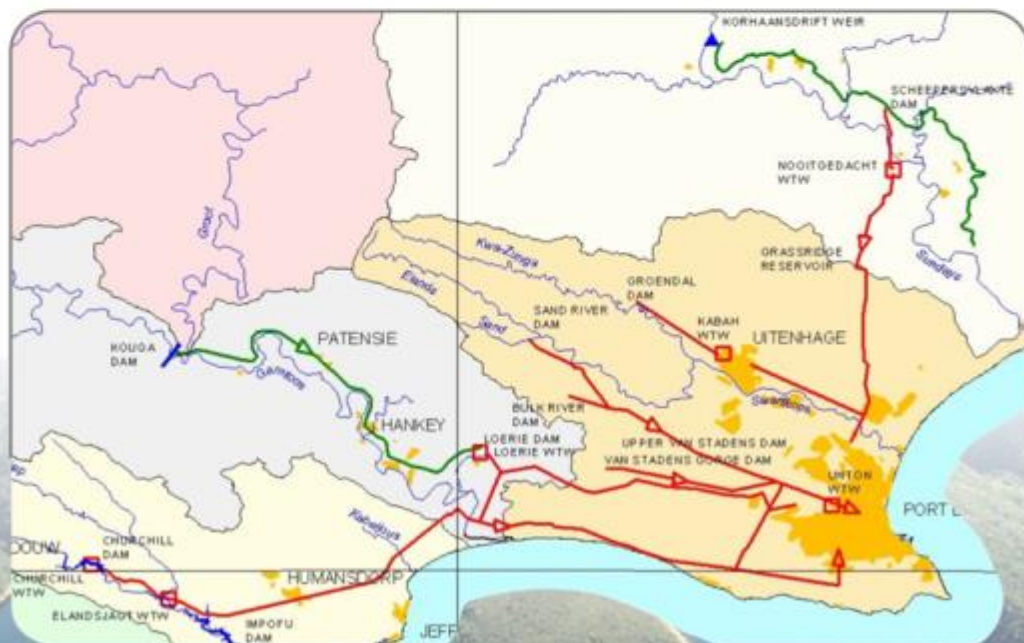




Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Water Reconciliation Strategy Study for the Algoa Water Supply Area

Algoa Reconciliation Strategy



Document control record

Document prepared by:

Aurecon South Africa (Pty) Ltd

1977/003711/07

Aurecon Centre
1 Century City Drive
Waterford Precinct
Century City
Cape Town
7441

PO Box 494
Cape Town
8000
South Africa

T +27 21 526 9400

F +27 21 526 9500

E capetown@aurecongroup.com

W aurecongroup.com

A person using Aurecon documents or data accepts the risk of:

- a) Using the documents or data in electronic form without requesting and checking them for accuracy against the original hard copy version.
- b) Using the documents or data for any purpose not agreed to in writing by Aurecon.

Document control							aurecon
Report title							
Document ID		-	Project number		112546		
File path		P:\Projects\112546 Algoa Recon Support\03 Prj Delivery\01 Recon Strategy\03 Status Reports\Status Report_3 March_2017 Final					
Client		Department of Water and Sanitation		Client contact		Ms I Thompson	
Rev	Date	Revision details/status		Prepared by	Author	Verifier	Approver
0	9 March 2017	Draft 1 – v0		Aurecon	E v/d Berg		E v/d Berg
1	10 March 2017	Final		Aurecon	E v/d Berg		E v/d Berg
Current Revision		Final					

Approval			
Author signature		Approver signature	
Name	Erik van der Berg	Name	Erik van der Berg
Title	Technical Director	Title	Technical Director



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

DEPARTMENT OF WATER AND SANITATION

Directorate: National Water Resource Planning

**Support of the Water Reconciliation Strategy for the Algoa
Water Supply System
STATUS REPORT 3**

Final: March 2017

Prepared by:

Aurecon South Africa (Pty) Ltd
P O Box 494
Cape Town, 8000
South Africa

Tel: 021 526 5790
Fax: 086 526 9500
E-mail: erik.vanderberg@aurecongroup.com

Prepared for:

Director: National Water Resource Planning,
Director: Water Use Efficiency
Department of Water and Sanitation
Private Bag X313
Pretoria 0001
South Africa

Ms Isa Thompson (CE: NWRP, South)
Tel: 012 336 8647
E-mail: thompsoni@dws.gov.za

Mr Patrick Mlilo (D: NWRP)
Tel: 012 336 8293
E-mail: mlilop@dws.gov.za

This report is to be referred to in bibliographies as:

Department of Water and Sanitation, South Africa. 2017. *Status Report 3*. Prepared by Aurecon South Africa (Pty) Ltd as part of the Support of the Water Reconciliation Strategy for the Algoa Water Supply System.

Department of Water and Sanitation
Directorates: National Water Resource Planning and Water Use Efficiency

**SUPPORT OF THE WATER RECONCILIATION STRATEGY FOR THE
ALGOA WATER SUPPLY SYSTEM**

APPROVAL

Title : Status Report 3

Consultants : Aurecon South Africa (Pty) Ltd

Report status : Final

Date : March 2017

STUDY TEAM

Approved for Aurecon South Africa (Pty) Ltd:



.....
E VAN DER BERG
Technical Director

DEPARTMENT OF WATER AND SANITATION
Directorates National Water Resource Planning

Approved for Department of Water and Sanitation:

.....
I THOMPSON
CE: NWRP (South)

.....
P MLILO
D: NWRP

Algoa Water Supply System Reconciliation Strategy

STATUS REPORT NR 3

1. Purpose of this report

This report provides information on the current water availability situation and the activities relating to the implementation of the Algoa Reconciliation Strategy. It provides pertinent background, progress made to ensure a sustainable long-term water supply to the Nelson Mandela Bay Municipality (referred to as the Metro), key issues to be addressed and recommendations on the way forward.

2. Water restrictions

Water restrictions were implemented on 30 August 2016. The Mayor has since announced that the municipality could increase the severity of water restrictions and impose punitive charges for high water consumption. On 7 March 2017 the total combined capacity of the 10 dams supplying the Metro was 47.2%. Should it dip below 45%, the Metro could apply to have the region declared a disaster area.

3. Background

The Algoa Reconciliation Strategy was completed in 2011 by the then Department of Water Affairs in cooperation with the Metro and other stakeholders, to secure a sustainable future water supply for the Metro and the other towns served by the Algoa Water Supply System. The major irrigation schemes that are situated around the Metro are also covered in the strategy. Implementation of the Strategy will ensure that interventions to augment the water supply will be studied and implemented in time to prevent unacceptable risks of water restrictions.

The purpose of the Strategy is to:

- Annually determine the system water balance,
- Annually update possible future water balance scenarios for a 25-year planning horizon,
- Track progress of the planning and implementation of interventions and update relevant information,
- Monitor other information relevant to the Strategy and activities that may impact on the Strategy.

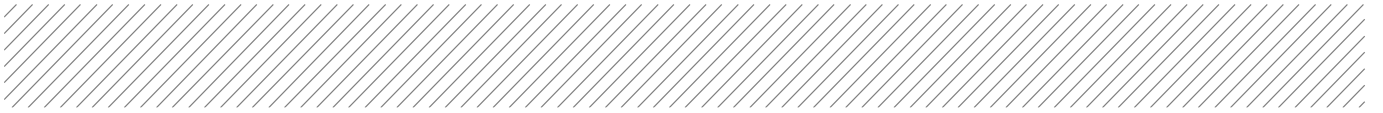
4. Progress

a. Management of the Strategy

The Strategy Steering Committee (SCC) monitors the implementation of agreed strategies/actions, updates the strategy as it becomes necessary, and informs all stakeholders and the public of progress with the implementation of the Strategy and the reigning water availability situation in the Algoa Water Supply System. They are supported in this by the Administrative and Technical Support Group. These committees were constituted in 2011. The SCC meets twice a year and the Administrative and Technical Support Group (ATSG) meets two weeks before and after each SCC meeting, and sometimes in-between as required. The last ATSG meeting was held on 1 March 2017, and the next SCC meeting will be held on 19 April 2017.

b. Communication

The Reconciliation Strategy Study aims to facilitate input from stakeholders and the public. A media release is issued annually after the final Steering Committee meeting of the year. A Strategy Status Report is compiled, disseminated and presented annually during September. A web page is also available on the DWS web site with all information and reports relevant to the study. The web page can be accessed at <http://www.dws.gov.za/Projects/Algoa>.



c. Improving the confidence of water availability: proposed water availability assessment study

As the surface water resources of the Kromme and Kouga catchment areas could be under stress, the need for verification and validation (V&V) of water use for these areas was identified. The verification and validation of water use of a significant part of the Kouga River catchment has been completed. The validation for the Langkloof area is complete but the verification has not yet been done. This will be done under the V&V project that is currently underway for the whole of the Eastern Cape. At the end of February 2017, Section 35 Application letters of 60% of registered users have been generated and distributed.

The PSP's contract for the V&V project ends in April 2017 but an application for an extension of time has been submitted, and the outcome is awaited. Verification by DWS is likely to be ongoing after the project has been completed. The information gathered by the V&V projects will be used as input to the future planned Water Availability Assessment Study for the Kromme and Kouga catchments. This study is expected to be initiated after the verification and validation has been completed.

d. Coega Industrial Zone Water Requirements

The Coega Industrial Development Zone is currently "home to 29 operational investors" that have invested R1.2 billion in infrastructure development, while a further R7.5 billion infrastructure development is at the implementation phase and further projects worth R8.1 billion are currently being negotiated. In addition, projects worth R116.3 billion are the subject of feasibility studies.

The estimates of the bulk water studies for the uptake of industrial water requirements has remained consistent over the past number of years. However, a lack of certainty exists in respect of the new heavy industries which have previously committed and then either postponed or withdrawn their proposed developments. Future uptake of industrial water will remain uncertain until such time that the availability of industrial water supplies and power can be confirmed. The supply of industrial quality water is a requirement of the environmental authorisation for establishing large industries at the Coega IDZ. The lack of confirmed availability of industrial quality water can pose serious challenges to attracting future development to the Coega IDZ.

In terms of the future water requirements, according to projections done under this Strategy Support Study and the Water Master Plan Review document of the Metro, surplus potable water will be available from the Nooitgedagt/Coega Low-Level Scheme once completed (Phase 3), and likely also after the completion of Phase 2, which is expected to be complete by July 2017. This potable water can be cost-effectively used as an interim industrial water supply to the Coega IDZ. The interim use of potable water in the IDZ has been accommodated through an amendment to the existing environmental authorisation for the large water user. It is however a condition of the EIA to the large water user that industrial water requirements should be met by the reuse of treated wastewater.

e. Water Conservation and Water Demand Management

It seems that non-revenue water is declining and thus that the Metro's current water conservation and water demand management (WC/WDM) interventions being implemented are now reaping benefits. A water audit will be conducted at the end of the financial year, which will provide more information on the status of the efficiency of water use and this will be fully reported on in the Annual Status Report.

f. Implementation of the Nooitgedagt/Coega Low-level Scheme

The Metro is constructing the Nooitgedagt/Coega Low-Level Scheme (NCLLS) as an extension to the existing Nooitgedagt High-Level Scheme that will treat Orange River water, delivered through the Orange-Fish-Sundays River system, to drinking water standard for supply into the Metro's water supply system.

The Metro is completing the outstanding works on the project in a phased approach, in line with the capacity of its capital budget. Phase 1 ensured an average supply of 90 MI/day (32.9 m³/a), which is the existing capacity of the WTW. Phase 2 will ensure an average supply of 140 MI/day (51.1 m³/a). Phase 3 will ensure an average supply of 160 MI/day (58.4 m³/a) which is the full allocation of NMBM from the OFS Scheme.

The implementation status is as follows:

Phase 1 was implemented by the Metro and is practically complete.

Phase 2 is being implemented and funded by the Metro (R128 million, excl. VAT) (additional 6 filters and low-lift Pump Station at Nooitgedagt WTW, under construction for completion in July 2017, three separate contracts for civil works, WTW mechanical and electrical works, pump station mechanical and electrical works). Only certain portions of the work (mechanical and electrical) still need to be completed.


Phase 3 will involve the construction of an additional 70 MI/day (peak) module at Nooitgedagt WTW (civil, mechanical and electrical works), 45 MI reservoir at Olifantskop (in addition to the 10MI reservoir previously constructed at the Olifantskop site), cathodic protection and AC mitigation measures on Nooitgedagt and Churchill pipelines, and rehabilitation of the Chelsea-Motherwell pipeline. Site handover to a contractor has not yet taken place. The Metro has received a regional bulk infrastructure grant of R437 million over 3 years for the completion of the Nooitgedagt Bulk Water Supply Scheme.

g. Other interventions

Groundwater: After extensive investigations that included geophysical and resistivity as well as magneto-telluric analyses, the Metro appointed a driller and drilling started in March 2014 in the Coega Kop area. Twenty seven probe/exploration holes have been drilled during 2014/15. It was decided to commence with the construction of one production hole and water treatment works, of which the design and tender document has been finalised. The 2 Tender documents have been submitted to the NMBM Specification Committee for approval. Tenders will be advertised in April 2017. Because the aquifer is artesian, boreholes will be so designed and constructed to ensure that they do not leak when not in use. Care will be taken to minimise the surface impact with strict environmental control, and most importantly, future abstraction will be designed to ensure that the aquifer cannot be over-pumped. The “sustainable yield” of the aquifer is estimated at between about 35 - 43 MI/day. The Metro has applied for a groundwater use license of 26 MI/day which includes the flow from the Uitenhage Springs. Water quality testing still needs to be completed to determine the actual iron and manganese content of the water. This is critical to determine whether blending with water from the Nooitgedagt/Coega Low-Level Scheme is an option. The entire well field still needs to be test-pumped.

Water re-use: The scheme involves large-scale supply of treated water from the Fish Water Flats Waste Water Treatment Works to industries in Port Elizabeth and the Coega IDZ. The first phase of supply is based on the understanding that the Metro will supply 30 MI/day of Category 4 industrial process water from the Fish Water Flats WWTW via a balancing storage reservoir at Coega Kop to the IDZ. The second phase of the scheme will increase the water re-use scheme to 60 MI/day and will incorporate new storage reservoir(s) at Olifantskop. This will be constructed at a future date and is excluded at this stage. The environmental impact assessment for the scheme to supply the IDZ has been approved by DEDEAT. The design is mostly complete and a 17 MI reservoir at Coegakop is about 85% complete. The Coega Development Corporation needs to procure additional funds to complete the reservoir. The implementation of the remainder of the scheme is dependent on the water requirements from large water users establishing in the IDZ. The construction will take 18-24 months to complete and R600 million is needed to bring the bulk supply conveyance infrastructure to the Coega IDZ boundary. The CDC needs to procure additional funds to complete the reservoir as NMBM does not have the funds.

Upgrade of Fishwater Flats WWTW – Phase 1: This upgrade involves a new inlet works (170 MI/day), upgrading of dewatering facilities, upgrade of the existing biological reactors with fine bubble, diffused aeration, addition of 45 MI/d membrane biological reactors (MBR) to increase capacity, bulk electrical upgrade and general upgrade and refurbishment of the entire plant. Programming for the



overall upgrade of the plant is currently scheduled to be completed in 2017 but this is dependent on the availability of funding.

Desalination of seawater: The Metro's Coega harbour desalination scheme went out on tender but was subsequently put on hold. The Metro has identified the need for a pre-feasibility study on the desalination of irrigation return flows in the Lower Sundays River as this could possibly be a more cost effective option.

Evaluation of Kouga River dams: In light of the latest information available, no major dam safety rehabilitation work is necessary for the Kouga Dam wall. It is planned to assess a potential dam in the Kouga River (either a new dam at Guernakop or a raised Kouga Dam) later in 2017, likely at a pre-feasibility level.

5. Recommendations

The most significant challenges being experienced that requires support and urgent attention are the following:

- a. Completion of the Nooitgedagt/Coega Low Level Scheme and Phase 2 of the Nooitgedagt Water Treatment Works as soon as possible is critical, to avert the current shortfall in water supply.
- b. Effective WC/WDM within the Metro is extremely important to curb water use, especially while water restrictions are in place, and until such time as the 'drought' caused by the delayed implementation of bulk water infrastructure, due to funding limitations, is over.
- c. It is important that effective water use be sustained when restrictions are lifted.
- d. Reduction of non-revenue water is a long-term programme that must be funded on a continuous basis to achieve the goals set out in the Integrated Water Resources Management Strategy.
- e. Funding: R600 million of funding for the Metro's Fishwater Flats WWTW Re-use Scheme is needed, for water supply to the Coega IDZ (industrial quality process water). Without this development being assured, it is unlikely that significant industries will commit to development in the Coega IDZ.



Aurecon South Africa (Pty) Ltd

1977/003711/07

Aurecon Centre
1 Century City Drive
Waterford Precinct
Century City
Cape Town
7441

PO Box 494
Cape Town
8000

South Africa

T +27 21 526 9400

F +27 21 526 9500

E capetown@aurecongroup.com

W aurecongroup.com

Aurecon offices are located in:

Angola, Australia, Botswana, China,
Ethiopia, Ghana, Hong Kong, Indonesia,
Lesotho, Libya, Malawi, Mozambique,
Namibia, New Zealand, Nigeria,
Philippines, Qatar, Singapore, South Africa,
Swaziland, Tanzania, Thailand, Uganda,
United Arab Emirates, Vietnam.