



water affairs

Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

**AMATOLE WATER SUPPLY SYSTEM
RECONCILIATION STRATEGY**

**STATUS REPORT
2009**

TABLE OF CONTENTS

1	PURPOSE	4
2	INTRODUCTION	4
2.1	General	4
2.2	Development of the Strategy	4
2.3	Adoption of the Strategy	5
2.4	Implementation of the Strategy	6
3	SYSTEM YIELDS	6
3.1	Background.....	6
3.2	Current Status.....	7
4	WATER REQUIREMENTS	7
4.1	Background.....	7
4.2	Current Status.....	8
5	WATER BALANCE	8
5.1	Background.....	8
5.2	Current Status.....	10
6	RECONCILIATION OPTIONS	10
6.1	Background.....	10
6.2	Current Status.....	11
7	SYSTEM OPERATIONAL CONSTRAINTS	11
7.1	Background.....	11
7.1.1	Wriggleswade Link	11
7.1.2	Institution Constraints	12
7.2	Current Status.....	12
7.2.1	Infrastructure Constraints	12
7.2.2	Institutional Constraints	12
8	WATER CONSERVATION / WATER DEMAND MANAGEMENT	12
8.1	Background.....	12
8.2	Current Status.....	13
8.2.1	Buffalo City Municipality.....	13
8.2.2	Amatola Water	14
8.2.3	Amathole District Municipality	14
8.2.4	Kubsi Irrigation Board	14
8.2.5	Concerns	14
9	WATER RE-USE	15
9.1	Background.....	15
9.2	Current Status.....	15
9.2.1	Buffalo City Municipality.....	15
9.2.2	Amathole District Municipality	15

9.2.3	Concerns	15
10	WATER QUALITY	15
10.1	Background.....	15
10.2	Current Status.....	16
11	RESOURCE AUGMENTATION.....	16
11.1	Background.....	16
11.2	Current Status.....	16
12	RECONCILIATION SCENARIOS.....	17
12.1	Background.....	17
12.2	Current Status.....	21
13	COMMUNICATION STRATEGY	21
13.1	Background.....	21
13.2	Current Status.....	21
14	RECOMMENDATIONS.....	22

APPENDICES:

Appendix A Maps and Schematics indicating the extent of the AWSS

Appendix B List of the Strategy Study Recommendations

Appendix C Table of Identified Priority Actions

1 PURPOSE

The purpose of this Status Report is to:

- a) Provide an overview of progress in the implementation of the Amatole Water Supply System Reconciliation Strategy (the Strategy); and
- b) Emphasize the actions required to prevent medium- to long-term water supply constraints to the growing water requirements of the Amatole Water Supply System.

2 INTRODUCTION

2.1 General

The Amatole Water Supply System (AWSS) provides water to some 1 million people residing in the catchments of the Buffalo, Nahoon and Upper Kubusi Rivers, as well as for some 1000 ha of scheduled irrigation along the upper and middle reaches of the Kubusi River. The communities within the above catchments primarily fall within the Buffalo City, Amahlati and Ngqushwa local municipal areas with East London, King Williams Town, Bhisho and Stutterheim being the main urban centres within the System supply area.

The main storage dams of the AWSS are the Gubu, Wriggleswade, Rooikrantz, Laing and Nahoon dams (owned by the Department of Water Affairs and operated by the Amatola Water Board) and the Maden and Bridledrift Dams (owned and operated by the Buffalo City Municipality). The Gubu and Wriggleswade dams are located on the Kubusi River, the Maden, Rooikrantz, Laing and Bridledrift dams on the Buffalo River and the Nahoon Dam on the Nahoon River. A map and layout schematics contained in **Appendix A** illustrate the extent of the AWSS, which comprises of the Upper, Middle and Lower Buffalo water supply areas as well as the Upper and Middle Kubusi supply areas.

The supply area of the AWSS is the second largest contributor to the Eastern Cape economy after Port Elizabeth and its immediate surrounds, but is the economic hub of the Border-Kei Region. Urban water use within Buffalo City Municipality (BCM) in general and in East London / Mdantsane in particular, represents the largest use of water from the AWSS (82% and 65% respectively).

The growth in water requirements of the area served by the AWSS is driven primarily by housing growth (increased number and level of housing and services provided) and to a lesser extent by industrial and agricultural growth.

2.2 Development of the Strategy

The DWA Amatole to Kei Internal Strategic Perspective Study of 2004 identified that demand is likely to exceed supply from the AWSS soon after 2012. The need for the development of a strategy that could be used as a decision-support framework for making timeous and informed decisions on those interventions that should be implemented to meet the future water requirements until 2030 was therefore identified. In 2005 DWA, as the custodian of the country's

water resources, commissioned the Amatole Reconciliation Strategy Study (the Study) to develop a strategy to ensure the reconciliation of estimated future water requirements with the available supply from the AWSS for a planning horizon to 2030.

In addition, the Study also served to:

- Engage stakeholders in the identification and management of the regional and local water resources;
- Develop toolkits to assist with the future reconciliation of supply and requirement;
- Provide a guide for decision-making towards effective reconciliation of supply and requirement; and
- Recommend preparatory measures and actions to be taken and assign responsibilities for these, to meet future water requirements.

The Study was completed in March 2008, with the key actions interventions identified to ensure a reconciliation of supply and requirement going forward, being as follows:

- Constitute a Steering Committee of key stakeholders to oversee the implementation of the Strategy;
- Complete the Wriggleswade /Yellowwoods link to remove supply constraints in the existing System;
- Operate the AWSS as an integrated system so as to maximise the yield possible from the System;
- Implement Water Conservation and Water Demand Management (WC/WDM) measures to reduce water wastage and promote the efficient use of water;
- Re-use water, with a focus on the water currently being discharged to waste into the ocean; and
- Study and then implement as required, new water supplies to augment the yield of the System.

A list of the Strategy Study recommendations is contained in **Appendix B** of this report.

2.3 Adoption of the Strategy

Following the completion of the Strategy Study, the Strategy document was circulated for formal adoptions by the key stakeholders. Although the report was approved by DWA, it was not formally adopted by stakeholders at the time.

Formal adoption of the Strategy was therefore required subsequent to the start of the implementation of the Strategy. The status of the adoption of the Strategy is as follows:

- Department Water Affairs (DWA) : Approved, formal adoption pending adoption by other stakeholders;
- Buffalo City Municipality (BCM) : Adopted;
- Amatola Water (AW) : Adopted;
- Amathole District Municipality (ADM) : Not formally adopted as yet; and

- Kubusi Irrigation Board (KIB) : Not formally adopted as yet.

It is also still necessary to present the Strategy to the Office of the Eastern Cape Premier for information purposes.

2.4 Implementation of the Strategy

A Strategy Steering Committee (SSC) comprising of senior representatives of all key stakeholders was constituted on 24 June 2009, to oversee the implementation and maintenance of the Strategy. Other key interested and affected parties have since been co-opted onto the SSC. The key functions/responsibilities of the SSC are:

- Oversee the implementation of the Strategy;
- Update and ensure that the Strategy remains relevant; and
- Communicate the Strategy and progress/success with its implementation and maintenance.

The Amatole System Strategy Steering Committee meets twice a year, in May and October.

An administrative and technical support group, comprising of members of the key stakeholders as well as an appointed service provider, has also been established to provide support to the SSC in managing the implementation, maintenance and communication of the Strategy. The Amatole System Administrative and Technical Support Group (ASATSG) meet four times a year to facilitate the implementation of decisions taken by the SSC.

3 SYSTEM YIELDS

3.1 Background

The yields available from the AWSS dams are presented in Table 1.

Table 1 : Yields of the dams comprising the Amatole Water Supply System

Dam	98% Assurance of Supply		
	Without EWR	With EWR	
	(Mm ³ /a)	EC	(Mm ³ /a)
Maden	0.48	None	0.48
Rrooikrantz	3.70	C	1.49
Laing	18.27	C	12.54
Bridledrift	29.41	C	28.91
Nahoon	8.41	C	3.45
Gubu	2.87	C/D	2.11
Wriggleswade	31.80	C	20.28
Total yield of dams	94.94		69.26

Notes.

- ECs (River environmental classifications) are provisional;
- EWR (environmental water requirements) are dependant on the ECs; and
- The Wriggleswade Dam yields assume no infrastructural supply constraints i.e. the full yield can be fed into the System.

The environmental clarifications (ECs) of the respective rivers were determined as part of the Strategy Study. However, due process still needs to be followed before the ECs can be formally adopted. As can be seen from Table 1 above, the potential impact of implementing the environmental water requirements (EWRs) on the yield from the AWSS is significant. The phasing in of the EWRs are therefore not planned at this stage, but will need to be accommodated when new dams are built.

3.2 Current Status

At present the System yield is taken as the sum of the individual dam yields presented in Table 1 above are still deemed to be relevant.

The actual System yield can however be increased if the System is managed as an integrated system. The operation of the System is managed by the Amatole System Operations Coordination Committee (ASOCC) comprising of the owners and operators of the dams constituting the AWSS. The extent to which the System is actually operated as an integrated system, will be reported on by the ASOCC at all ASSSC meetings.

The additional incremental yield increase possible from the System, if the System is optimally managed, will be determined in the Annual Operating Rules study of DWA and will be forwarded to the ASATSG for incorporation in future reconciliation planning when available.

The EWRs are not being enforced at present but are included as a scenario in future reconciliation planning.

4 WATER REQUIREMENTS

4.1 Background

Various future water requirement scenarios were developed based on current and predicted future population data from various sources, coupled with predictions of progressively increasing levels of water services being provided, as well as current and projected industrial and agricultural water requirements. As a result of divergent base data received, difficulty in modelling the impact of HIV/Aids and the uncertainty of the regional economy going forward (impacts on population migration as well as industrial and agricultural growth), high and low water requirement scenarios were developed.

The water requirement scenarios are presented in Table 2. The requirement scenarios presented in Table 2 do not make provision to service the areas immediately outside of the AWSS supply area i.e. to the east and west of East London. Meeting these additional requirements is treated as options to the Strategy. Furthermore, the requirement scenarios do not take account of future WC/WDM measures. These are considered interventions that could be implemented to reduce the future water requirement.

The irrigation requirement is based on compensation releases and existing rights only, with no provision for growth. Any new irrigation application will be evaluated in terms of the Strategy.

Table 2 : Anticipated Water Requirements for the AWSS supply area

Year	Domestic		Industrial		Irrigation		Total	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
	(Mm ³ /a)	(Mm ³ /a)	(Mm ³ /a)	(Mm ³ /a)	(Mm ³ /a)	(Mm ³ /a)	(Mm ³ /a)	(Mm ³ /a)
2005	45.34	57.34	14.32	14.32	13.44	13.44	73.10	85.10
2010	43.45	64.50	14.52	15.32	13.44	13.44	71.41	93.26
2015	40.81	70.38	14.69	16.17	13.44	13.44	68.94	99.99
2020	37.73	75.57	14.87	17.07	13.44	13.44	66.04	106.08
2025	34.89	80.93	15.05	17.97	13.44	13.44	63.38	112.34
2030	32.27	80.62	15.23	18.87	13.44	13.44	60.94	112.93

4.2 Current Status

The combined domestic, industrial and irrigation historical water requirements from 2003 to 2010 are presented in Figure 1, together with the System yield. The average increase in requirement over this period equates to 0.9% per annum.

The requirement profile is characterised by:

- A general increase in requirement between 2003 and 2008;
- A general decrease in requirement between 2008 and 2010;
- A general steady decrease in requirement from Bridledrift Dam; and
- A general steady increase in requirement from the other dams.

BCM is responding to development pressures to the west of East London (West Bank, Kidds Beach and Kaysers Beach) and are implementing infrastructure to feed this area from the AWSS.

The ADM have initiated feasibility studies to service the Great Kei area (to the east of East London) from the AWSS, and have indicated that they will submit a license application for a supply from the Wriggleswade Dam to feed this area, in due course.

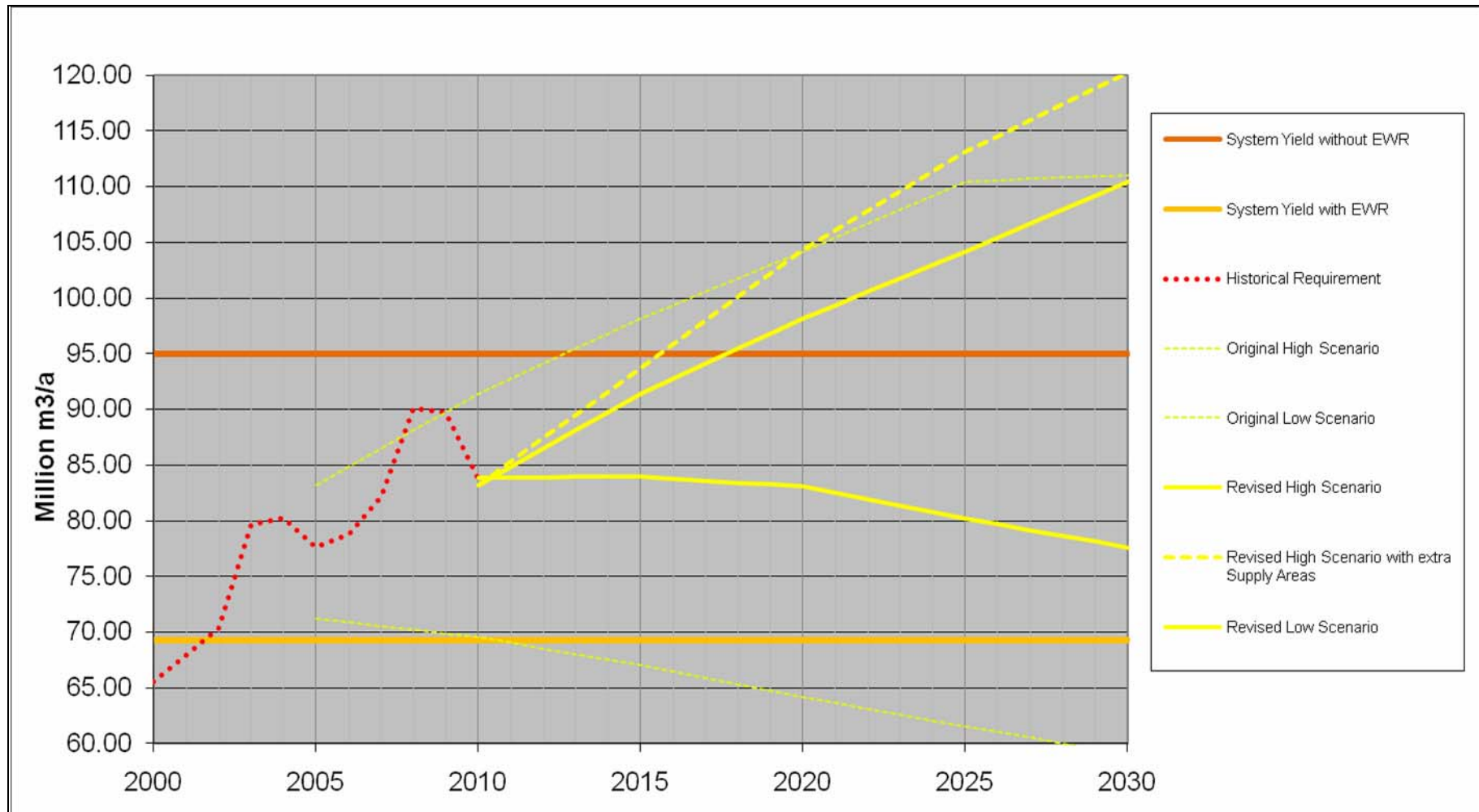
The high growth scenario as per the Strategy Study, but with the inclusion of the supply area to be west of East London, is deemed to be appropriate for forward planning, but with the forward projections starting as at the date of the last historical water requirement record.

5 WATER BALANCE

5.1 Background

Figure 1 shows the current high and low water requirements scenarios against supply available from the System.

Figure 1 : AWSS Water Requirement versus Supply



Based on the original high water requirement scenario, measures to reduce the requirement or to increase the supply would have to have been implemented by 2013 at the latest and possibly earlier, depending on the extent to which areas outside of the AWSS are supplied from the System or the EWRs are implemented.

Based on the original low water requirement scenario, the System has adequate yield to meet the requirements to 2030, provided that the EWRs were not implemented for the existing schemes prior to 2010.

Due to the future growth uncertainty, as indicated in the widely divergent requirement scenarios, the long time frames to plan and implement larger resource augmentation options and the risk of investing in infrastructure that may not be required/fully utilised in the future, the need to utilise existing resources/infrastructure assets optimally was identified as an imperative for water supply and requirement reconciliation in the AWSS.

5.2 Current Status

The updated requirement projections, based on historical water requirements to 2010, indicate the following:

- Measures to augment supply or to reduce requirement need to be in place by 2016 in order to meet the high requirement scenario;
- This could be delayed to 2018 provided that growth in the requirement for the supply area to the west of East London is curtailed or occurs at a slower rate than currently anticipated; and
- The System has adequate yield to meet the updated low growth scenario requirement to 2030, provided the EWRs for existing infrastructure are not implemented.

As the drop in requirement between 2009 and 2010 is not fully understood at present (i.e. whether it is a sustainable reduction in requirement), there is a measure of risk in basing future reconciliation planning on the 2016 and 2018 time periods.

6 RECONCILIATION OPTIONS

6.1 Background

The following reconciliation options were prioritised for implementation in terms of the Strategy:

- Water conservation and water demand management (WC/WDM) interventions;
- Completion of the Wrigglewade link;
- Operation of the System as an integrated system; and
- The re-use of water.

The development of new water supplies, including surface water supplies and desalination of brack and sea water will be considered for implementation once they have been adequately studied and the implementation of the above efficiency interventions are adequately advanced.

6.2 Current Status

The focus of the Strategy remains as presented above, with the following additions.

Stream flow enhancement through the removal of alien vegetation in the catchments of the AWSS is an ongoing initiative being undertaken by Working for Water (WfW). The impact of the above is however not anticipated to be significant and is therefore not included in current reconciliation planning. WfW will however provide updates to the ASSSC and should the need arise; the impact of alien vegetation removal will be incorporated in future reconciliation planning.

Sea water desalination is being investigated for supplementary supply in other coastal areas. The findings of these initiatives will be made available for possible consideration in the Amatole Reconciliation Strategy, when available.

The status of the other reconciliation options is described in more detail in subsequent chapters.

7 SYSTEM OPERATIONAL CONSTRAINTS

7.1 Background

There are at present certain institutional and infrastructure related constraints which prevent the optimisation of the system yield from the AWSS. These are as detailed below.

7.1.1 *Wriggleswade Link*

Water from the Wriggleswade dam is transferred via a tunnel and canal system to the Buffalo and Nahoon rivers, in order to augment the yields of the dams on these rivers. This transfer scheme was effectively completed prior to the Water Act coming into effect, except for a few pedestrian bridges across the Yellowwoods River which were the responsibility of the then Ciskei Government, but were never implemented. DWA has to arrange for the the crossings to be built in order to complete this project.

The original planning allowed for a transfer of up to 4 m³/s, but environmental concerns over a 2 km stretch of the KwaNkwebu River (a tributary of the Yellowwoods River, which drains into the Buffalo River), have recently arisen. As a provisional measure, DWA has undertaken to limit transfers across this reach of the river to a maximum of 1 m³/s, provided supply to users is not unduly compromised.

There is a current DWA study to investigate methods of circumventing this constraint by constructing weirs and bypasses at substantial cost, although there is no legal obligation to do so. The Wriggleswade scheme was selected for implementation and agreed with users without the cost of the above bypass works. Decisions on whether the bypass works are to be built, and if so who should pay for the works, will therefore need to be made as soon as possible after the completion of the study.

Addressing this constraint is important for reconciling water supply and requirement in the short- to medium-term.

7.1.2 *Institution Constraints*

The various components of the AWSS are owned and operated by several different institutions. As a result of the relations between the respective institutions, the AWSS is currently not being operated as an integrated system. A consequence of the above is that the yield from the AWSS is not being optimised at present.

A key recommendation of the Strategy Study is that the service level agreements between the respective parties be reviewed to facilitate the operation of the AWSS as an integrated system, as well as to address other matters such as water quality. In particular, the following aspects were identified as being in need of review:

- The rules of engagement;
- The quantities of water to be supplied by one party to another;
- Transparency and consensus in the pricing of water and the determination of charges;
- Conditions governing the provision of assets;
- The manner in which the use and provision of assets are to be optimised;
- The responsibility for augmenting assets; and
- Recourse in the event of one party failing to fulfil its obligations.

7.2 Current Status

7.2.1 *Infrastructure Constraints*

The study initiated by DWA:OA have been suspended due to procurement constraints. DWA:OA is therefore in the process of resurrecting this study.

A delay in the decision regarding the bypass works is therefore anticipated.

7.2.2 *Institutional Constraints*

The responsibility to address the operational and institutional constraints resides with ASSOC. The progress to date in addressing the institutional constraints is unclear, but ASSOC are to provide reports in this regard at future ASSOC meetings.

8 WATER CONSERVATION / WATER DEMAND MANAGEMENT

8.1 Background

It is the responsibility of the respective Water Services Authorities and Water Services Providers i.e. BCM, ADM and AW, as well as the Kubusi Irrigation Board (KIB), to implement WC/WDM interventions to facilitate water requirement and loss reduction in the AWSS. BCM is the key role-player in this regard, given that they are the largest user of water from the System.

It is estimated that as of 2005, losses in the AWSS amounted to between 23% and 42% of the total volume of water treated in the System. The large variance is as a result of the quality of the information available at the time. It is furthermore estimated that these losses could be reduced to between 8% and 32%, depending on the effectiveness of the measures implemented. The

interventions identified for implementation are divided into those currently in-hand, those still to be implemented and support initiatives to make the interventions more effective.

The savings deemed possible through WC / WDM interventions are presented in Table 3.

Table 3 : Potential Water Requirement Reduction through WC/WDM Interventions

Measure	Lower Limit Mm ³ /a	Upper Limit Mm ³ /a
Water Use Reduction	7	12
Water loss downstream of WTWs	7	13
Water loss at and upstream of WTWs	3	5

8.2 Current Status

8.2.1 Buffalo City Municipality

BCM does not have an approved WC/WDM strategy in place as yet, but are currently implementing various WC/WDM initiatives, including:

- Enhanced metering (bulk and retail);
- Water loss studies (Zwelitsha and Dimbaza);
- Upgrade of existing and/or construction of new communal toilets (coastal areas);
- Structured response to high water usage;
- Education awareness programmes (Mdantsane, Zwelitsha, Duncan Village & Dimbaza);
- Pipe midblock/replacement (Mdantsane, Duncan Village, Zwelitsha & Dimbaza);
- Meter replacement (coastal areas);
- Interventions beyond the meter (Zwelitsha, Duncan Village and Dimbaza);and
- Reduction of losses at the Umzonyana treatment plant.

Information provided by BCM indicates that between November 2008 and October 2009, the losses between the raw water released from the Bridledrift Dam and that abstracted from the downstream Buffalo River weir was in the order of 6.39 million m³ (13.6%) and difference between the raw water abstracted and the treated water delivered was in the order of 5.31 million m³ (13.1%). This implies a total loss of 11.7 million m³ (25%) during this period.

It is understood that BCM have initiated certain interventions to address these losses, but no detailed information has as yet been made available in this regard.

Information provided by BCM also indicates that non-revenue water for 2008/09 amounted to 28.3 million m³ (45%) and for the first six months of 2009/10 to 12.8 million m³ (41%).

Detailed reports as to the state of implementation or effectiveness in implementing the above WC/WDM interventions, as well as in developing a WC/WDM Strategy, is anticipated at future ASSSC meetings.

8.2.2 Amatola Water

Amatola Water does not have an adopted WC/WDM strategy in place at present, but do undertake routine audits of their water treatment plants and bulk mains. Losses through their respective plants and bulk mains for the period April 2009 to March 2010 are presented in Table 4.

Table 4 : Water losses on Amatola Water Infrastructure

Supply Area	Water Treatment Plant		Bulk Mains	
	Mm ³ /a	%	Mm ³ /a	%
Nahoon	0.46	4.7	0.46	5.0
Laing	0.75	8.1	-0.76	-9.0
Rooikrantz	0.06	10.5	0.06	11.5

Amatola Water has on two occasions during 2009/10, transferred water between the Wiggleswade and Nahoon dams. The details of the transfers, including the losses incurred in the transfers, are presented in Table 5.

Table 5 : Releases from Wiggleswade Dam

Release	Released	Loss	
	Mm ³ /a	Mm ³ /a	%
3 June 2009 to 7 July 2009	6.266	0.994	15.6
5 February 2010 to 11 March 2010	6.099	0.801	13.1

Further information on progress in developing a WC/WDM Strategy and in implementing WC/WDM interventions, is anticipated at future ASSSC meetings.

8.2.3 Amathole District Municipality

The Amathole District Municipality do not have an adopted WC/WDM strategy in place as yet.

Further information on progress in developing a WC/WDM Strategy and in implementing WC/WDM interventions, is anticipated at future ASSSC meetings.

8.2.4 Kubsj Irrigation Board

No information has been made available as to whether the Board are implementing any WC/WDM initiatives.

Further information on progress in developing a WC/WDM Strategy and in implementing WC/WDM interventions, is anticipated at future ASSSC meetings

8.2.5 Concerns

The Strategy is highly reliant on WC/WDM to ensure a reconciliation of supply with requirement going forward. Given that the key stakeholders do not have approved WC/WDM strategies in

place as yet, raises concern regarding the reliance one can place on WC/WDM to ensure reconciliation going forward.

9 WATER RE-USE

9.1 Background

There are thirteen waste water treatment works (WWTW) within the AWSS. Three discharge effluent directly into the sea and four into rivers downstream of dams. Currently some 24.0 million m³/a of effluent is being discharged to waste via these seven WWTWs.

The six WWTWs located geographically high up in the System discharge effluent into river systems upstream of dams and thereby augment existing dam yields. Any intervention at these works would largely address water quality issues, as opposed to augmenting system yields.

Less than 1% of the effluent from the seven coastal WWTWs is currently being re-used. This use is primarily for local irrigation of golf courses and for agriculture.

9.2 Current Status

9.2.1 Buffalo City Municipality

BCM do not have an adopted Re-use strategy in place as yet. BCM are however planning to implement re-use measures together with the construction of their proposed new regional WWTWs at Reeston and Zwelitsha. No further details have been provided in this regard to date, but are anticipated at future ASSSC meetings.

9.2.2 Amathole District Municipality

The ADM do not have an adopted Re-use strategy in place as yet. However, re-use at the WWTW operated by the ADM would not result in system yield augmentation.

9.2.3 Concerns

The re-use of water is a key reconciliation intervention in terms of the Strategy. Given that none of the key stakeholders have an adopted re-use strategy in place, raises concern as to the reliance one can place on re-use to ensure reconciliation going forward.

10 WATER QUALITY

10.1 Background

Previous studies proposed that the AWSS be operated in such a manner so as to optimise water quality issues in the AWSS. However, a conclusion of the Strategy Study was that the AWSS be operated so as to optimise the yield possible from the System, and that water quality concerns be addressed at the source of the pollution.

It was recommended that such water quality interventions should focus on:

- Reduction of saline effluent sources;
- Elimination of sewer leaks, particularly in Mdantsane;

- Reduction of phosphate loading from point sources e.g. enhance waste water treatment; and
- Control of diffuse pollution from informal settlements to reduce bacterial loading.

10.2 Current Status

The responsibility to monitor and address water quality concerns resides with ASOCC.

Reports on water quality issues and proposed interventions are anticipated from ASSOC at future ASSSC meetings.

11 RESOURCE AUGMENTATION

11.1 Background

The implementation of large surface water resource augmentation projects can take up to ten years or more to complete, from feasibility study to water becoming available for use. It is therefore essential that potential future sources of supply be identified and investigated as soon as possible.

The AWSS is not as yet a truly integrated system. In particular, the Upper Buffalo sub-system is not seamlessly integrated into the System. Therefore, one needs to look specifically at this sub-system when considering and prioritising supply interventions.

A number of surface water supply reconciliation options were identified in previous studies and reviewed during the Strategy Study. These will however need to be studied further by DWA:OA to enable consideration for implementation.

The surface water supply options identified to increase the available supply are listed below:

- Sandile and Binfield Park dams transfers (the transfer of surplus water from these dams into the AWSS);
- Potential Ravenswood dam on the Keiskamma River;
- Potential Thornwood dam on the Keiskamma River;
- Potential Stone Island dam on the Nahoon River; and
- Potential Groothoek dam on the Gonubie River.

The groundwater potential of the area was reviewed during the Strategy Study, but was found not to be a viable augmentation option in this instance.

11.2 Current Status

DWA:OA have not initiated any studies for the above augmentation options as yet.

12 RECONCILIATION SCENARIOS

12.1 Background

A scenario planning process was undertaken as part of the Strategy Study to identify, evaluate and assess alternative groupings and phasing of reconciliation options so as to determine the most appropriate combination of options that should be implemented to reconcile water supply and requirement in the AWSS up to 2030. The objective was not to select one “favourable scenario”, but to identify which options should be studied first to cater for a range of possible scenarios, to allow DWA and other stakeholders the maximum flexibility in making informed decisions on which interventions to implement. The outcome of the reconciliation scenario initiative was a list of options that should be implemented or studied to a feasibility level of detail by specific dates, as well as the organisations responsible for these. The list of the identified priority actions is contained in **Appendix C** of this report.

The scenario planning process was utilised to *inter alia* assess the following:

- The benefits of implementing WC/WDM (implications if not implementing WC/WDM); and
- The reconciliation implications of implementing the ecological reserve for existing water resources.

During the scenario planning process, eleven reconciliation scenarios were considered. Each scenario had a specific objective, which impacted on the possible studies required, as well as the date when DWA and/or the relevant stakeholders should commence the implementation process. The list of Priority Actions identified is contained in **Appendix C** of this report.

A summary of the Net Present Values (NPVs) for the various scenarios considered are presented in Table 6, whilst graphical representations of selected scenarios are presented in Figures 2,3, 4 and 5.

Table 6: NPVs of the identified reconciliation scenarios

Scenario Number	Scenario Title	NPV (R million)
1	Full WC/WDM interventions with surface water asset creation	510
2	Full WC/WDM interventions with use of return flow otherwise discharged downstream of Bridle Drift and Nahoon dams	276
3	Full WC/WDM interventions with no surface water options	276
4	Full WC/WDM interventions with a more balanced approach	276
5	WC/WDM interventions that BCM has in hand and the creation of surface water assets	534
6	WC/WDM interventions that BCM has in hand, the use of treated wastewater and the creation of surface water assets	228

Scenario Number	Scenario Title	NPV (R million)
7	No WC/WDM interventions or failure of the WC/WDM interventions that BCM has in hand, with surface water asset creation	800
8	Impact of the lower water requirement with the interventions that BCM has in hand	151
9	Impact of the EWR, with full WC/WDM intervention	790
10	Impact of the EWR, with WC/WD interventions that BCM has in hand	833
11	Impact of the EWR on the lower water requirement, with WC/WDM interventions that BCM has in hand	151

Notes:

- Scenarios 1 to 4 assess the extent to which the full WC/WDM interventions can meet the upper water requirement scenario. Thereafter surface and re-use options are considered to reconcile requirement and supply.
- Scenarios 5 and 6 assess the extent to which only those WC/WDM interventions BCM currently have in hand, can meet the upper water requirement scenario. Thereafter surface and re-use options are considered to reconcile requirement and supply.
- Scenario 7 assesses the impact of failing to implement WC/WDM interventions and utilising only surface water options to meet the high water requirement scenario.
- Scenario 8 assesses the extent to which only those WC/WDM interventions BCM currently have in hand, can meet the low water requirement scenario.
- Scenarios 9 and 11 assess the impact of implementing the EWRs on both the high and low water requirements scenarios.

The above table clearly indicates the cost implications of not implementing WC/WDM and re-use, as well as the cost implication of implementing the EWRs.

Figure 2 : Scenario 1: Full WC/WDM Interventions with new Surface Water Supplies

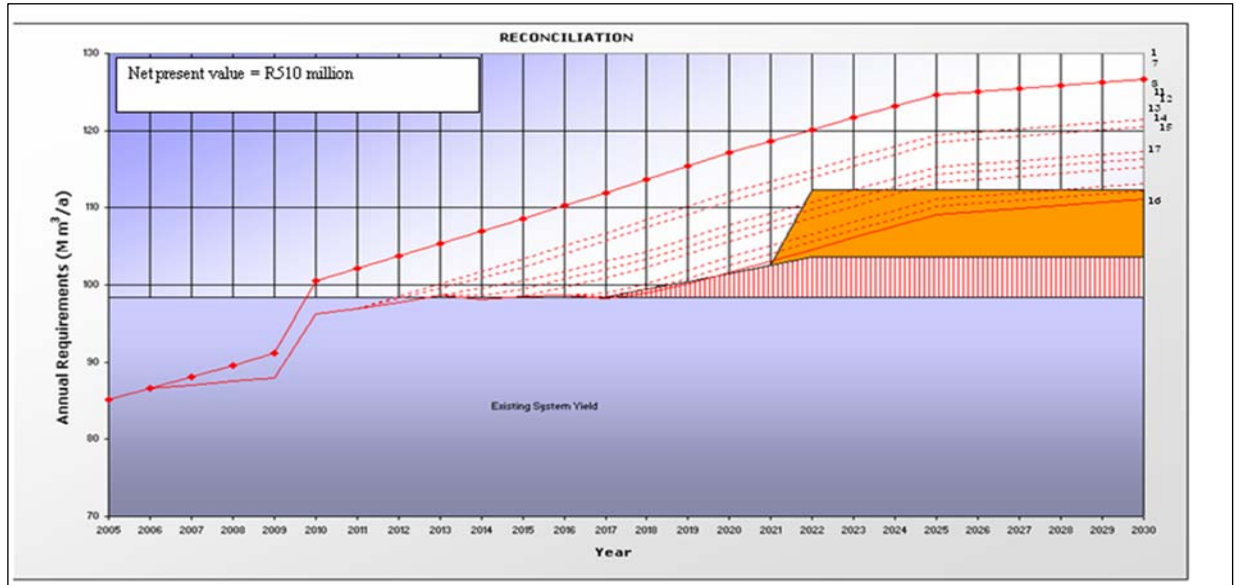


Figure 3 : Scenario 3: Full WC/WDM Interventions with no Surface Water

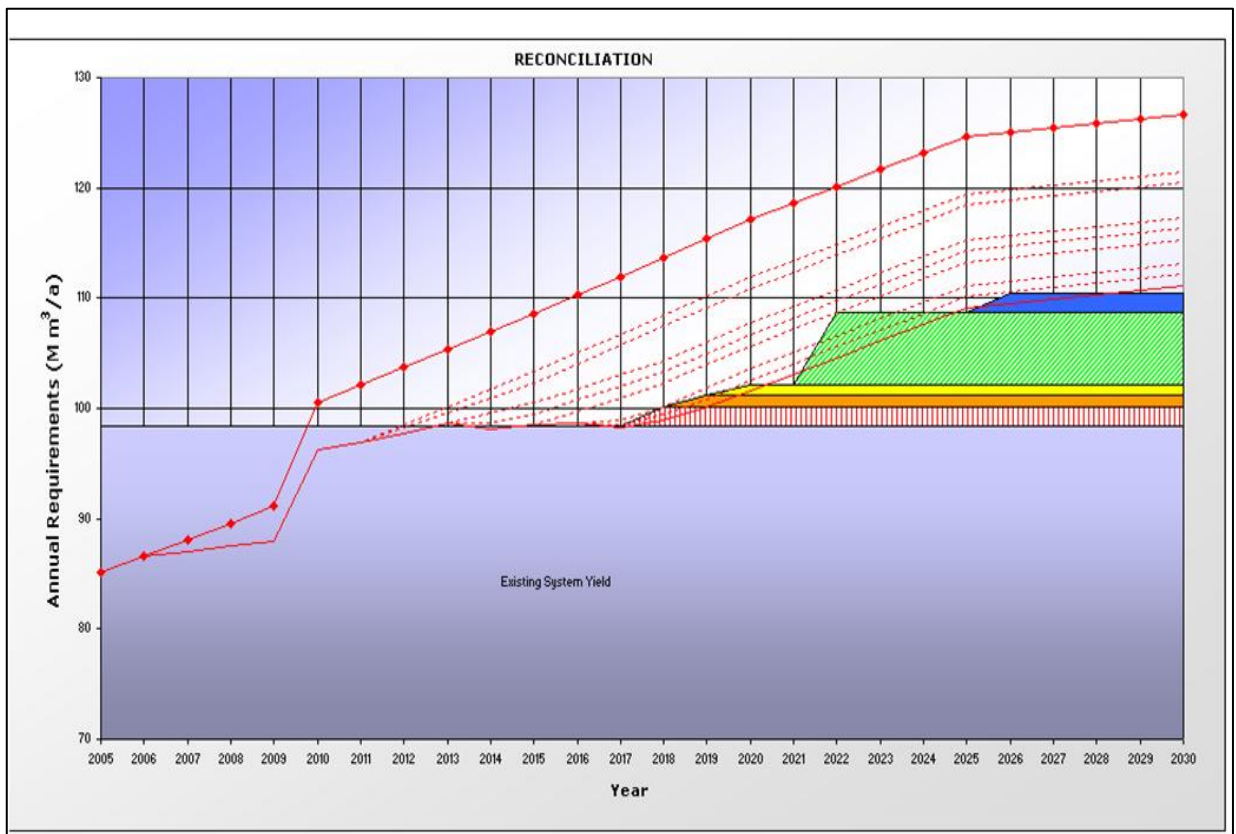


Figure 4 : Scenario 5: WC/WDM Interventions that BCM have in hand and new Surface Water Supplies

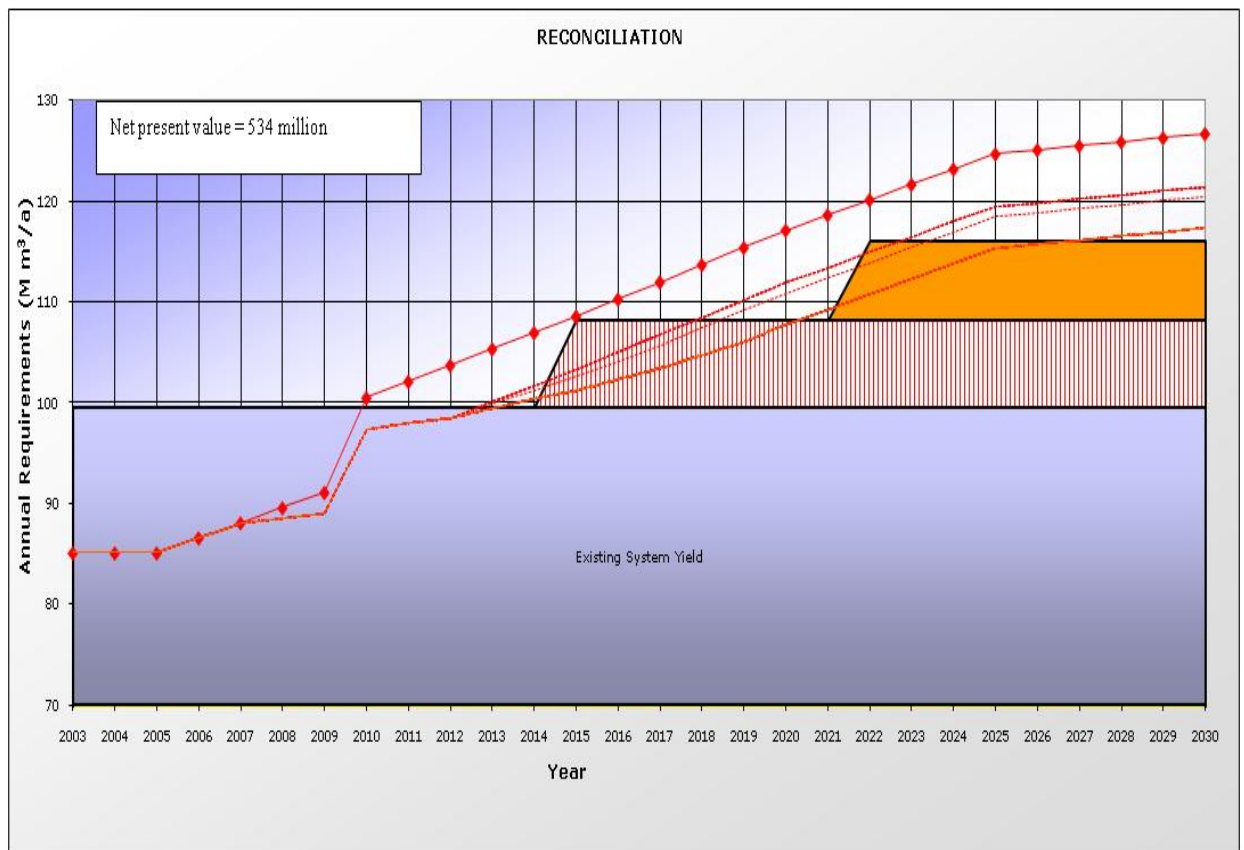
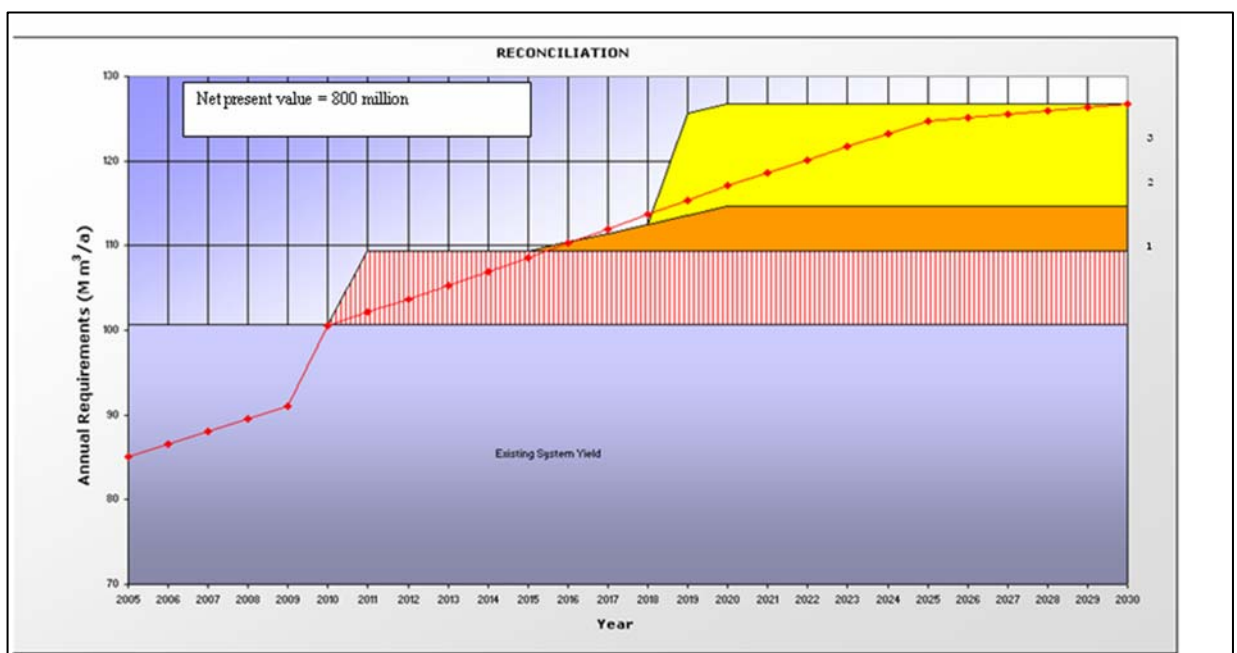


Figure 5 : Scenario 7: No WC/WDM Interventions or failure of the WC/WDM interventions that BCM has in hand, with new surface water supplies



12.2 Current Status

There has to date been no structured response by any of the stakeholders to implement any of the priority actions contained in **Appendix C**.

There has as a result been a two year delay in implementing the reconciliation options, and there is therefore a need to facilitate that options are implemented and that reconciliation scenario planning exercise is reviewed based on updated information.

13 COMMUNICATION STRATEGY

13.1 Background

A key requirement in implementing the Strategy is to communicate the outcomes of the Strategy, including progress in the implementation and maintenance thereof to stakeholders. This is to allow stakeholders opportunity to both provide input to the Strategy and to extract information from the Strategy, to assist them in directing their own future planning.

13.2 Current Status

A communication strategy, which makes provision to communicate to the following persons / institutions, was adopted at the ASSSC meeting of November 2009:

- Primary stakeholder individuals (directly involved in water planning);
- Secondary stakeholder individuals (affected by water planning); and
- General public.

The strategy makes provision to communicate to these persons/institutions via the following mechanisms:

- Status Report : primary stakeholder : annually
- Flyer : secondary stakeholder : bi-annually; and
- Press release : all : following significant events.

The details of the first communication to be released are as follows:

- Press release : to be approved at the ASSSC meeting of 19 May 2010;
- Flyer : to be circulated following the press release;
- Status Report : to be circulated following the press release;
- Strategic Planning for Water Resources Report : to be circulated following the press release.

The ASATSG is responsible to receive and coordinate all communication between the respective stakeholders, whilst the key stakeholders will have their own internal communication needs and mechanisms.

14 RECOMMENDATIONS

The following recommendations are made to assist in reconciliation planning going forward:

- In light of the delays in initiating the projects/studies recommended in the Strategy, coupled with the updated historical water requirement figures and forward growth projections, the reconciliation scenario exercise be repeated so as to review the time frames for the implementation of projects and/or commencement of studies;
- In light of the absence of WC/WDM strategies, the limited in depth understanding of current and planned WC/WDM initiatives as well as the potential savings thereof, the ASATSG meet with key stakeholders (BCM, AW, ADM & KIB) to review their ongoing and planned WC/WDM initiatives and the savings deemed possible through the various initiatives;
- In light of the absence of a Re-use strategy, the limited in depth understanding of current and planned re-use initiatives as well as the potential yields thereof, the ASATSG meet with BCM to review their ongoing and planned re-use initiatives and the yields deemed possible through the various initiatives; and
- That the above be undertaken in advance of the proposed scenario planning exercise.