water services network is required to improve efficiency. It should also be noted that the implementation of a water loss management programme would delay the need for future extensions to WTW and also reduce the load on the current WWTW.

The ZDM is currently developing a Metering Strategy that is due for completion by about February 2005. Once complete, and implementation of the strategy has occurred, a full water loss investigation for all schemes and systems within the ZDM can be conducted. However, the ZDM is currently investigating water losses within the R293 towns of Nongoma and Ulundi. This investigation will be linked to the Metering Strategy to ensure that sufficient meters and correct placement give an accurate accounting of the water system. Once the Metering Strategy and water loss investigations have been completed the targets for reducing water inefficiencies will be addressed (Table 6.1).

Table 6.1: Targets for reducing water inefficiencies in the urban areas of the ZDM.

	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009
Reticulation leaks							
Illegal connections							
Unmetered connections							
Internal plumbing leaks							
Total UAW (should equal physical water losses reported in Table 8.3)							

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6.2 Targets for reducing unaccounted for water and water inefficiencies (MI/year): rural

Actual data for leaks and illegal connections in the rural areas still needs to be obtained. However, indications are that in some areas this information does not exist. Nevertheless, proper maintenance of the entire water services network is required to improve efficiency. However in general the majority of water loss in these schemes is through leaks and burst pipes (i.e. wear and tear) and illegal house or yard connections. Owing to the fact that no data exists for historic water consumption at these schemes it is difficult to determine the amount of increased demand and its exact nature. The ZDM needs to develop a strategy and utilise their bylaws to deal with illegal connections and improve scheme maintenance.

In addition, the ZDM is currently developing a Metering Strategy that is due for completion by about February 2005. Once complete, and implementation of the strategy has occurred, a full water loss investigation for all schemes and systems within the ZDM can be conducted. Once the Metering Strategy and water loss investigations have been completed the targets for reducing water inefficiencies will be addressed (Table 6.2).

Table 6.2: Targets for reducing water inefficiencies in the rural areas of the ZDM.

	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009
Reticulation leaks							
Illegal connections							
Unmetered connections							
Internal plumbing leaks							
Total UAW (should equal physical water losses reported in Table 8.4)							

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6.3 Reducing high pressures for residential consumers: urban

No pressure management study has been carried out by the ZDM to date. All maintenance is on a demand basis; therefore management programmes for pipelines and rehabilitation are currently not in place. However, the ZDM is in the process of completing a schematic layout for all schemes attached to a database that will assist in routine maintenance. The water loss investigation that will be commissioned once the Metering Strategy is finalised will assist the ZDM in determining whether network pressure changes are required to ensure efficient water use (Table 6.3). The ZDM is in the process of conducting an assessment for the appointment of a long-term WSP. Once appointed, the WSP/s will be responsible for constant monitoring of water use and losses to ensure that network pressures are sustainable.

Table 6.3: Projected network pressure changes for water services in urban areas.

No. of consumer units with water supply pressure of:	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009	Total no. of consumer units
<30kPa (0.3Bar)								
30 – 50kPa								
50 – 300kPa								
300 – 600kPa								
600 – 900kPa								
>900kPa (>9Bar)								
Total								

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6.4 Reducing high pressures for residential consumers: rural

No pressure management study has been carried out by the ZDM to date. All maintenance is on a demand basis; therefore management programmes for pipelines and rehabilitation are currently not in place. However, the ZDM is in the process of completing a schematic layout for all schemes attached to a database that will assist in routine maintenance. The water loss investigation that will be commissioned once the Metering Strategy is finalised will assist the ZDM in determining whether network pressure changes are required to ensure efficient water use (Table 6.4). However, in general the water pressures in the rural areas are low and are only sufficient for domestic/residential use and not for high water use industries. Therefore, the need to change the network pressures to reduce water losses through burst pipes, leaks, etc. in these areas is not likely. Nevertheless, the ZDM is in the process of conducting an assessment for the appointment of a long-term WSP. Once appointed, the WSP/s will be responsible for constant monitoring of water use and losses to ensure that network pressures are sustainable.

Table 6.4: Projected network pressure changes for water services in rural areas.

No. of consumer units with water supply pressure of:	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009	Total no. of consumer units
<30kPa (0.3Bar)								
30 – 50kPa								
50 – 300kPa								
300 – 600kPa								
600 – 900kPa								
>900kPa (>9Bar)								
TOTAL								

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6.5 Consumer/end-use demand management: public information and education programmes

Currently there are no education programmes on consumer demand management in the ZDM that target either the schools or the public. However, the ZDM recognises that this may be an important tool to help curb water use and illegal connections, especially in the rural areas. It is expected that the education programme will form part of the Communications Strategy that is being devised. The aim is to target schools and include a holistic programme on water use, conservation and health and hygiene programme. Public and adult education programmes will be highlighted in the Communications Strategy, however many of these will be related to the implementation of water and sanitation schemes. The envisaged programme targets are given in Table 6.5, however these will be revised once the Communications Strategy is in place.

Table 6.5: Envisaged education programmes related to water services within the ZDM.

	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009
% schools targeted by education programmes				15%	15%	15%	15%
% consumers targeted by public information programmes				5%	5%	10%	10%

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6.6 Leak and meter repair programmes

Both the rural and urban areas do not have formal leak and meter repair programmes. Maintenance is carried out on a demand basis through public or operator complaints or instruction. However, the ZDM is in the process of conducting a WSP assessment, and once complete a routine maintenance programme that includes leaks and meter repairs will form part of their functions and responsibilities. In addition, the ZDM is currently compiling a digital schematic layout of all schemes with an associated database. This dataset, that is due for completion by December 2004, will assist the ZDM in developing an efficient, effective and sustainable routine maintenance programme (Table 6.7). The Metering Strategy (due for completion by February 2005) and water loss investigations will also assist in devising a short-term leak and meter repair programme.

Table 6.7: Envisaged maintenance programmes related to water services within the ZDM.

Number of consumer units to be targeted by:	2002/ 2003	2003/ 2004	2004/ 2005	2005/ 2006	2006/ 2007	2007/ 2008	2008/ 2009
Leak repair assistance programme							
Retro-fitting of water efficient toilets							
Meter repair programme							

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6.8 Working for Water Programme

The Working for Water Programme is a DWAF funded programme that targets the removal of invasive alien vegetation from riparian zones using local labour. The target is to improve surface flow volumes and quality thereby providing further water available for reticulation. The ZDM itself is unaware of any Working for Water Programme currently operating or planned within their area. However, the ZDM in association with DWAF is currently conducting a mini catchments management study and total catchments water balance to ensure that their required abstraction for the planned regional schemes will not affect the resources or down stream users. This study is due for completion by March 2005 and will hopefully assist the ZDM in identifying potential sites for the Working for Water Programme (Table 6.8). In addition, information on the working for water programme from DWAF still has to be collected.

Table 6.8: Envisaged working for water programmes within the ZDM.

Location (river reach)	Project name	Description	Estimated water volume recovered	Status of project	Jobs created
No project areas are currently identified.					

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