KWAZULU-NATAL COASTAL METROPOLITAN AREA WATER SUPPLY SYSTEM

Strategy Steering Committee (SSC) for the Implementation and Maintenance of the Reconciliation Strategy

MEETING 5: PROGRESS REPORT

September 2012

1. INTRODUCTION

The fifth meeting of the Strategy Steering Committee (SCC) was held on Tuesday, 11 September 2012 to discuss the further progress made with regard to the implementation of the Water Reconciliation Strategy for the KwaZulu-Natal Coastal Metropolitan Areas and the supply challenges that exist in the area with regard to implementation.

A summary of the progress to date with the implementation of the main strategies up to September 2012 is presented in this report. The progress with the various aspects of the strategy was supplied by the responsible authorities as follows:-

- The Department of Water Affairs (DWA) supplied information on the water balances with input from Umgeni Water.
- DWA provided input on the progress with the Mooi Mgeni Transfer Scheme, Hazelmere Dam Raising, Mkomazi Scheme and the Mvoti Scheme.
- eThekwini, iLembe, Ugu and Msunduzi municipalities provided report back on the progress made with Water Conservation and Water Demand Management (WC/WDM) initiatives.
- eThekwini supplied information on the progress with the re-use of treated sewage effluent.
- Umgeni Water reported on progress with the Lower Thukela Bulk water supply transfer scheme, upgrade of the North Coast water infrastructure and the desalination of seawater.
- DWA provided a report back on the water supply situation on behalf of the System Operation Forum for the coastal area.

2. PROBLEMS WITH WATER SUPPLY

The water situation in the KwaZulu-Natal Coastal Metropolitan Area is such that the water use already exceeds the assured supply of water. This poses a challenge in water security for this metropolitan area. Recent above average rainfall has kept the major supply dams full which has led to a false sense of security regarding the water supply situation.

This area is experiencing rapid growth in water requirements attributed to the migration of people from the rural areas, economic growth and development initiatives. A below average rainfall period in the area will result in the need for water restrictions which will have impacts on the local economy.

The Reconciliation Strategy for the KwaZulu-Natal Coastal Metropolitan Area Water Supply System (**Figure 1**) identifies, prioritises and confirms the essential interventions necessary to meet the water requirements of the area for the next twenty five years (Department of Water Affairs, 2009). The strategy was developed by DWA in close collaboration with the eThekwini Municipality, Umgeni Water, other municipalities and stakeholders.

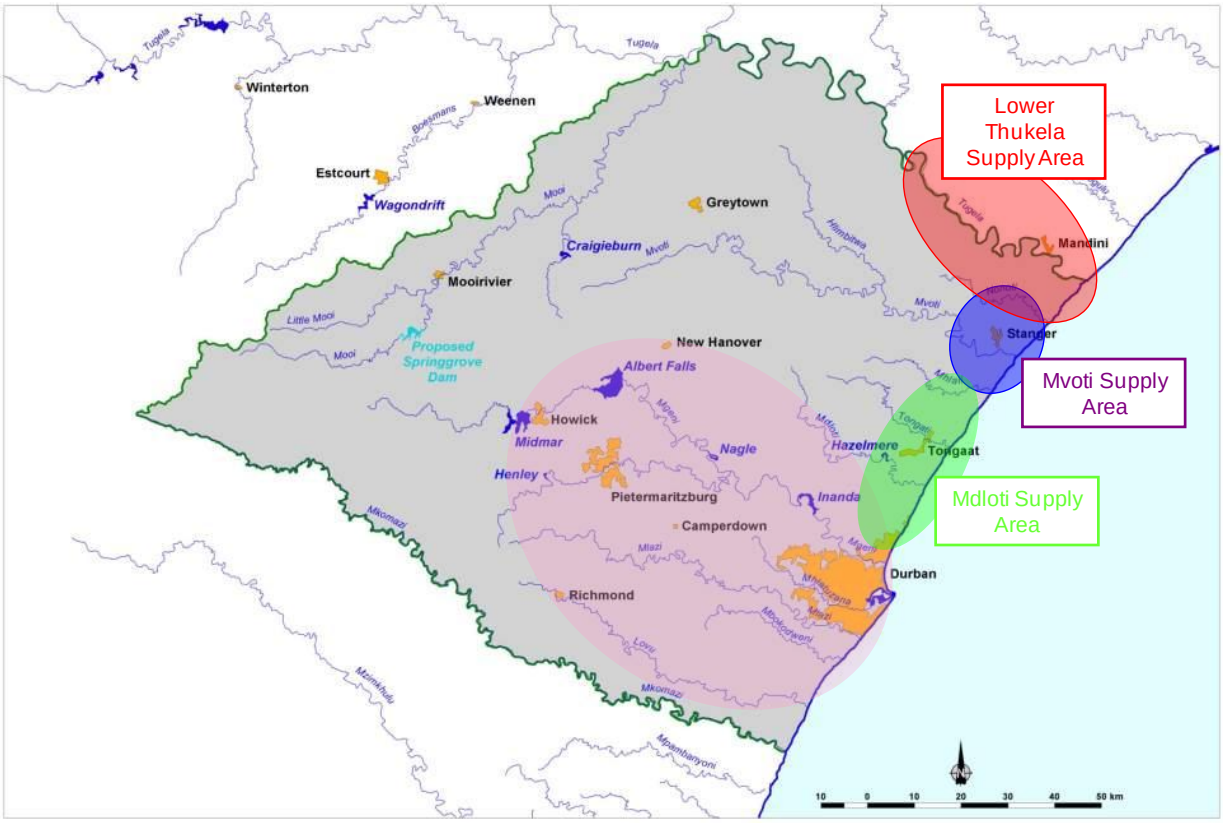

Figure 1: KwaZulu-Natal Coastal Metropolitan area (Pietermaritzburg to Durban from the west to east and from KwaDukuza in the north to Amanzimtoti in the south)

Various actions supporting the strategy implementation to address potential water shortages are underway. These include major infrastructure development such as the construction of the Spring Grove Dam, phase 1 of the Lower Thukela Bulk Water Supply Scheme and the raising of the Hazelmere Dam. In the short- to medium-term measures like WC/WDM, the use of treated effluent from wastewater treatment works, desalination of seawater and the Ngwadeni Dam in the Lower Mkomazi River are currently measures being implemented and studied in the area to deal with potential shortages. Investigations of the feasibility of longer term options that are underway include the Mkomazi River Transfer Scheme and the Mvoti River Development. The building of dams and supply schemes are major undertakings that take time to get the required regulatory approvals, designs, funding and to implement.

3. WATER BALANCES

The water balances depicting the water reconciliation situation in the Mvoti, Mdloti and Mgeni River Systems were updated with the latest implementation schedule of the interventions for the following two scenarios:

Scenario A: Including re-use of treated effluent

Scenario B: Excluding re-use of treated effluent

The water balance diagrams of the different river systems for both scenarios are presented **Section 3.1** (Scenario A) and **Section 3.2** (Scenario B) below. The graphs indicate how the water requirements compare with the available resources and also the augmentations required to meet the future water requirements over the planning period.

3.1 Scenario A (including re-use of treated effluent)

Mvoti River System

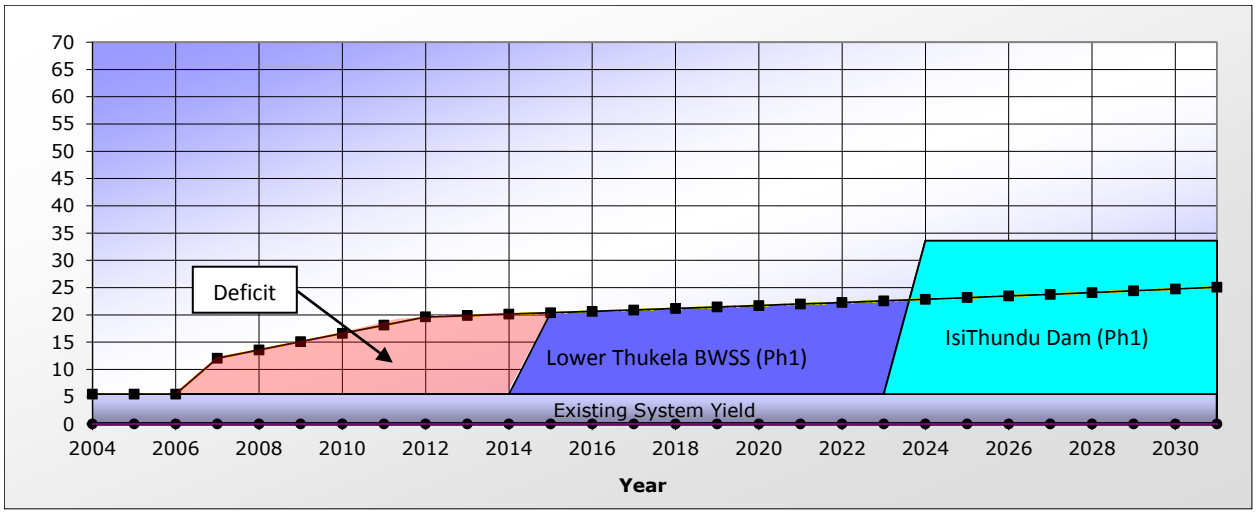

Figure 2: Water reconciliation situation in the Mvoti River System

Figure 2 shows the following:-

- The black line represents the water requirement projection for the Mvoti River System. The curve was adopted from the KZN Recon Strategy and was originally derived from the Water and Sanitation Master Plan for the iLembe District Municipality.
- The red shaded area indicates where the water requirements exceed the yield of the system and deficits in supply and a high risk of water restrictions will be experienced.
- The blue area represents the support that the Lower Thukela Bulk Water Supply Scheme (BWSS) will provide to the system. According to Umgeni Water (UW), the initial phase of the Lower Thukela BWSS (20 million m^3/a or 55 Ml/day) has been scheduled to be completed in December 2014. The scheme has been designed for a larger capacity 40 million m^3/a (110 Ml/d, Phase 2) and can possibly be upgraded to this capacity (from 20 million m^3/a to 40 million m^3/a) 18 months after the initial phase has been implemented.
- The light blue area represents the additional yield provided by the Mvoti River Development Project (IsiThundu Dam) from the year 2024 onwards. The total yield of IsiThundu Dam is 28.1 million m^3/a (Phase 1). The illustrated total surplus yield from the IsiThundu Dam is used to support the Mdloti System from 2030 onwards as shown in Figure 3.

Figure 2 highlights the following:-

- There is a high risk of water restrictions until the Lower Thukela BWSS is scheduled to deliver water to the Mdloti River System.
- Once the Mvoti River Development (IsiThundu Dam) has been developed, support is no longer required from the Lower Thukela BWSS and surplus yield is available to support the Mdloti River System.
- The water requirement projection is based on the Water and Sanitation Master Plan that was finalised for the iLembe District Municipality in 2007. It is suggested that a water requirement project be revised for this area and that the actual water use is monitored and tracked.

Mdloti River System

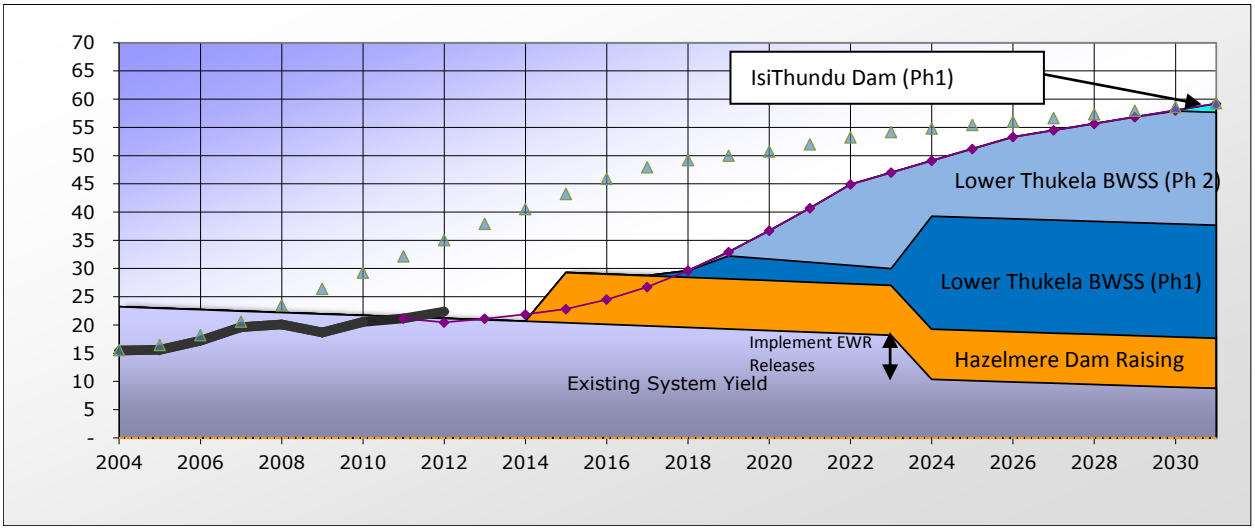

Figure 3: Water reconciliation situation in the Mdloti River System

Figure 3 shows the following:-

- The purple line represents the latest water requirement projection for the Mdloti River System, provided by Umgeni Water (September 2011) and the grey dotted line represents the previous projection used in the KZN Recon Study (Umgeni Water 2007). The decrease in the existing system yield is as a result of gradual siltation that reduces the storage capacity of Hazelmere Dam.
- The orange area represents the additional yield available (8.9 million m^3/annum) due to the raising of Hazelmere Dam (December 2014).
- The blue area represents the support that the Lower Thukela Bulk Water Supply Scheme (BWSS) will provide to the system. Over the 2018 and 2024 period, the Lower Thukela BWSS (Phase 1) supports both the Mvoti and the Mdloti Systems and operates at maximum capacity of the scheme from 2018 onwards. Phase 2 of the scheme is required to support the Mdloti System from 2019 and operated at maximum capacity from 2030 onwards.
- The small light blue area represents the surplus yield available from the Mvoti System (IsiThundu Dam) to support the Mdloti system from the year 2030 onwards.
- It was proposed that the Ecological Water Requirements (EWR) are introduced once the Mvoti River Development Project (IsiThundu Dam) has been developed and the Lower Thukela BWSS (Phase 1) can be fully utilised to support only the Mdloti System. As a result the EWR releases were only met from the year 2024 onwards, which is illustrated by a sudden drop in yield in the year 2024.

Figure 3 highlights the following:-

- From the figure it can be see that the latest actual water use exceeds the UW September 2011 Projection. Umgeni Water has indicated that a revised projection will be available in September/October 2012.
- A very small supply deficit situation exists over the 2013/2014 period until the Hazelmere Dam Raising has been completed.
- The Lower Thukela BWSS (Phase 1) supports both the Mvoti and Mdloti systems from 2018 up to 2024. Once Phase 1 of IsiThundu Dam has been implemented in 2024 then the full capacity of Phase 1 of the Lower Thukela BWSS is available to supply the Mdloti System. Phase 2 of

the Lower Thukela BWSS is required from 2019 and is utilized at maximum capacity from 2029 onwards. Support is required from the IsiThundu Dam from 2030 onwards.

Mgeni River System

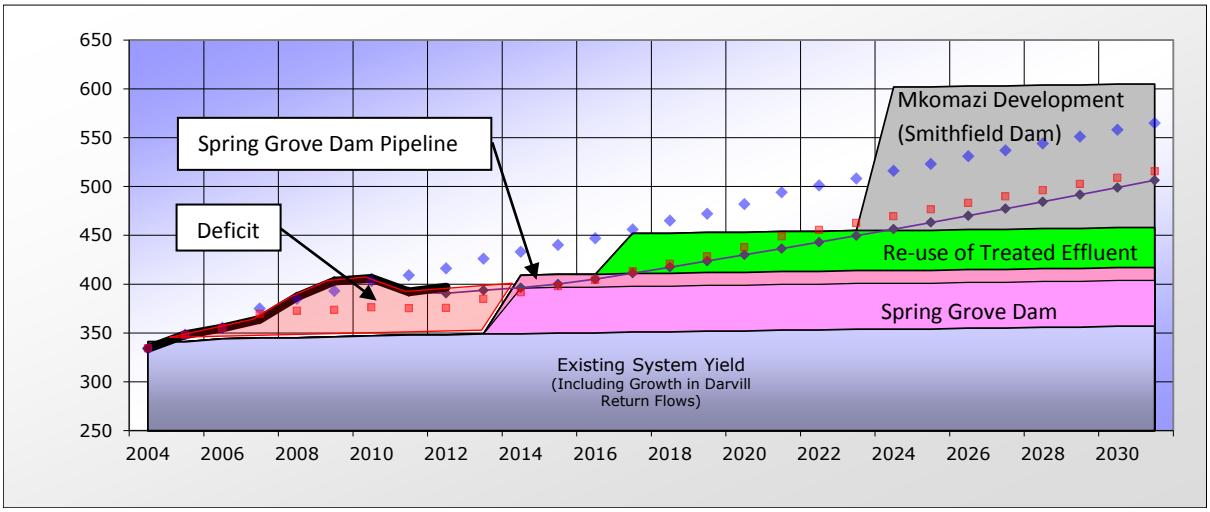

Figure 4: Water reconciliation situation in the Mgeni River System (including re-use of treated sewage effluent)

Figure 4 shows the following:-

- The purple solid line represents the latest water requirement projection for the Mgeni River System, provided by Umgeni Water (September 2011). The blue dotted line represents the previous projection used in the KZN Recon Study (Umgeni Water 2007) and the red dotted line is the same projection with WC/WDM initiatives included.
- The pink area represents the total additional yield available (60 million m^3/annum) due to the implementation of Spring Grove Dam (December 2013).
- The green area represents the additional yield (41 million m^3/annum) created as a result of the re-use of treated effluent (2017).
- The grey area represents the additional yield (147 million m^3/a) provided by the Mkomazi River Development Project (Smithfield Dam) from the year 2024 onwards, which is the earliest implementation date for the scheme.

Figure 4 highlights the following:-

- The latest actual water use slightly exceeds the UW September 2011 projection and Umgeni Water has indicated that a revised projection will be available in September/October 2012.
- Based on the September 2011 projection the Mgeni River System is in a deficit situation up until Spring Grove Dam is implemented and starts to deliver water in 2014 (December 2013). Sufficient water is available for the remaining portion of the projection period provided that both the re-use of treated effluent and the Mkomazi River Development projects are implemented to deliver water in 2017 and 2024 respectively.

3.2 Scenario B (excluding re-use of treated effluent)

The water balance diagram for the Mvoti River System is identical to the one presented in **Figure 2** for Scenario A.

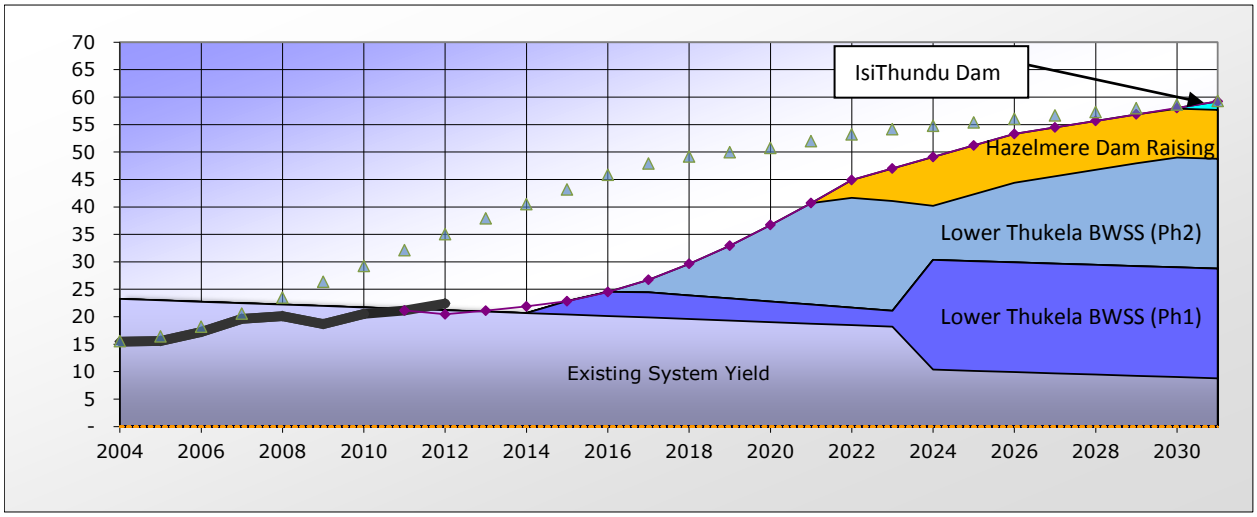

Figure 5: Water reconciliation situation in the Mdloti River System (excluding re-use of treated effluent)

Figure 5 shows the following:-

- The additional yield created as a result of the raising of Hazelmere Dam is used to support the Mgeni River System up until 2024. The supply from the raising of Hazelmere Dam replaces in part the re-use of treated sewage effluent as an augmentation option in the Mgeni River System. After 2024, the Smithfield Dam will be delivering water in the Mgeni River System. As a result the Lower Thukela BWSS is required to support the Mdloti River System at the earliest implementation date (2015). Over the 2015 to 2024 period, the Lower Thukela BWSS (Phase 1) supports both the Mvoti and the Mdloti Systems and operates at a maximum capacity from 2015 onwards. The Lower Thukela BWSS (Phase 2) is also required at an earlier date than for Scenario A (2017) and operates at maximum capacity from 2022 to 2024.
- The support provided from Hazelmere Dam to the Mgeni River System (additional yield due to Hazelmere Dam Raising) is reduced over the 2021 to 2024 period in order to avoid a deficit situation in the Mdloti River System. No support is provided to the Mgeni River System from Hazelmere Dam from 2024 onwards, when the Mkomazi River Development Project (Smithfield Dam) has been implemented to support the Mgeni System.
- The light blue area again represents the surplus yield available from the Mvoti System (IsiThundu Dam) to support the Mdloti System from the year 2030 onwards.
- It must be noted that the Ecological Water Requirement releases (EWR) are again introduced once the Mvoti River Development Project (IsiThundu Dam) has been developed and the Lower Thukela BWSS (Phase 1) can be fully utilised to support only the Mdloti System, which is illustrated by a sudden drop in yield in the year 2024.

Figure 5 highlights the following:-

- A very small supply deficit situation exists over the 2013/2014 period until the Lower Thukela BWSS (Phase 1) has been implemented.
- Since support is also provided from the Mdloti to the Mgeni River System (additional yield generated through the raising of Hazelmere Dam), the Lower Thukela BWSS supports both the Mvoti and Mdloti systems from 2015 up to 2024, when IsiThundu Dam has been implemented. Phase 2 of the Lower Thukela BWSS is required at an earlier date from 2016 onwards. A portion of the additional yield created as a result of Hazelmere Dam raising is required over the 2021-2024 period to ensure that no deficits exist and is then utilized fully from 2024 onwards when the Mgeni River System no longer requires the support.

Mgeni River System

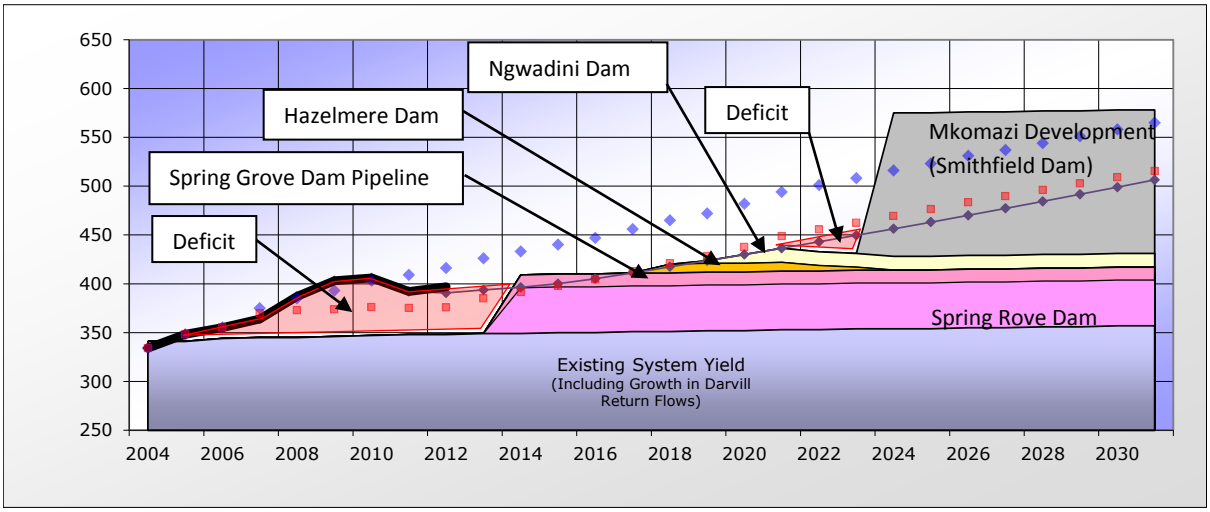

Figure 6: Water reconciliation situation in the Mgeni River System (excluding re-use of treated effluent)

Additional yield is provided to the Mgeni River System for Scenario B (excluding re-use of treated effluent) as follows:

- Construction of Ngwadini Off-Channel Storage Dam (Mkomazi River) with a yield of 14.1 million m^3/a (earliest water delivery in 2015).
- Support from Hazelmere Dam when the dam raising is completed in 2015 (additional yield of 8.9 million m^3/a).

Figure 6 shows the following:-

- Support is only required from Hazelmere Dam (8.9 million m^3/a) from 2017 until 2024 when the Mkomazi River Development Project is scheduled to deliver water. The support is reduced over the 2021 to 2024 period, in order to avoid a deficit situation in the Mdloti River System.
- The white area represents the additional yield (14.1 million m^3/annum) created as a result of the construction of Ngwadini Off-Channel Storage Dam on the Mkomazi River (required from 2019 onwards).
- The grey area represents the additional yield (147 million m^3/a) provided by the Mkomazi River Development Project (Smithfield Dam) from the year 2024 onwards, which is the earliest implementation date.

Figure 6 highlights the following:-

- Based on the September 2011 projection, the Mgeni River System is in a deficit situation up until Spring Grove Dam is implemented and starts to deliver water in 2014 (December 2013). A second deficit situation occurs between 2021 and 2024, after which the Mkomazi River Development Project (Smithfield Dam) is implemented. The deficit in 2023 is 19 million m^3/a (4% of the total demand). More than sufficient yield is available once Smithfield Dam has been constructed and the Ngwadini Dam might no longer be required. If the Ngwadini Dam is not constructed, the deficit period will increase from 2019 to 2024, with a maximum deficit of 33 million m^3/a (7% of the total demand). A possibility exists that additional support could be provided from the Thukela River (Woodstock Dam (Vaal River System water)) from 2020 onwards since the 2nd Phase of the Lesotho Highlands Transfer Scheme (Polihali Dam) is scheduled to deliver water to the Vaal River from 2020 onwards, which will result in surplus yield in the Vaal River System for a couple of years. The practicality of transferring this water to the Mgeni River System supply area over the deficit period would however need to be investigated as the full capacity of both the Lower Thukela BWSS Phase 1 and Phase 2 are required over the 2022 to 2024 period according to the balance diagrams.

- It must again be noted that the latest actual water use slightly exceeds the UW September 2011 projection and Umgeni Water has indicated that a revised projection will be available in September/October 2012.
- A further possibility that could be investigated is the viability of utilising the surplus yield in the Mgeni System, as a result of the Mkomazi River Development Project (Smithfield Dam) from 2024 onwards, to support the Mvoti River System supply area (and the Mdloti from 2030 onwards), which could postpone the requirement for the Mvoti River Development Project (IsiThundu Dam).

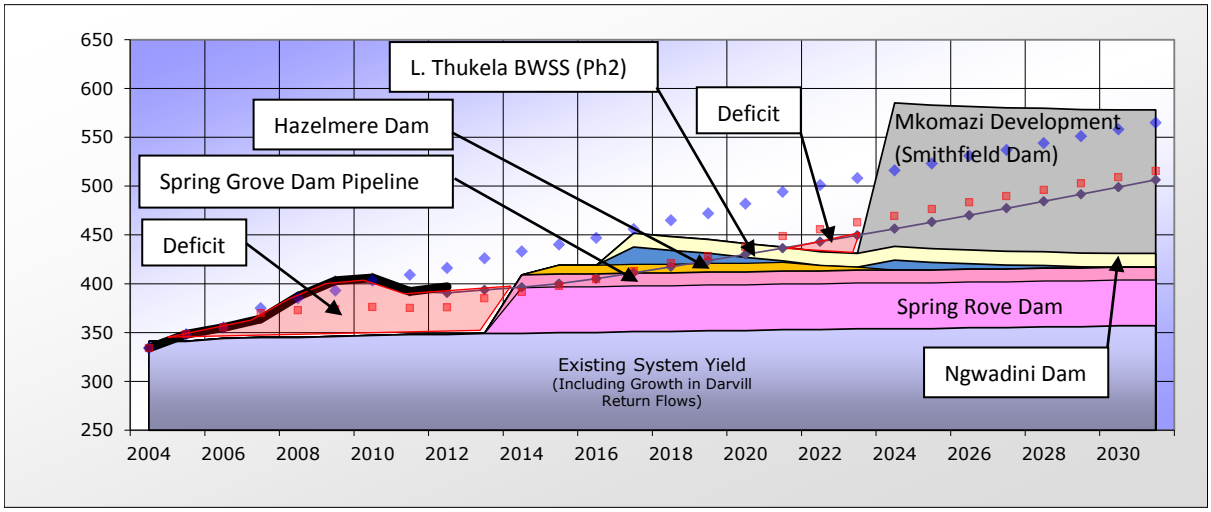

Figure 7: Water reconciliation situation in the Mgeni River System with full support from the Mdloti/Lower Thukela Systems (excluding re-use of treated effluent)

Figure 7 shows the following:-

- The total surplus yield available from the Mdloti System (Hazelmere Dam), the Lower Thukela BWSS and the Ngwadini Dam are illustrated from their earliest possible implementation dates.
- The total available yield exceeds the water requirements (September 2011 projection) from 2014 until 2021 and then from 2024 onwards.

Figure 7 highlights the following:-

- The Mgeni River System remains in the same deficit situation between 2021 and 2024 (based on the September 2011 projection) when supported by the total surplus yield from the Mdloti System and the Lower Thukela BWSS. This is because the total capacity of the Lower Thukela BWSS Phase 1 and Phase 2 is required to support the Mdloti System in order to avoid any shortfalls. Some surplus yield also exists in the Mvoti River System once IsiThundu Dam has been implemented, but this only occurs in 2024 when the Mgeni System itself has surplus yield as a result of the implementation Smithfield Dam on the Mkomazi River and has thus not been included.

4. IMPLEMENTATION OF THE STRATEGY

4.1 Water Conservation and Water Demand Management

WC/WDM has been identified as an immediate action to deal with water shortages in the area. Even if completely successful, WC/WDM measures will not be sufficient to ensure sufficient future water availability in the area and further significant interventions are required.

The current WC/WDM initiatives of the eThekwini, iLembe, Ugu and Msunduzi municipalities have resulted in a significant saving of water in the KwaZulu-Natal Coastal Metropolitan area. The successes to date were reported on at the SSC meeting. The WC/WDM focus over the short to medium term will be on addressing illegal connections. Legal proceedings have been instituted in some cases to deal with illegal connections however this is a slow process. The municipalities highlighted and emphasized that WCWDM requires ongoing effort that will only be effective if it the gains are maintained.

4.2 Spring Grove Dam and transfer system

Background

- Mooi Mgeni Transfer Scheme 2 (MMTS-2) will augment the water supply of the Mgeni System.
- The full scheme will increase the current system yield by 60 million m^3/a.
- The scheme consists of the Spring Grove Dam (MMTS-2A) and conveyance infrastructure (MMTS-2B)
- The Trans Caledon Transfer Authority (TCTA) has been instructed to implement the scheme on behalf of the Department of Water Affairs (DWA).

Progress

- Stage 2 River Diversion works are completed.
- Excavation completed
- EMPR restriction of 30 heavy duty trucks per day hindering supply of construction materials was lifted
- Impoundment delayed to January 2013, delivery April 2013
- Environmental authorisation of pipeline route contested and upheld resulting in reassessment of environmental impact assessment which was started during February 2012. Environmental Authorisation is expected end 2012.
- Pre-qualification process of contractors continued.

4.3 Raising of Hazelmere Dam

Background

- The project will augment the water supply to the KwaZulu-Natal North Coast (Mdloti to Thukela) and sustain irrigation downstream of the dam.
- The project entails the raising of Hazelmere Dam by installing radial gates to increase the gross storage capacity from 23.9 million m^3 to 43.7 million m^3.
- The storage capacity of the dam has been greatly reduced by sedimentation (2010: 11.4 million m^3) with the corresponding reduction of the yield.

Since the development of the initial reconciliation strategy, DWA has identified geotechnical issues related to the stability of the Hazelmere Dam wall. This has resulted in an increase in the capital cost to raise the dam wall and an increase in the implementation time frame. This made the raising of Hazelmere Dam less attractive and potentially comparable to other augmentation schemes.

The situation regarding the raising of the Hazelmere Dam was presented at the Technical Support Group (TSG) meeting on the 7 February 2012, at the Strategy Steering Committee (SSC) of the 14th March 2012 and the extraordinary SSC meeting held on 23rd May 2012. A high level preliminary assessment of the economics of the augmentation options was undertaken for the SSC meeting of the 14th March and for the extraordinary SSC meeting of the 23rd May 2012.

The options considered in the economic analysis instead of Hazelmere Dam raising were Phase 2 of the Lower Thukela BWSS, desalination of seawater and the re-use of treated sewage effluent. The

results showed that the Lower Thukela BWSS was marginally more financially attractive than the Hazelmere Dam raising. The seawater desalination and re-use of treated sewage effluent were shown to be significantly more expensive than the Lower Thukela BWSS and the Hazelmere Dam raising.

A financial analysis on the sequencing of the Hazelmere Dam raising and the Lower Thukela BWSS Phase 2 was undertaken. The advantages and disadvantages of the two schemes indicated that the Hazelmere Dam raising has more advantages than the Lower Thukela BWSS Phase 2. Based on this assessment and the available information, the raising of Hazelmere Dam before the implementation of Phase 2 Lower Thukela bulk water supply scheme was recommended as the preferred option.

Progress

- Due diligence analysis of preferred design option for raising including geological investigation, has been completed.
- Report on preferred design option has been submitted to CD: IWR Planning and viability of project has been confirmed.
- Detailed design of civil works in progress for drafting of tender document by November 2012.
- Tender for mechanical crest gates was advertised on 3 August 2012.
- Civil contract award - April 2013
- Gate contract award - November 2012
- Project completion September 2014.

4.4 North Coast pipeline and Hazelmere Supply Infrastructure

Background

Extensive current and proposed future developments within the North Coast region have necessitated the augmentation of the entire North Coast Supply System. The following projects are being planned or implemented as part of this augmentation. These include:

- A pipeline has been constructed from Avondale Reservoir to Honolulu reservoir,
- A pipeline is currently being constructed to augment the North Coast Supply System from Honolulu Reservoir to Mvoti Balancing Reservoirs,
- A pipeline is planned to augment the line from Hazelmere WTP to La Mercy bifurcation,
- A new raw water pipeline is planned from the Hazelmere Dam to the Hazelmere WTP, and
- The Hazelmere WTP will be upgraded from 45Ml/d to 75Ml/d.

Progress

- Avondale to Honolulu Pipeline was completed in November 2009
- Honolulu to Mvoti Balancing Reservoir Pipeline
    - Pipeline contract was completed in October 2010
    - The construction of the pipe bridge has been completed
    - Approval from Minister to expropriate the land for the pump station received in August 2012
- Hazelmere Raw water Pipeline
    - Construction contract was awarded in June 2012
    - Contract withdrawn in July 2012 as contractor was liquidated
    - New contractor appointed in July 2012
    - Completion date scheduled for March 2013
- Hazelmere WTP Upgrade

- Construction contract awarded end August 2012 and construction started beginning September 2012

- Hazelmere to Bifurcation Pipeline & Pump Station
  - Construction contract awarded in February 2012 and construction currently underway
  - Practical completion expected in November 2013 and final completion in March 2013
  - Tender documentation for the pump station is being compiled.

Way forward

- Honolulu to Mvoti Balancing Reservoir Pipeline
  - Negotiations with Contractor are underway as to when construction of the pump station can commence.
- Hazelmere supply infrastructure
  - Complete the upgrade of:
    - Raw water pipeline from dam to waterworks (March 2013)
    - Upgrade of Hazelmere WTP to 75Ml/day (February 2014)
    - Upgrade Hazelmere to Bifurcation Pipeline and Pump Station (March 2013/ May 2014)

4.5 uMkhomazi River Transfer Scheme

Background

MWP-1: Module 1: Technical Feasibility Study: Raw Water commenced 1 December 2011- BKS was appointed as PSP for the study. First site visit took place 6 December 2011. The Inception report has been reviewed and will be signed off by 18 September 2012.

Scope of work

- Environmental Screening
- Project Management Project/Coordination
- Water Resources
- Engineering Investigation
- Implementation Actions
- Institutional, Financial and Operational Aspects
- Socio-Economic Analysis
- Detailed design: Start October 2016 (end September 2018)
- Construction: October 2018 (end October 2022)
- Water delivery: January 2023

Potable Water Component (Umgeni Water)

- Professional Service Provider appointed in August 2012 to conduct detailed feasibility study
- Currently assisting the PSP for the Raw Water component to determine the best system configuration for the scheme
- Study completion expected by end 2013.

4.6 Lower Thukela Bulk Water Supply Scheme

Background

This scheme is planned to abstract water from the lower reaches of the Thukela River near the SAPPI Mill, for treatment at a regional water treatment plant situated in close proximity. Potable water will be delivered southwards to local developments and rural communities and will link into the existing North Coast Supply System. Potable water can also be delivered northwards to the Mandini Municipality area to support future development.

Progress

- The detailed Feasibility Study was completed in June 2011.
- Detailed design of all components is well advanced
- Environmental authorisation was issued on 24 August 2012
- Construction tender for the gravity pipeline component was awarded in August 2012, however, there has been an appeal lodged which is currently being attended to.
- Tender for the construction of the abstraction weir, desilting works, water treatment plant, pump station and access roads has closed and has been adjudicated. The award is now pending formal confirmation that RBIG funding will be given to the project.
- Applications for DWA licences submitted March 2012

Way Forward

- All necessary DWA licenses and approvals need to be obtained before construction on abstractions can commence
- Appeal needs to be resolved such that construction of the gravity pipeline can start in September 2012
- Construction of the weir and WTP could start in October if RBIG confirmation and DWA licences are received soon – a delay of more than 3 months now will result in losing a year!
- Rising Main Pipeline and Mechanical & Electrical tenders still to be issued.
- Electricity supply still to be designed, environmental scoping completed.
- Target deadlines for final completion are still:
    - Gravity Pipeline (Mvoti Reservoir to Darnall) – November 2013
    - LTBWSS Phase 1 - December 2014

4.7 Mvoti River Development

- It is anticipated that the feasibility studies will start by December 2012 and it will take 3 years to complete.
- Detailed design: Start April 2016 (end March 2018)
- Construction (IsiThundu Dam): June 2018 (end June 2021)
- Water delivery: January 2022

4.8 Re-use of treated sewage effluent

- Feasibility study recommended that effluent from the Northern and Kwa Mashu sewage treatment works be further treated to a potable water standard and be discharged directly into the aquaducts supplying the northern areas from the Durban Heights water treatment works
- EIA draft basic assessment report has been completed and will be published for comment by end October 2012.
- Limited response – both positive and negative – UNTIL a 5000 signature objection petition received in August.
- There is a 30 day period for comment on the draft basic assessment report during which period there will be a meeting with the facilitator of the petition. If necessary a public meeting will be held.

Way Forward

- It is planned that a final Basic Assessment report, which will incorporate any additional comments which are received, will be submitted to DAEA by early November 2012.
- A decision on whether to proceed is still to be made based on an assessment of costs and risks. This will be done once the results of the other feasibility studies become available. It is envisaged that this will be undertaken by July 2013.

4.9 Desalination of seawater option

The projected demand of the Mgeni Inland and Central systems is greater than the assured yield that the system can generate. Umgeni Water is currently investigating the possibility of augmenting the supply to the Mgeni System through one or more large scale desalination plants. These plants would supply water to the coastal areas of KwaZulu-Natal thus freeing up water currently allocated from the Mgeni System.

Project Progress

- Due diligence investigation of both sites completed
- Northern site has been moved to a new site
- Water quality buoys launched and monitoring is ongoing according to the WQ Monitoring Programme
- Hydrographic and Marine Survey is complete at both sites and bathymetric data is currently being processed
- The geotechnical investigations (initially trial pits and shallow probing) are about to commence
- EIA Tender currently being evaluated

Way Forward

- Once bathymetric survey is available the Marine Engineering Design component will commence
- Review of approaches to process design to be undertaken in October with an international expert
- Meeting with eThekwini and others in September to review the options for integration of the desalinated water into the existing supply system in the northern and southern supply areas
- Award of the tender for the Environmental Impact Assessment

4.10 Management of System Operation

Further to the above interventions, a Systems Operations Committee has been established that is focused on improving system management and managing water restrictions in the area in the event of a drought.

Late rainfall during the last season has kept the major dams supplying the area full and has averted water restrictions from being imposed in the short term. The Systems Operation Committee met on 13 March 2012 and came to the conclusion that the very short term water supply situation is not at risk at present but that the situation will have to be monitored carefully.

5. UPDATE OF STRATEGY

The augmentation schemes and measures identified in the 2009 Reconciliation Strategy have not changed. No new supply options have been identified. The key to the successful implementation of the strategy is meeting the target dates for the various phases of the augmentation schemes. The revised set of dates is given in Table 1.

Table 1: Target dates of activities for augmentation schemes identified

MAIN SCHEME	Start Date	End Date
Mooi Mgeni Transfer Scheme Phase 2 A		
Spring Grove Dam		
Construction	Feb 2011	May 2013
Impounding	Nov 2012	March 2013
Water Delivery via MMTS-1		April 2013
Upgrade Mearns Pump Station and pipeline (3,2 m^3/s)	Oct 2011	Nov 2012
Mooi Mgeni Transfer Scheme Phase 2 B		
Pipeline & Pump station		
EIA (Transfer pipeline & measuring weir on Little Mooi River)	Feb 2012	Dec 2012
Detailed Design	Jan 2012	Nov 2012
Construction	Jan 2013	Dec 2014
Delivery via MMTS-2B (1.8 m^3/s)		Dec 2014
Hazelmere Dam Raising (DWA)		
Design of civil works	Oct 2011	
Contract for gates	Nov 2012	Nov 2012
Preliminary design work/geotech to confirm best raising option	Feb 2012	Jun 2012
Decision to continue with Hazelmere Dam as an option	July 2012	Aug 2012
Finalise design/tenders	Sep 2012	Nov 2012
Construction	Jan 2013	Sep 2014
Delivery		Sep 2014
uMkhomazi Scheme (DWA)		
Feasibility Study (Raw Water)	Oct 2011	Sept 2016
Feasibility Study (Potable Water)	Aug 2012	Dec 2013
Detailed Design	Oct 2016	Sept 2018
Construction	Oct 2018	Oct 2022
Delivery		Jan 2023
Mvoti River Scheme (DWA)		
Feasibility Study	Dec 2012	Dec 2015
EIA (including estuary)	Jan 2012	Jan 2016
Detailed Design	April 2016	Mar 2018
Construction	June 2018	June 2021
Delivery		Jan 2022
Lower Thukela Transfer (Umgeni Water)		
Feasibility Study		31 July 2011
Detailed Design	1 Aug 2011	31 May 2012
Construction	1 Jul 2012	31 Mar 2015
Delivery		31 Dec 2014
North Coast pipeline and Hazelmere Dam infrastructure upgrades (Umgeni Water)		
Construction of Avondale to Honolulu reservoir		Nov 2009
Construction North Coast pipeline Honolulu to Mvoti Balancing Reservoir		Oct 2010
Construction of Honolulu to Mvoti Pump Station		July 2013
Construction of the Hazelmere to La Mercy Bifurcation Pipeline	Feb 2012	Nov 2013
Raw water pipeline from Hazelmere Dam to Hazelmere WTW		Mar 2013
Upgrade Hazelmere WTW		Feb 2014
Desalination (Umgeni Water)		
Site Selection	March 2011	Dec 2012
Feasibility Study	Jan 2012	31 July 2013
Re-use treated sewage effluent (eThekwini Metro)		
PSP for Mgeni Estuary reserve appointed		March 2011
Results of Mgeni Estuary workshop		Sept 2011
DWA decision		April 2012
EIA process and approval	Nov 2011	Nov 2012
Tender preparation and adjudication	Jan 2013	July 2013
Tender award, financing and site establishment	July 2013	June 2014
Construction and commissioning	July 2014	June 2016
Water delivery		July 2016

6. GENERAL INFORMATION

Detailed progress reports on the water resource management strategies can be found at the following link: http://www.dwa.gov.za/Projects/KZNWRMS/documents/aspx.

The Study Manager for the project is Mr. Niel Van Wyk, Chief Engineer at the Directorate: National Water Resource Planning (East).