APPENDIX Q

MINUTES OF FOCUS GROUP MEETINGS WITH IRRIGATORS

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

TCTA
A new word for water

Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)

ENVIRONMENTAL IMPACT ASSESSMENT (EIA): FOCUS GROUP MEETINGS

Meetings with Irrigators

24 – 25 January 2018

WATER IS LIFE, SANITATION IS DIGNITY

1) OPENING AND WELCOME

2) ATTENDANCE AND APOLOGIES

2.1) PROJECT TEAM

	ROLE IN PROJECT	PROJECT TEAM MEMBERS
DWS	Applicant	➢ O. van den Berg ➢ R. Gilmer ➢ R. Botha ➢ N. Sibongiseni ➢ H. Pretorius
TCTA	Implementing Agent	➢ A. Nelwamondo ➢ K. Mabitsela ➢ S. Kelefetswe ➢ A. Thebe
MCC	Technical Team	➢ J. Kroon ➢ J. Pienaar
WRP	Water Resources Specialist	➢ P. van Rooyen
Nemai Consulting	EIA Practitioner	➢ D. Henning ➢ C. van der Hoven

3) AIMS OF THE MEETING

- Provide background regarding the proposed MCWAP-2A.
- Provide an overview of the findings of previous and related studies.
- Provide information pertaining to the proposed River Management System.
- Provide an overview of the Environmental Impact Assessment.
- Discuss key issues related to the proposed project.

4) CONFIRMATION OF THE AGENDA

Meeting 1 | Focus Group Meeting – Hartebeespoort Irrigation Board | 24 January 2018 | 09h00 – 12h00

	Agenda Items	Speaker	Time Slot
1	OPENING AND WELCOME	Chairperson	09h00 – 09h15
2	ATTENDANCE AND APOLOGIES		
3	AIMS OF THE MEETING		
4	CONFIRMATION OF THE AGENDA		
5	PROJECT OVERVIEW		
5.1	*Background and Motivation*	O van den Berg	09h15 – 09h30
5.2	*Proposed Project Layout*	J Pienaar	09h30 – 09h45
6	VERIFICATION OF EXISTING LAWFUL WATER USES IN THE CROCODILE RIVER (WEST)	R Botha	09h45 – 10h00
7	KEY ISSUES RELATED TO THE PROPOSED PROJECT		
7.1	*Availability of Water in the Crocodile River (West)*	P van Rooyen	10h00 – 11h00
7.2	*Management of Impacts regarding Existing Water Uses (Operating Rules)*	P van Rooyen	11h00 – 11h15
7.3	*River Management System*	J Pienaar	11h15 – 11h30
8	ENVIRONMENTAL IMPACT ASSESSMENT	D Henning	11h30 – 11h50
9	RELATED MATTERS (to be confirmed under item 4)		11h50 – 12h00
9.1			
10	CLOSURE		12h00

4) CONFIRMATION OF THE AGENDA

Meeting 2 | Focus Group Meeting – Crocodile River West Irrigation Board | 24 January 2018 | 14h00 – 17h00

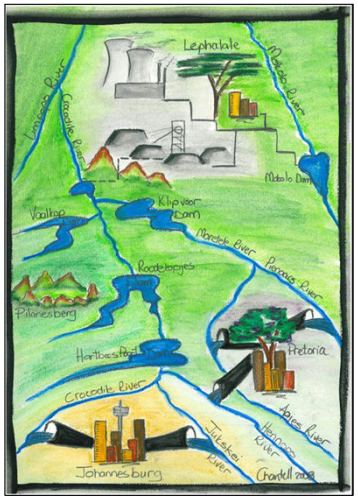
	Agenda Items	Speaker	Time Slot
1	OPENING AND WELCOME	Chairperson	14h00 – 14h15
2	ATTENDANCE AND APOLOGIES		
3	AIMS OF THE MEETING		
4	CONFIRMATION OF THE AGENDA		
5	PROJECT OVERVIEW		
5.1	*Background and Motivation*	O van den Berg	14h15 – 14h30
5.2	*Proposed Project Layout*	J Pienaar	14h30 – 14h45
6	VERIFICATION OF EXISTING LAWFUL WATER USES IN THE CROCODILE RIVER (WEST)	R Botha	14h45 – 15h00
7	KEY ISSUES RELATED TO THE PROPOSED PROJECT		
7.1	*Availability of Water in the Crocodile River (West)*	P van Rooyen	15h00 – 16h00
7.2	*Management of Impacts regarding Existing Water Uses (Operating Rules)*	P van Rooyen	16h00 – 16h15
7.3	*River Management System*	J Pienaar	16h15 – 16h30
8	ENVIRONMENTAL IMPACT ASSESSMENT	D Henning	16h30 – 16h50
9	RELATED MATTERS (to be confirmed under item 4)		16h50 – 17h00
9.1			
10	CLOSURE		17h00

4) CONFIRMATION OF THE AGENDA

Meeting 3 | Focus Group Meeting – Makoppa Irrigation Area | 25 January 2018 | 09h00 – 12h00

	Agenda Items	Speaker	Time Slot
1	OPENING AND WELCOME	Chairperson	09h00 – 09h15
2	ATTENDANCE AND APOLOGIES		
3	AIMS OF THE MEETING		
4	CONFIRMATION OF THE AGENDA		
5	PROJECT OVERVIEW		
5.1	*Background and Motivation*	O van den Berg	09h15 – 09h30
5.2	*Proposed Project Layout*	J Pienaar	09h30 – 09h45
6	VERIFICATION OF EXISTING LAWFUL WATER USES IN THE CROCODILE RIVER (WEST)	R Botha	09h45 – 10h00
7	KEY ISSUES RELATED TO THE PROPOSED PROJECT		
7.1	*Availability of Water in the Crocodile River (West)*	P van Rooyen	10h00 – 11h00
7.2	*Management of Impacts regarding Existing Water Uses (Operating Rules)*	P van Rooyen	11h00 – 11h15
7.3	*River Management System*	J Pienaar	11h15 – 11h30
8	ENVIRONMENTAL IMPACT ASSESSMENT	D Henning	11h30 – 11h50
9	RELATED MATTERS (to be confirmed under item 4)		11h50 – 12h00
9.1			
10	CLOSURE		12h00

5) PROJECT OVERVIEW



5.1) BACKGROUND & MOTIVATION

A. National Development Context – SIP 1

B. Increased need for Water in the Lephalale Area

C. Project Overview

D. Management of National Water Resources

NATIONAL DEVELOPMENT CONTEXT SIP 1

SIP 1: Unlocking the Northern Mineral Belt with Waterberg as the Catalyst

Unlocking SA's northern mineral belt in one of the poorest provinces (Limpopo) through key infrastructure provision in the Waterberg and Steelpoort districts, initiating new energy and industrial development, shifting coal from road to rail in Mpumalanga and increasing rail capacity to Richards Bay whilst supporting regional integration

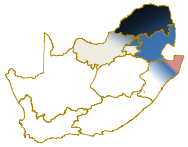
Proposal

Investment in rail, water pipelines, energy generation and transmission infrastructure will catalyse unlocking of rich mineral resources in Limpopo resulting in up to 98 000 direct jobs across the areas covered. Urban development in the Waterberg will be the first major post apartheid new urban centre and will be a "green" development project.

Mining includes coal , platinum and other minerals for local use and export, hence the rail capacity is being extended to Mpumalanga power stations and for export principally via Richards Bay and in future Maputo (via Swaziland link).

The additional rail capacity will shift coal from road to rail in Mpumalanga with positive environmental and social benefits. Supportive logistics corridors will help to strengthen Mpumalanga's economic development.

Project location



Primary Mineral Reserves

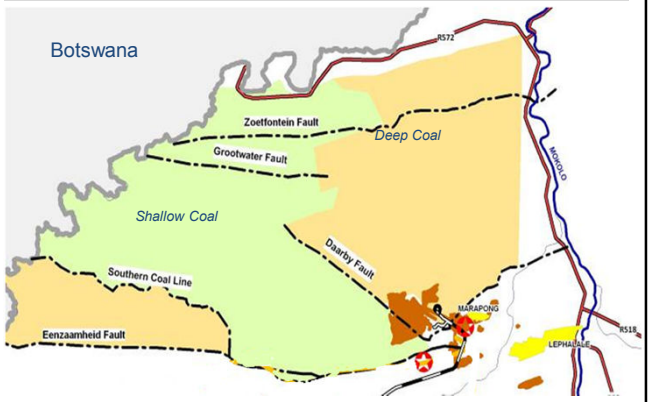
Components

- **Rail and road:**
  - Waterberg - 600km rail (increase capacity to 112Mtpa)
  - Mpumalanga - 140km rail (increase capacity to 32Mtpa)
  - Swazi link – 163km (increase capacity from 16Mtpa to 33Mtpa)
  - Export link – upgrade Ermelo to Richards Bay
  - Rolling stock :14000 wagons, 1000 locomotives
  - Road: national, provincial and municipal roads
  - Moloto corridor centered around deeper economic linkages with Gauteng
- **Water:**
  - **Mokolo Phase 2 - 170km water pipeline providing potentially 150Mm³ per annum**
  - De Hoop Dam (80Mm³ per annum) and distribution system (260km pipeline),
- **Electricity:**
  - New Coal fired power station (Coal 3) 4800MW, and transmission lines
- **Urban development, including human settlement, energy, roads, etc.:**
  - Housing, community centers, public transport, green urban development and roads
- **Port:**
  - Richards Bay capacity from 14,2Mtpa to 23.7Mtpa
- **Industrial Development:**
  - 80 000 barrels/day Coal-to-liquid plant (Mafutha)
  - Coal Mines : 3 mines 5-10 Mtpa per mine

INCREASED NEED FOR WATER IN THE LEPHALALE AREA

B) Increased Need for Water in the Lephalale Area

Waterberg Coal Fields

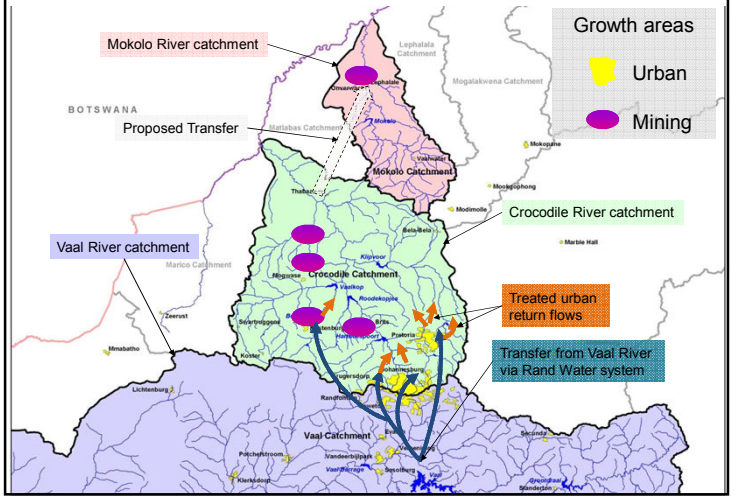


B) Increased Need for Water in the Lephalale Area

Assessment of Water Resources

- DWS developed and is updating a reconciliation strategy for the Crocodile River West Supply System in consultation with stakeholders through a Strategy Steering Committee
  - ***(Version 1 in 2008; Version 2 in 2012; Version 3 to be issued shortly)***
- Water balance was assessed by sophisticated risk analysis to ensure that assurance of supply will be maintained to current and future needs of all users
- Surplus water is available in the Crocodile system due to increasing effluent return flow discharges from the Northern parts of Gauteng
  - ***(Projected to grow from 388 mill m3/a in 2015 to 657 mill m3/a in 2050)***
- Due to the priority accorded by Government to strategic important energy projects, it was prudent to give priority to the future water needs of the Lephalale area in support of the national development imperatives

Context of the Crocodile West System



PROJECT OVERVIEW

17

MCWAP DESCRIPTION

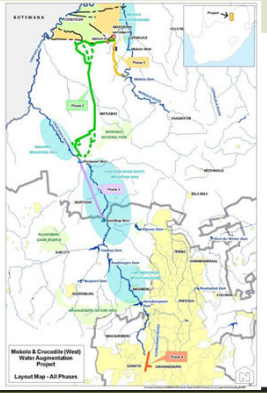
Objective: Water augmentation project to supply demands in the Waterberg Coal Fields (Eskom, IPP's & coal mining), utilising available yield of the existing Mokolo Dam and surplus return flows from Gauteng being discharged in the Crocodile River (West) Catchment.

MCWAP 1 : PIPELINE & PUMPING STATION FROM MOKOLO DAM TO LEPHALALE AREA (44 KM)

MCWAP 2 : ABSTRACTION WORKS AND PUMPING STATION IN CROCODILE RIVER (WEST) NEAR THABAZIMBI & PIPELINE TO STEENBOKPAN AND LEPHALALE (157 KM), INCLUDING RIVER MANAGEMENT SYSTEM.

MCWAP 3: 83 KM PIPELINE – *ONLY IF RIVER CONVEYANCE LOSSES ARE EXCESSIVE.*

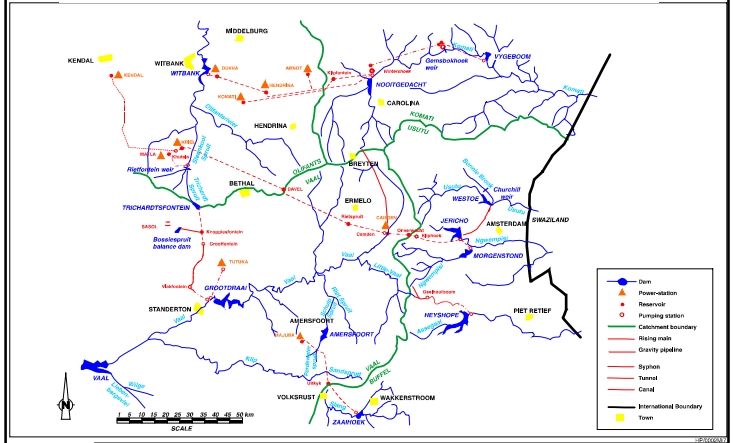
MCWAP 4: TRANSFER SCHEME FROM JOHANNESBURG KLIP RIVER WASTEWATER TREATMENT WORKS TO HEAD WATERS OF CROCODILE RIVER – *ONLY IF SURPLUS IN CROCODILE RIVER WEST IS INSUFFICIENT.*



MANAGEMENT OF NATIONAL WATER RESOURCES

19

Example: Linkages Eastern Vaal Supply System



AUGEMENTATION OF THE EASTERN SUB-SYSTEMS OF THE VAAL RIVER SYSTEM

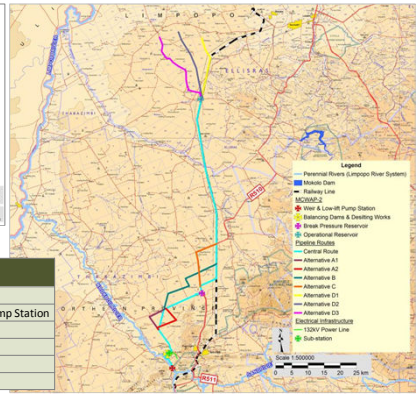
Integration of the Eastern Subsystem A-1

5.2) PROPOSED PROJECT LAYOUT

	MCWAP-2 Components
1	Water Transfer Infrastructure
2	Borrow Pits

WATER TRANSFER INFRASTRUCTURE

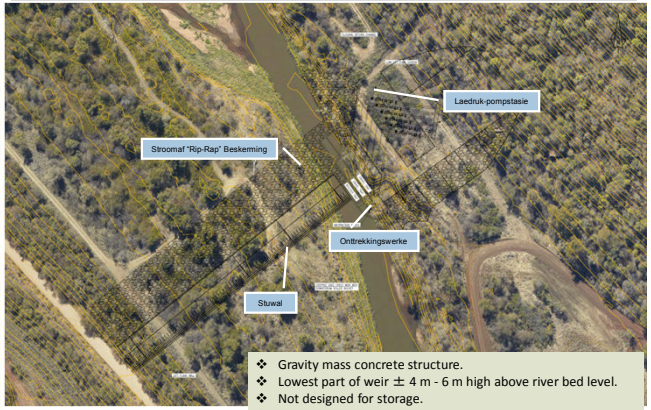
1. Scope



No.	Water Transfer Infrastructure
1	Vlieëpoort Weir and Abstraction Works
2	Balancing Reservoir, Desilting Woks, High Lift Pump Station
3	Transfer & Delivery Systems
4	Break Pressure Reservoir
5	Operational Reservoir
6	Roads

WATER TRANSFER INFRASTRUCTURE

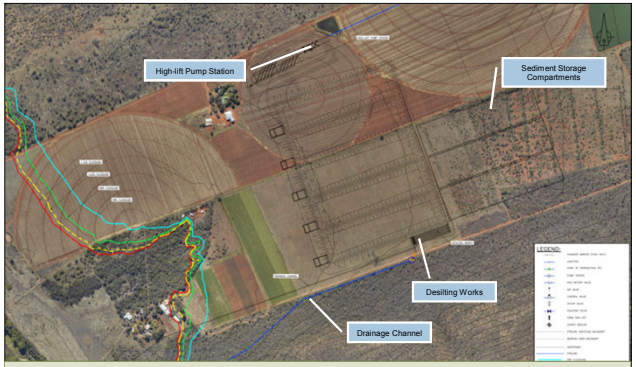
2. Vlieëpoort Weir and Abstraction Works



- Gravity mass concrete structure.
- Lowest part of weir ± 4 m - 6 m high above river bed level.
- Not designed for storage.
- Low-lift pump station building ± 25 m high

WATER TRANSFER INFRASTRUCTURE

3. Balancing Reservoir, Desilting Works, High Lift Pump Station



- Desilting Works - at least eight 120 m long concrete channels, typically 2.5 m wide with a depth varying from 4.0 m to 5.5 m and will protrude about 1 – 2 m above the top of the balancing reservoir embankment.
- Balancing Reservoir - artificial dam formed by shallow excavation and surrounding earthfill embankments. Footprint area of the reservoir including the desilting works ± 620 m x 440 m. The reservoir will be divided into 5 compartments, each with top dimensions of approximately 400 m x 100 m. The depth varies from 13.0 m at the inlet side to 10.5 m at the outlet side.
- High-lift Pump Station - ± 120 m x 300 m.

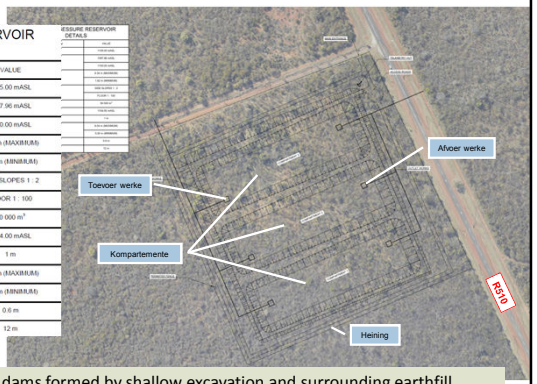
25

WATER TRANSFER INFRASTRUCTURE

4. Break Pressure Reservoir

BREAK PRESSURE RESERVOIR DETAILS

DESCRIPTION	VALUE
NON SPILL OVER CREST	1105.00 mASL
BASE LEVEL	1097.96 mASL
	1100.00 mASL
EMBANKMENT HEIGHT	6.34 m (MAXIMUM)
	1.62 m (MINIMUM)
SLOPES	SIDE SLOPES 1 : 2
	FLOOR 1 : 100
COMPARTMENT VOLUME	50 000 m³
WATER LEVEL	1104.00 mASL
FREE BOARD	1 m
WATER DEPTH	6.64 m (MAXIMUM)
	5.00 m (MINIMUM)
SPILLWAY DEPTH	0.6 m
SPILLWAY WIDTH	12 m



- Artificial dams formed by shallow excavation and surrounding earthfill embankments.
- Reservoirs will be compartmentalised.

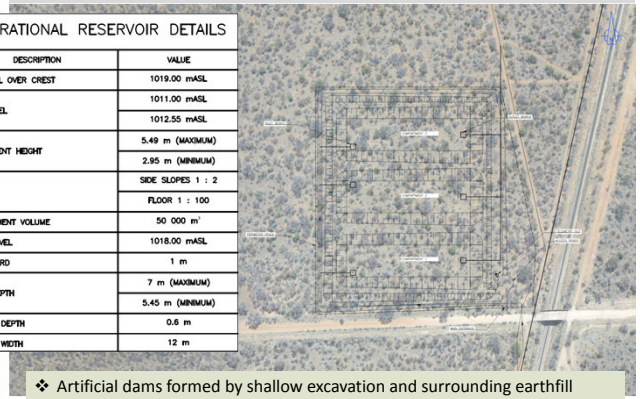
26

WATER TRANSFER INFRASTRUCTURE

5. Operational Reservoir

OPERATIONAL RESERVOIR DETAILS

DESCRIPTION	VALUE
NON SPILL OVER CREST	1019.00 mASL
BASE LEVEL	1011.00 mASL
	1012.55 mASL
EMBANKMENT HEIGHT	5.49 m (MAXIMUM)
	2.95 m (MINIMUM)
SLOPES	SIDE SLOPES 1 : 2
	FLOOR 1 : 100
COMPARTMENT VOLUME	50 000 m³
WATER LEVEL	1018.00 mASL
FREE BOARD	1 m
WATER DEPTH	7 m (MAXIMUM)
	5.45 m (MINIMUM)
SPILLWAY DEPTH	0.6 m
SPILLWAY WIDTH	12 m



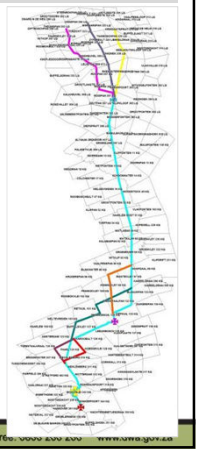
- Artificial dams formed by shallow excavation and surrounding earthfill embankments.
- Reservoirs will be compartmentalised.

27

WATER TRANSFER INFRASTRUCTURE

6. Transfer & Delivery Systems

- To minimise impacts, the proposed route attempts to remain alongside existing linear-type infrastructure, such as roads (main roads and dirt roads), the railway line (i.e. section of approximately 56km), industrial corridors and farm boundaries where the environment is regarded as less sensitive.
- Final alignment still needs to be confirmed.
- 100m corridor (50m on either side of centre line) assessed as part of EIA.



28

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BORROW PITS

- Require 30 Borrow Pits at 5km spacing
- Location of 7-8 additional Borrow Pits to be confirmed – additional geotechnical investigations
- Require Environmental Authorisation – separate EIA process
- Rehabilitation specifications

6) VERIFICATION OF EXISTING LAWFUL WATER USES IN THE CROCODILE RIVER (WEST)

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Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)

Environmental Impact Assessment (EIA): Focus Group Meetings

Progress with Validation & Verification of water use in the Crocodile (West)-Marico catchment

24 January 2018

Presented by: Rens Botha CE: WRM

BACKGROUND

Existing lawful water use

In order to qualify as existing lawful water use, a water use must meet the following criteria:

a) the water must have been physically used in the two years before the implementation of the National Water Act, 1998 (qualifying period).

- 1 October 1996 to 30 September 1998 for groundwater, e.g. water from boreholes;

- 1 October 1997 to 30 September 1999 for surface water, e.g. water from dams or rivers.

and

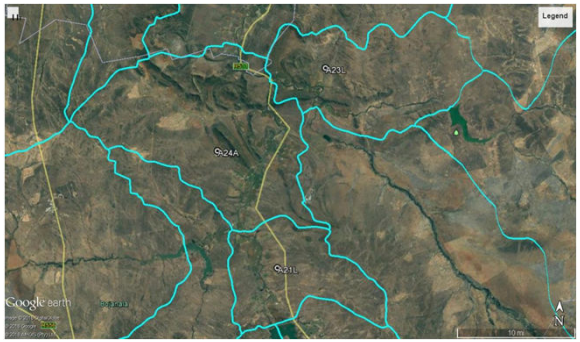
b) the quantity of water used had to meet the requirements as per the Water Act, 1956 (act 54 of 1956)

VERIFICATION PROJECT

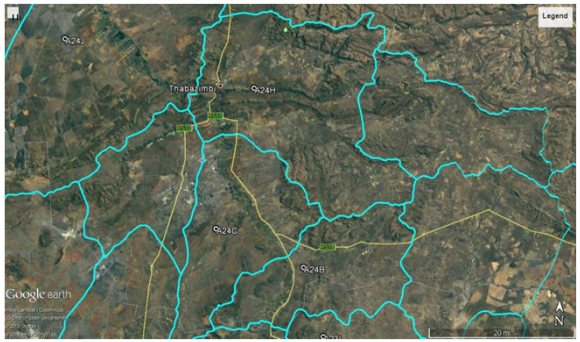
- DWS started verification in 2009
- First project ended May 2015, incomplete due to various reasons
- Current project started January 2016 and will be completed mid 2018
- Virtually all registered water use have been validated
- Verification part of process is currently ongoing
- Does not address scheme related use, which is being addressed in terms of section 33 of the Act

HARTBEESPOORT IRRIGATION AREA A21J

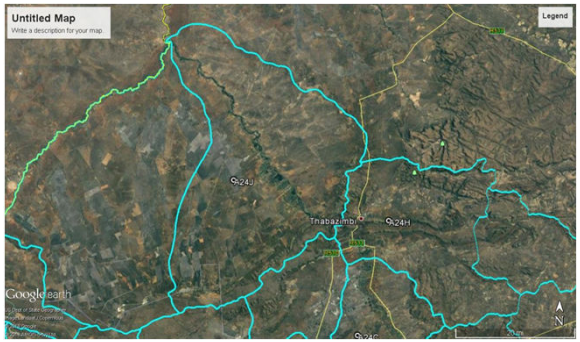
CROCODILE WEST IRRIGATION AREA A21L, A24A, A23L



CROCODILE WEST IRRIGATION AREA A24B, A24C, A24H



LOWER CROCODILE IRRIGATION AREA A24J



VERIFICATION RESULTS

Quat	Irrigation						Storing		
	Surface			Borehole					
	PEL SVol	C Reg SVol	Present SVol	PEL Bvol	C Reg BVol	Present BVol	PEL Vol	C Reg Vol	Present Vol
A21J	1 040 389	550 402	452 148	11 811 739	974 265	2 464 893	122 053	0	11 085
A21L	0	0	0	413 016	12 480	0	10 048	0	6 578
A23L	0	0	0	0	0	0	0	0	0
A24A	0	0	0	0	0	0	0	0	0
A24B	0	0	0	0	0	0	0	0	0
A24C	1 034 400	0	0	3 300 480	0	1 130 400	71 201	0	47 233
A24H	931 546	0	0	931 546	0	0	111 803	0	0
A24J	32 560 334	20 595 132	22 012 434	31 539 940	29 232 329	23 381 962	1 874 200	5 161 390	2 755 500

7) KEY ISSUES RELATED TO THE PROPOSED PROJECT

7.1) AVAILABILITY OF WATER IN THE CROCODILE RIVER (WEST)

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Mokolo en Krokodilrivier (Wes) Wateraanvullings Projek Fase 2A

24 Januarie 2018

7.1 Beskikbaarheid van Water in die Krokodilrivier (Wes)

Plek: Krokodilrivier-Wes Besproeiingsraad

WATER IS LIFE, SANITATION IS DIGNITY

Presentation layout

- Context
- DWS Studies
  - Crocodile (West) River System
- Analysis methodology
- Reconciliation Strategy Development Process
- Risk Analysis – Crocodile (West) system
  - Without Transfer to Lephalale Area (Madupi Power Station)
  - City of Tshwane proposed Reuse Project
  - With Reuse and Transfer to Lephalale Area (MCWAP Phase 2)
- Annual Water Resource Balance (Scenarios)
- Reconciliation Strategy
- Summary

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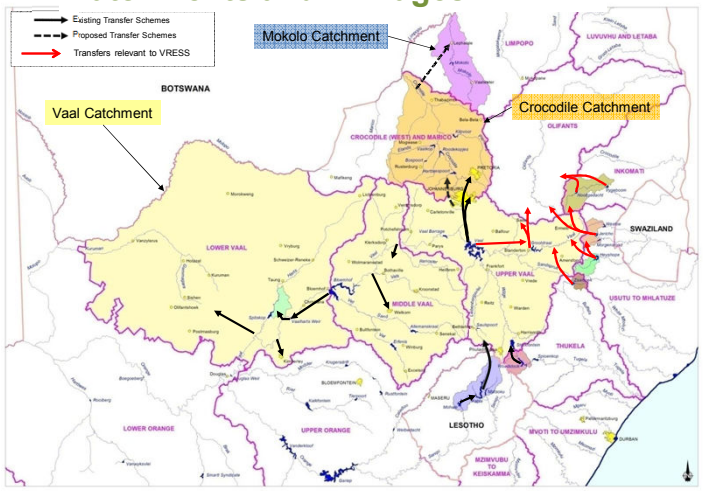
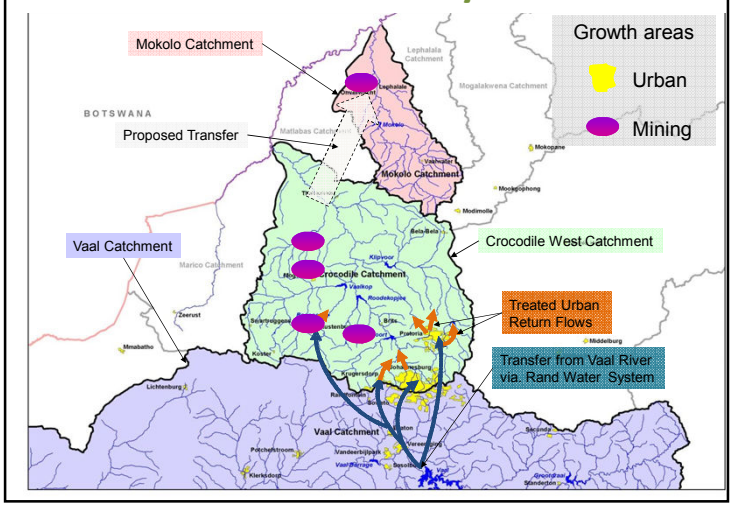
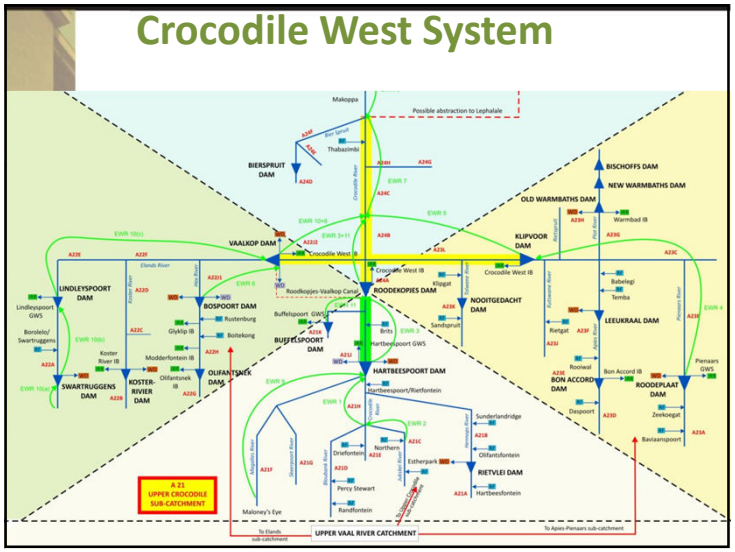
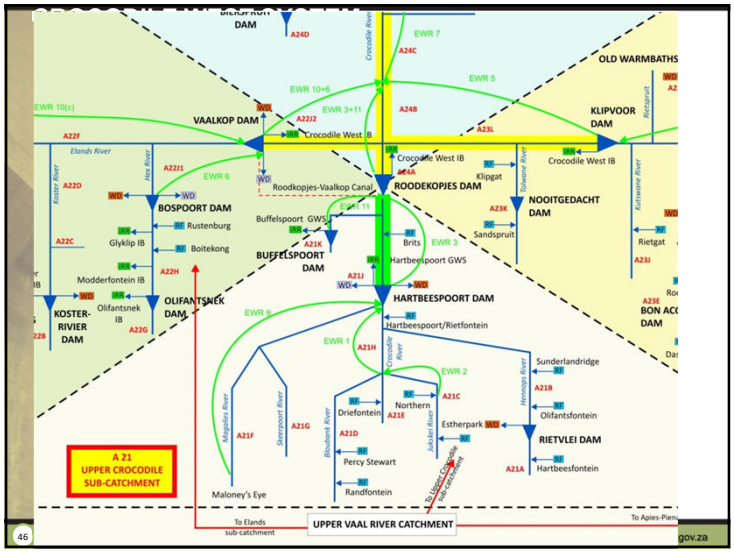
Catchments and Linkages



Water Resource Systems







Crocodile (West) River Reconciliation Strategy Version 1 (2008)

Executive Summary	P WMA 03/000/00/3908
Version 1 of the Crocodile West River Reconciliation Strategy	P WMA 03/000/00/3608
WRPM analyses.	P WMA 03/000/00/3708
Current and future water requirements and return flows and water conservation and demand management	P WMA 03/000/00/3508
Hydrological Assessment.	P WMA 03/000/00/2307
Agricultural Assessment.	P WMA 03/000/00/2207
Groundwater Assessment.	P WMA 03/000/00/2507.
Water requirements and availability scenarios for the Lephalale area	P WMA 03/000/00/4008
Summary of previous and current studies	P WMA 03/000/00/3408
CWRS Inception report	P WMA 03/000/00/3307

47

Crocodile (West) River Reconciliation Strategy 2012

2012 Crocodile West Reconciliation Strategy.	P WMA 03/A31/00/6110/4
Water Resources Planning Model.	P WMA 03/A31/00/6110/3
Water quality calibration.	DWS to comment
MOCWS Inception Report	P WMA 03/A31/00/6110/1
Assessment of the ultimate potential and future marginal cost of water resources in South Africa.	P RSA 000/00/12610
An assessment of rain-fed crop production potential in South Africa's neighbouring countries.	P RSA 000/00/12510

http://www.dwa.gov.za/Projects/crocodilemaintenance/documents.aspx

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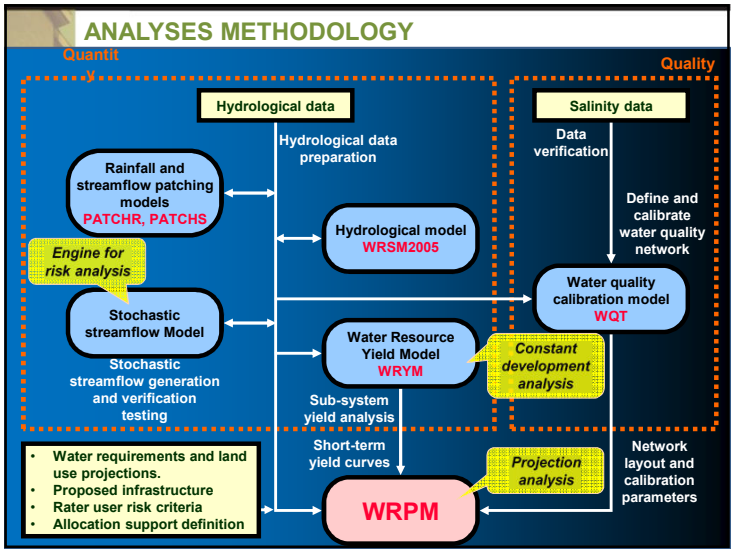
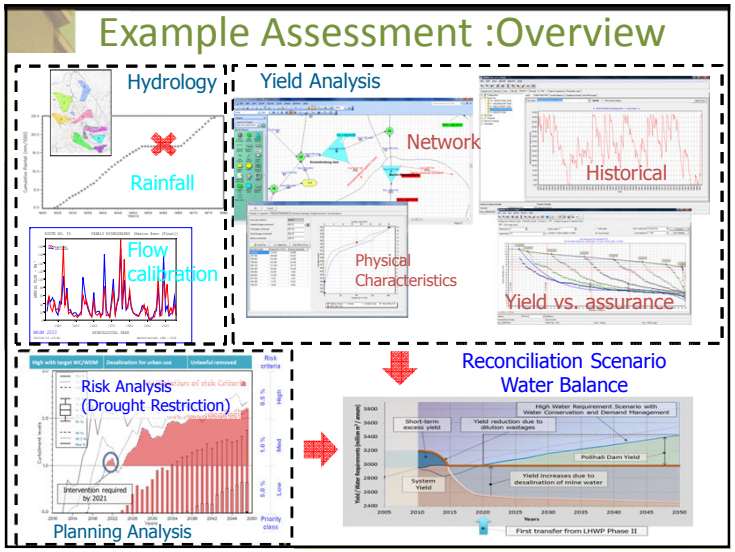
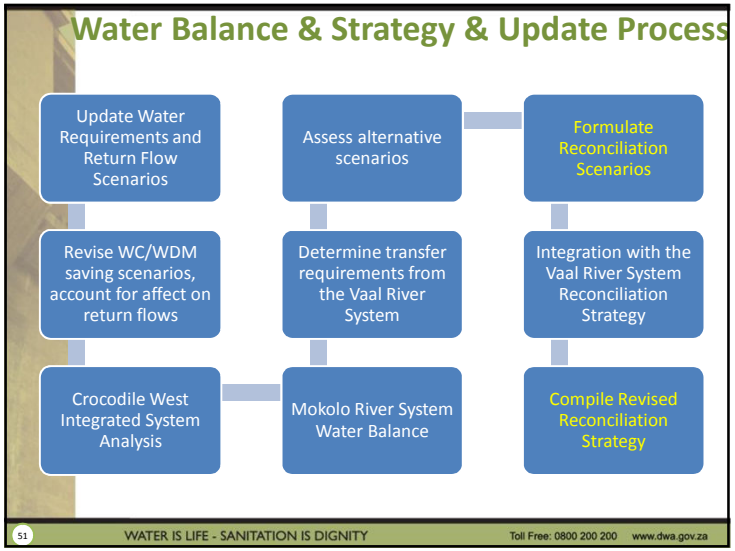

ANALYSES METHODOLOGY
Quantity
Quality
Hydrological data
Hydrological data preparation
Rainfall and streamflow patching models PATCHR, PATCHS
Hydrological model WRSM2005
Engine for risk analysis
Stochastic streamflow Model
Stochastic streamflow generation and verification testing
Water Resource Yield Model WRYM
Sub-system yield analysis
Short-term yield curves
Salinity data
Data verification
Define and calibrate water quality network
Water quality calibration model WQT
Constant development analysis
Projection analysis
Network layout and calibration parameters
Water requirements and land use projections.
Proposed infrastructure
Rater user risk criteria
Allocation support definition
WRPM


Example Assessment :Overview
Hydrology
Rainfall
Flow calibration
Yield Analysis
Network
Historical
Physical Characteristics
Yield vs. assurance
Risk Analysis (Drought Restriction)
Planning Analysis
Reconciliation Scenario Water Balance


Water Balance & Strategy & Update Process
Update Water Requirements and Return Flow Scenarios
Assess alternative scenarios
Formulate Reconciliation Scenarios
Revise WC/WDM saving scenarios, account for affect on return flows
Determine transfer requirements from the Vaal River System
Integration with the Vaal River System Reconciliation Strategy
Crocodile West Integrated System Analysis
Mokolo River System Water Balance
Compile Revised Reconciliation Strategy
51
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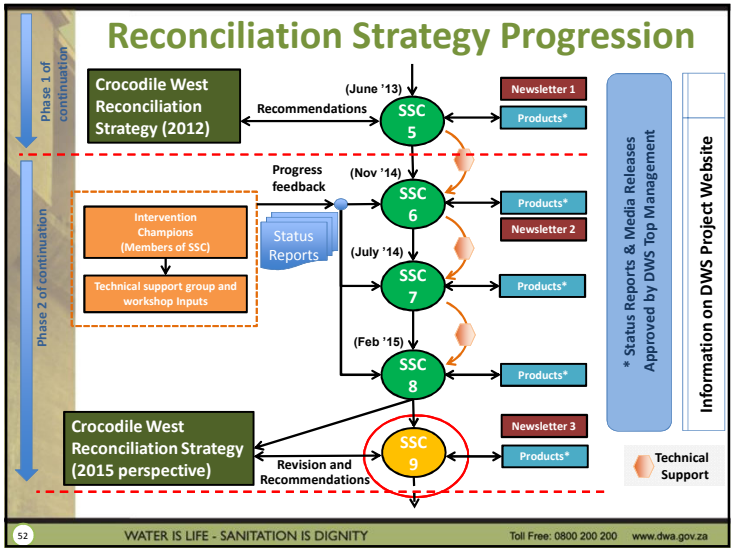
Reconciliation Strategy Progression
Phase 1 of continuation
Phase 2 of continuation
Crocodile West Reconciliation Strategy (2012)
Recommendations
(June '13)
SSC 5
Newsletter 1
Products*
Progress feedback
(Nov '14)
SSC 6
Products*
Newsletter 2
Intervention Champions (Members of SSC)
Technical support group and workshop Inputs
Status Reports
(July '14)
SSC 7
Products*
(Feb '15)
SSC 8
Products*
Crocodile West Reconciliation Strategy (2015 perspective)
Revision and Recommendations
SSC 9
Newsletter 3
Products*
* Status Reports & Media Releases Approved by DWS Top Management
Information on DWS Project Website
Technical Support
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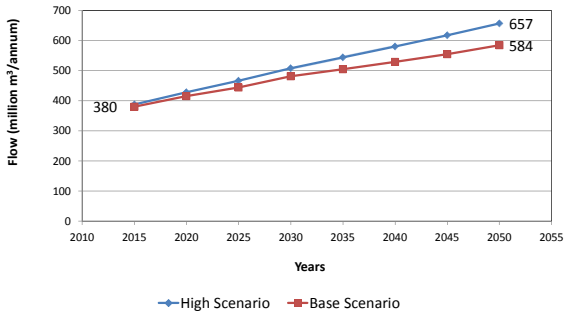
Water balance scenarios

Revised current water supply and return flow volumes: two different growth projections:

1. Base Scenario brought forward from previous Reconciliation Strategy work: *Base Scenario*
2. Planning by the municipalities considering earmarked developments : *Alternative High Scenario*

Urban Return Flows



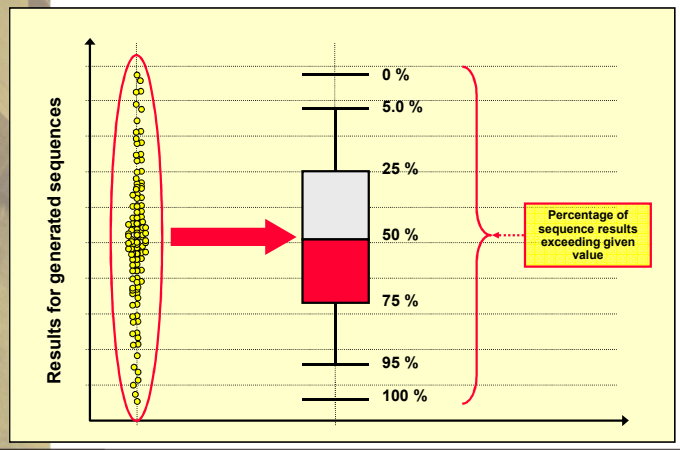
Scenarios

Main characteristics of scenarios:

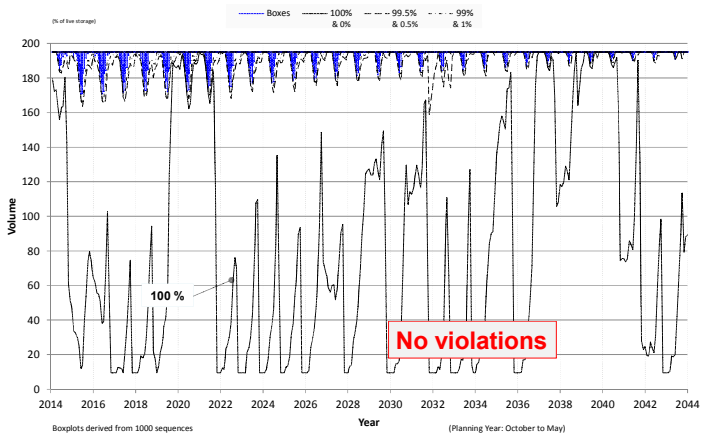
1. Status quo scenario (current developments persist).
2. Tshwane Water Augmentation Program added as an accepted planned intervention.
3. Same as above with the future transfer of water to Lephalale included.
4. Additional water available for further domestic supply over and above Lephalale transfers.

Status Quo Scenario

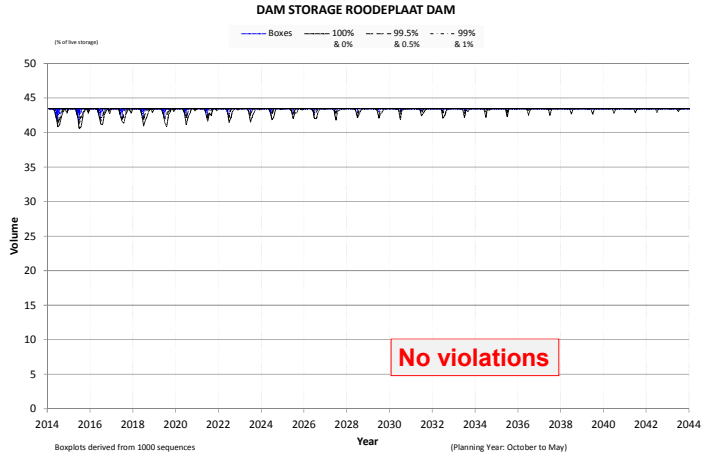
Probability distribution (box plot)



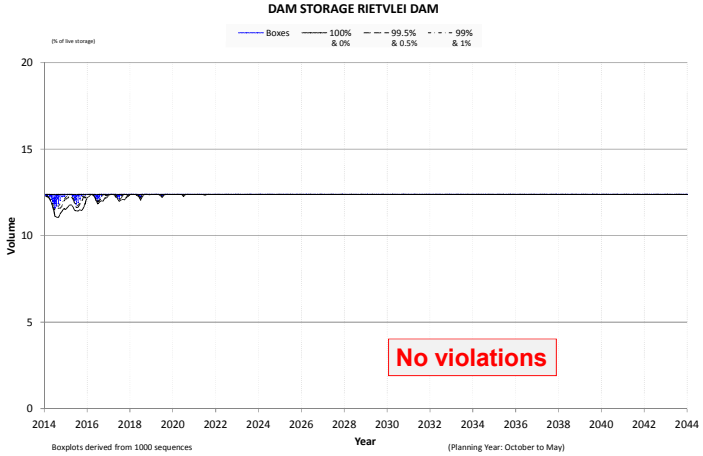
Without Transfer to Lephalale



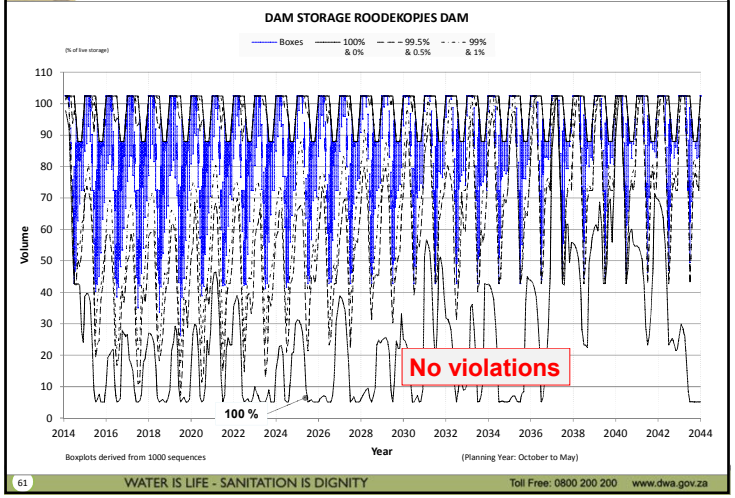
Without Transfer to Lephalale



Without Transfer to Lephalale



Without Transfer to Lephalale



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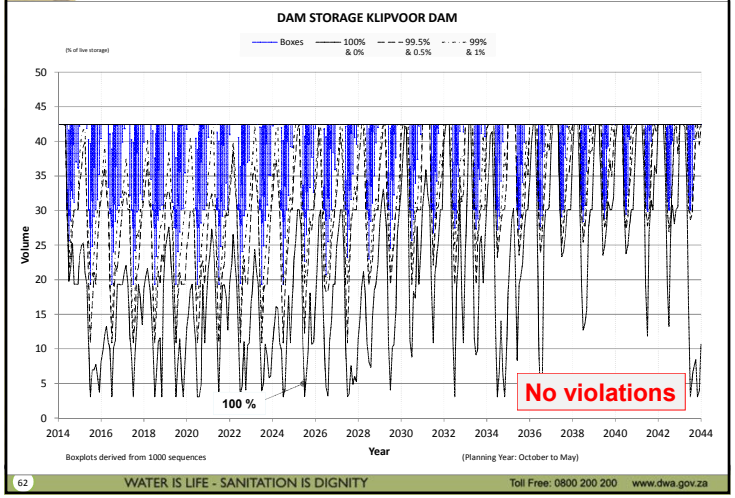
Without Transfer to Lephalale



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Tshwane Water Augmentation Program

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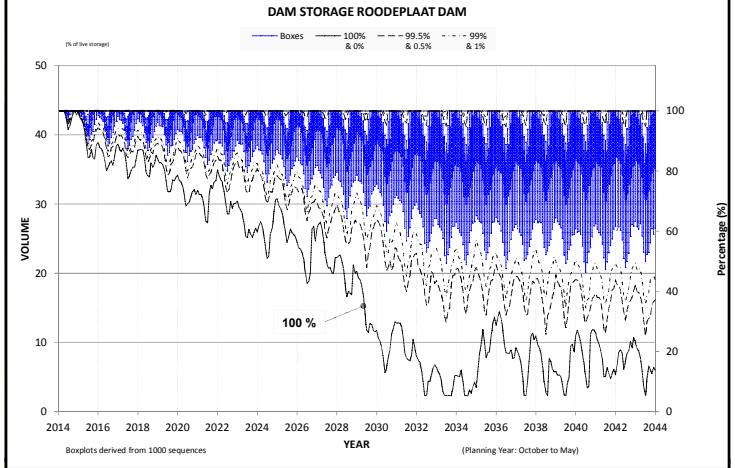
City of Tshwane proposed Reuse Project



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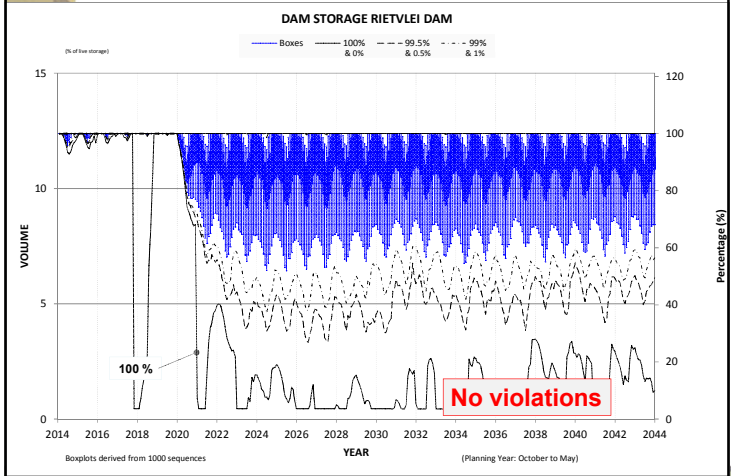
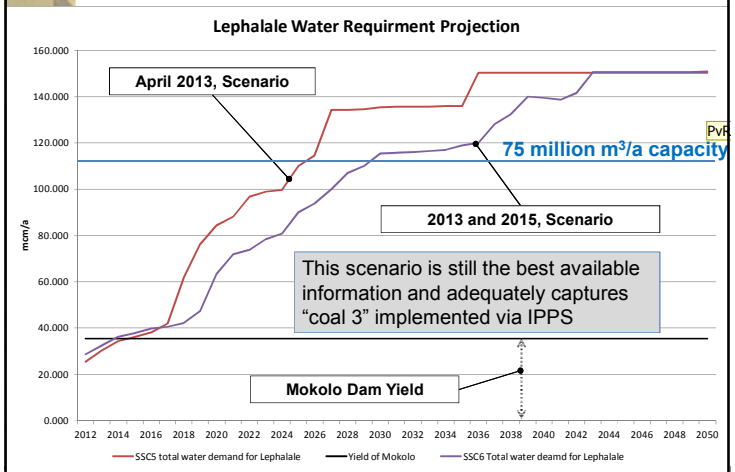
City of Tshwane proposed Reuse Project

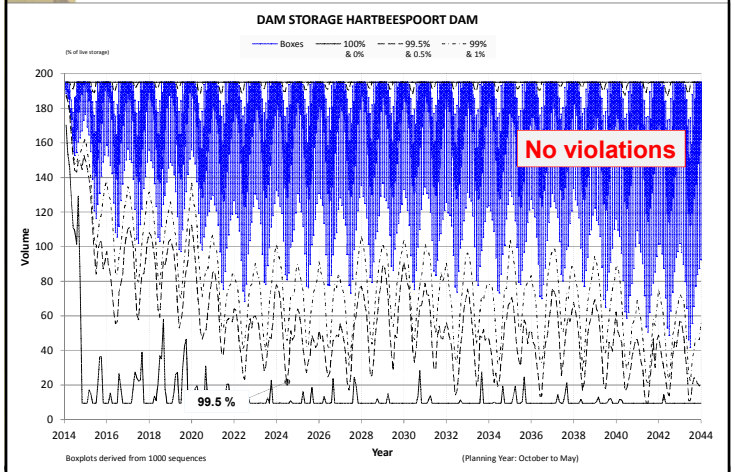


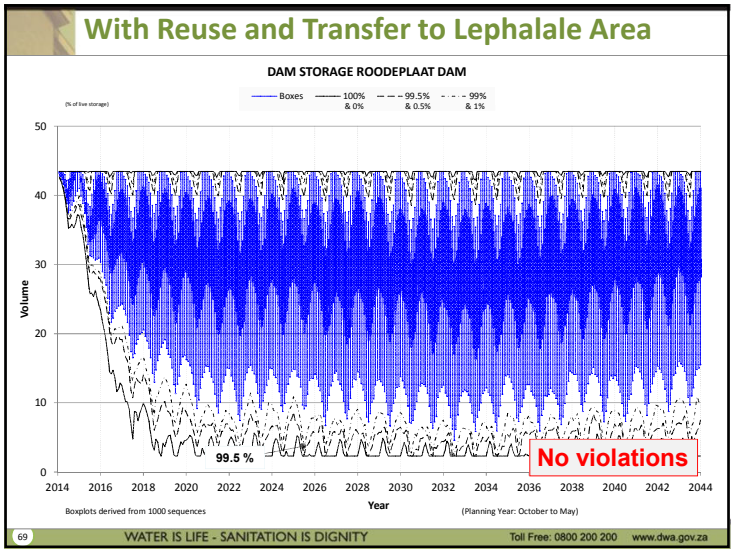
- Tshwane Water Augmentation Program
- Transfer to Lephalale (MCWAP Phase 2)
- Plus: Additional abstraction to determine projected annual balances

Lephalale water requirement projections



With Reuse and Transfer to Lephalale Area




With Reuse and Transfer to Lephalale Area
DAM STORAGE ROODEPLAAT DAM
Boxes
100% & 0%
99.5% & 0.5%
99% & 1%
(% of live storage)
Volume
Year
99.5 %
No violations
Boxplots derived from 1000 sequences
(Planning Year: October to May)
69
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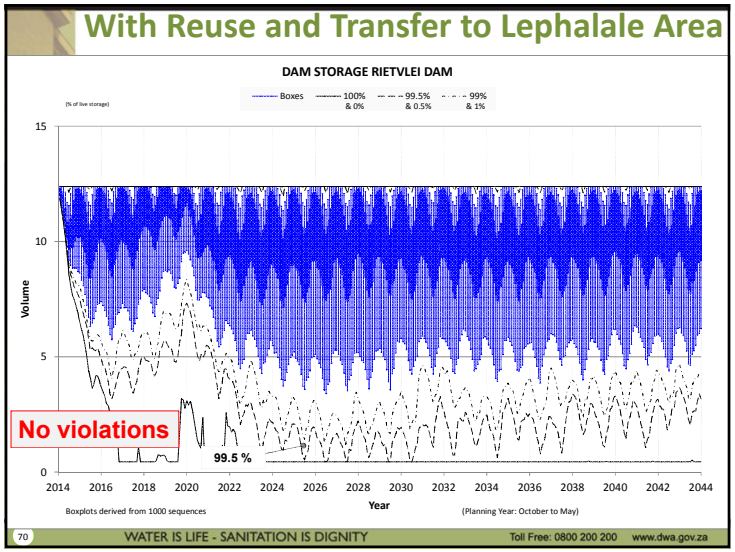
With Reuse and Transfer to Lephalale Area
DAM STORAGE RIETVLEI DAM
Boxes
100% & 0%
99.5% & 0.5%
99% & 1%
(% of live storage)
Volume
Year
No violations
99.5 %
Boxplots derived from 1000 sequences
(Planning Year: October to May)
70
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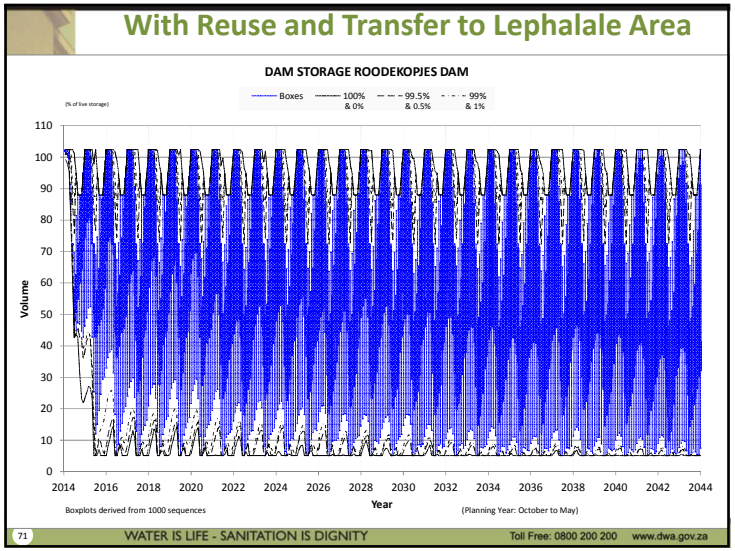
With Reuse and Transfer to Lephalale Area
DAM STORAGE ROODEKOPJES DAM
Boxes
100% & 0%
99.5% & 0.5%
99% & 1%
(% of live storage)
Volume
Year
Boxplots derived from 1000 sequences
(Planning Year: October to May)
71
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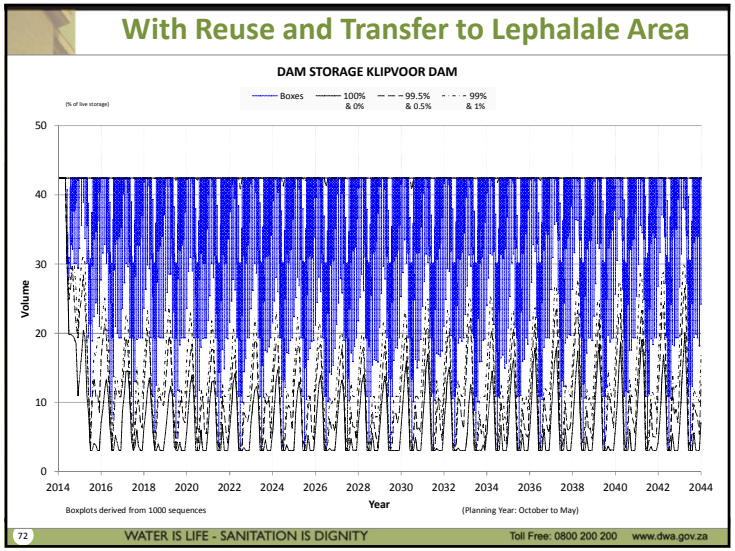
Toll Free: 0800 200 200
www.dwa.gov.za


With Reuse and Transfer to Lephalale Area
DAM STORAGE KLIPVOOR DAM
Boxes
100% & 0%
99.5% & 0.5%
99% & 1%
(% of live storage)
Volume
Year
Boxplots derived from 1000 sequences
(Planning Year: October to May)
72
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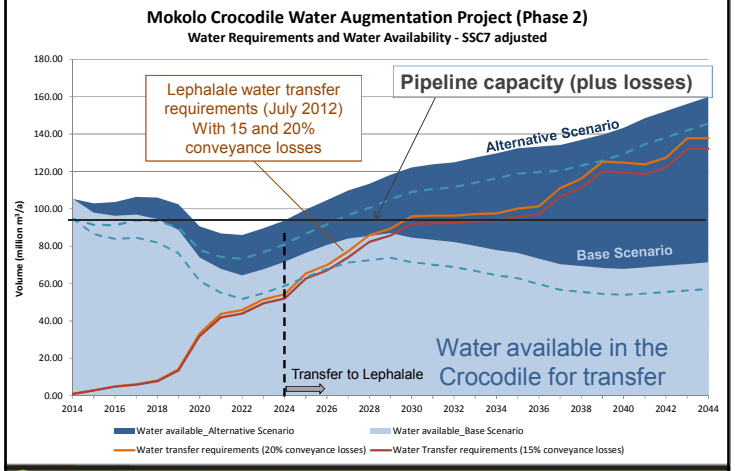
Annual Water Resource Balance (Alternative Scenarios)

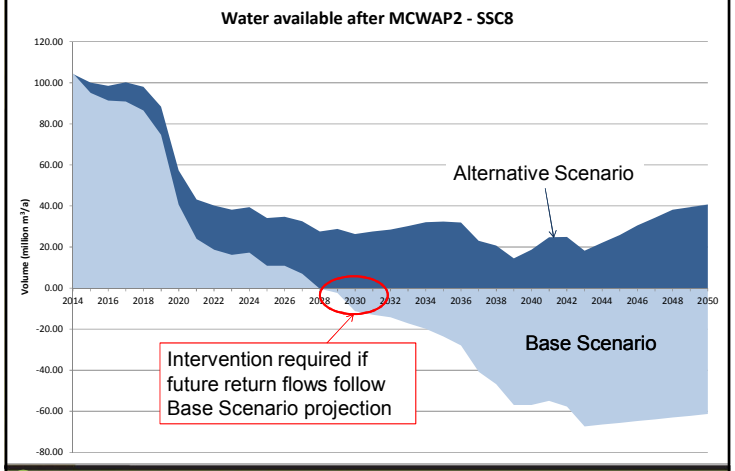
Water Balance Scenarios

- **The following scenarios were considered for the water balances:**
  - With the base (a) and higher alternative (b) growth scenarios in the Metropolitan areas (different projections of **return flows**)
  - With the base (a) and higher growth scenarios (b) in the areas north of the Magaliesberg (different **water requirements** in the Magalies Water Supply area) predominantly in the mining area.

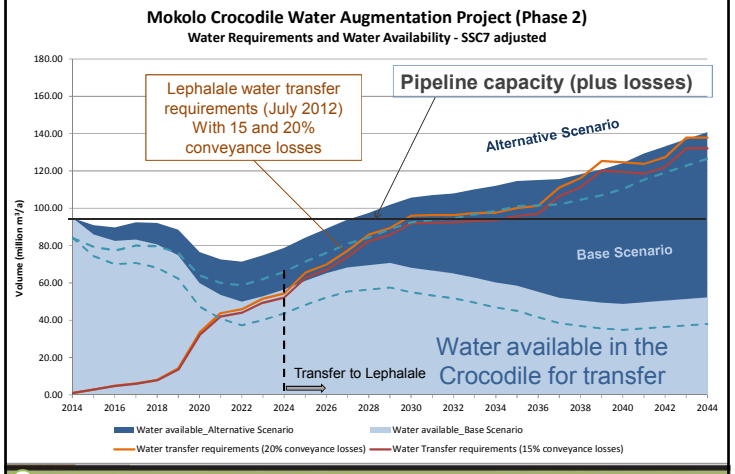
Base urban growth north of the Magaliesberg



Base domestic growth north of the Magaliesberg



Higher growth north of Magalies (extrapolation of past 10 years)



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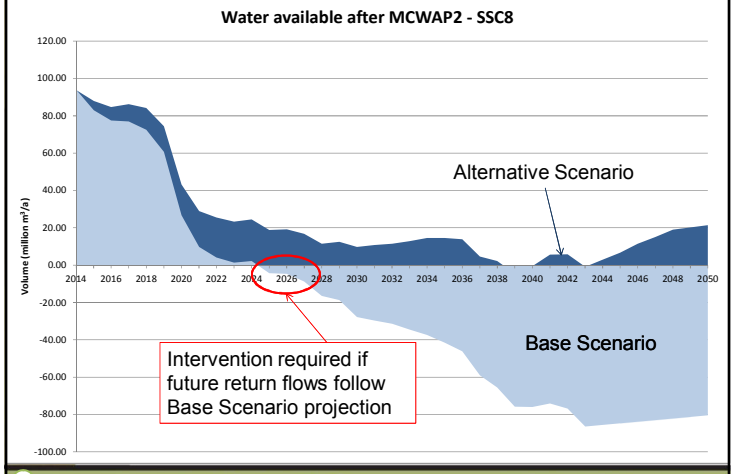
Higher growth north of Magalies (extrapolation of past 10 years)



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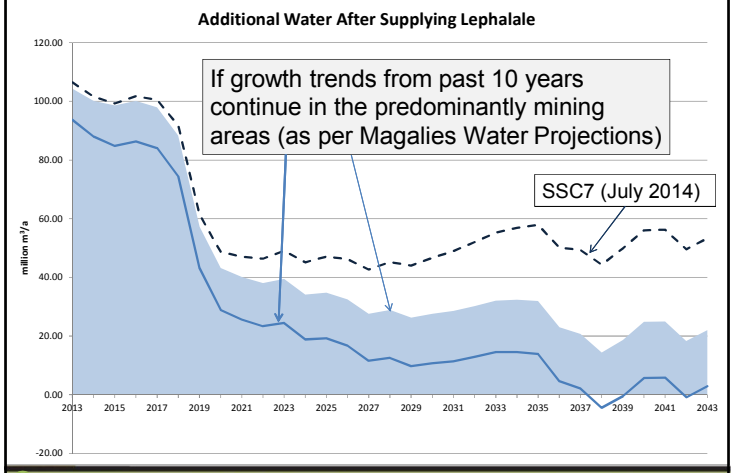
- Water in Crocodile after supplying LepHalale



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Conclusions (1 of 2)

- Sufficient water available for transfer to Lephalale over and above initial phases of Tshwane's re-use program.
- If growth and supply in metro areas is reduced then later phases of Tshwane re-use may need to be delayed.
- If current short term trend of increased return flows in the metros continues then water availability in the catchment could increase. Further monitoring needed.
- Re-use of water most likely needed as Vaal River system may not meet higher projected Rand Water requirements in Crocodile system until LHWP2 if a drought period occurs.

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Conclusions (2 of 2)

- Capacity of MCWAP2 selected at 75 million m^3/a, but water requirement projections for Lephalale unchanged, Assumed additional phases developed term if needed.
- Mining growth -> still very low prospects.
- Possible higher water requirements in urban centers in Magalies Water area if past growth trends continue. Links with mining development need to be monitored, together with likelihood of continuation in past trends.
- Releases from only Hartbeespoort Dam to Vlieëpoort is feasible and combines well with planned Tshwane Water Augmentation Project:
  - Operationally easier.
  - Likely to result in reduced losses compared to releases from Roodeplaat and Rietvlei dams.

Strategy 2015 (1 of 2)

- *The Rand Water service area will continue to be supplied from the Vaal River system and additional re-use within the catchment will be* ***considered only when surplus becomes available****.*
- *The areas north of the Magaliesberg outside the Rand Water supply area will receive increased treated effluent.*
- *In the Waterberg area (north of the Crocodile River catchment) the future optimal utilisation of local resources will continue and* ***surplus water in the Crocodile River catchment will be transferred to the Lephalale area via MCWAP Phase 2****.*

Strategy 2015 (2 of 2)

- *Interventions to supply a possible future temporary projected shortfall will be evaluated by investigating water demand management and/or potential augmentation by* ***transferring treated wastewater from the Vaal River system to the Crocodile River*** *catchment.*
- *The mining sector should provide annual updates of water use and future water requirement projections.*
- ***Annual monitoring of actual water requirements and return flows, review of the water balance****.*
- *Continue with the Crocodile West Annual Operating Analyses.*

Summary

The strategy makes provision for a range of water resource management measures to ensure:

- Sufficient water will be available to all existing water users (including irrigation).
- Support the proposed transfers via MCWAP Phase 2.
- Support Re-use of treated wastewater.
- If required, transfer treated wastewater from the Vaal River System to the Crocodile.

7.2) MANAGEMENT OF IMPACTS REGARDING EXISTING WATER USES (OPERATING RULES)

water & sanitation
Department: Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Mokolo en Krokodilrivier (Wes) Wateraanvullings Projek Fase 2A

24 Januarie 2018

7.2 Bestuur van Impakte in verband met Bestaande Watergebruike (Bedrysreëls)

Plek: Krokodilrivier-Wes Besproeiingsraad

Presentation Layout

- System Operation:
  - Objectives
  - Principles & Process
- Analysis methodology – overview
  - Simulation model – WRPM
  - Assurance of supply criteria
- Monitoring Example

Operating Analysis – Main Objectives

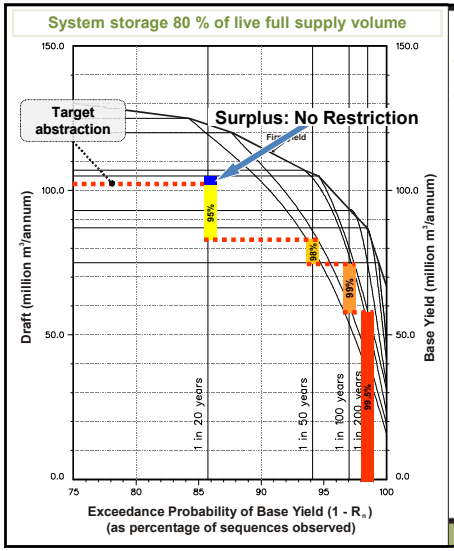
- Primary objective of the Operating Analysis is to maintain the assurance of supply to users:
  - Ecological Flow Requirements
  - Irrigation, Domestic, Industrial, Mining
  - International obligations
- Secondary objectives can include:
  - Minimise operation costs
    - Reduce pumping under high storage conditions
  - Determine impacts due to emergency conditions, large maintenance work, changed operating rules

Maintain Assurance of Supply

- System operation is based on principle that water use are restricted during severe drought:
  - Objective is to reduce supply in accordance with set priorities.
  - The basis on which restrictions are implemented is defined by means of a user priority classification definition.
- Determine the extent of restrictions required during droughts (times of low storage).
- Should the risk criteria of any user be exceeded – further interventions must be planned and implemented.

Basic principles of drought restrictions

- Water users can be restricted
- Objective to avoid failure (zero storage volume in reservoirs).
- Water users prioritised into classes:
  - High, Medium and Low priority classes.
  - Each class is assigned a risk of restriction criteria.
  - Balanced (proportional) restriction within a single class.
  - Restrictions implemented progressively for Low > Medium > High classes.



Short-term balance determines restrictions (explanation)

Annual Operating Analysis Process

- Activities centred around annual Decision Dates – 1 May & review 1 September of each year.
- Monitoring implementation of previous years rules
- Data collation in preparation for analysis.
- Scenario formulation meeting
- System Risk Analysis of scenarios
- System Operating Forum:
  - Present scenario results
  - Consult with stakeholders
  - Seek consensus on operating ruled for next 12 months.
- Document all activities and decision in an annual operating analysis report.

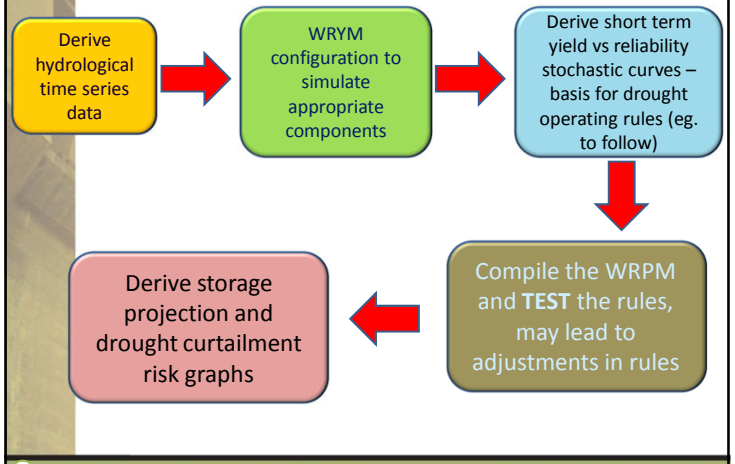
Monthly Monitoring Report

- Section 1: General description of AOA:
  - Description of the system data sets & scenario
  - Brief description of key operating rules
  - Key transfer volumes
- Section 2: Observed versus target water supply to key water users or transfers.
- Section 3: Storage projection plots versus observed storage, flow projections-observed flow.
- Comments provided to each projection graph giving reasons for deviations.
- Identify areas that need to be investigated.

What is monitored?

- Compare observed system behavior with projected modelled results
- Monitor key points in the system
  - Main storage dams
  - Water use or abstractions main or key demand centres
  - Transfers
  - Pumping at key points
  - Releases into rivers from storage dams
  - River flows at key points in system
  - Return flows
- Monthly Monitoring Reports

Overview of analysis method



Risk Criteria Crocodile West System

User Sectors	User priority classification (assurance of supply)		
	Low (90 %)	Medium (99 %)	High (99.5 %)
	Proportion of water demand supplied (%)		
Domestic	20	30	50
Industry, Mining, Power	0	30	70
Irrigation *	100	0	0
Restriction levels:	0	1	2 3

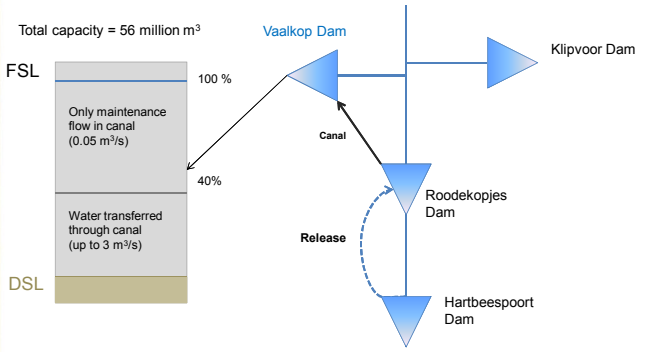
* Note: Irrigation from dams at 1:11 year drought recurrence interval (equivalent to 70/30 rule)

Irrigation Assurance of Supply Criteria

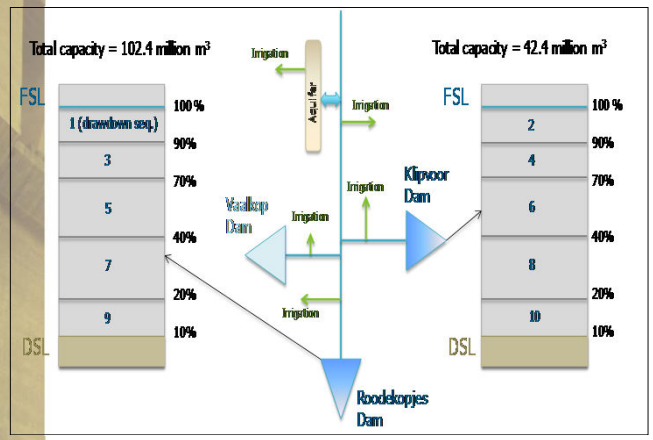
- Irrigators supplied from dams:
  - 91% annual reliability (70/30 rule)
- Irrigators in the Makkopa area:
  - Priority supply from the incremental runoff downstream of the system dams.

Note: DWS does not guarantee the assurance of supply.

Vaalkop Dam Support Rule

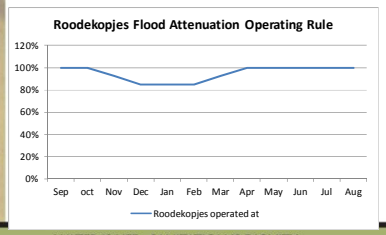


Dual Drawdown Rule



Roodekopjes: Flood Operating Rule

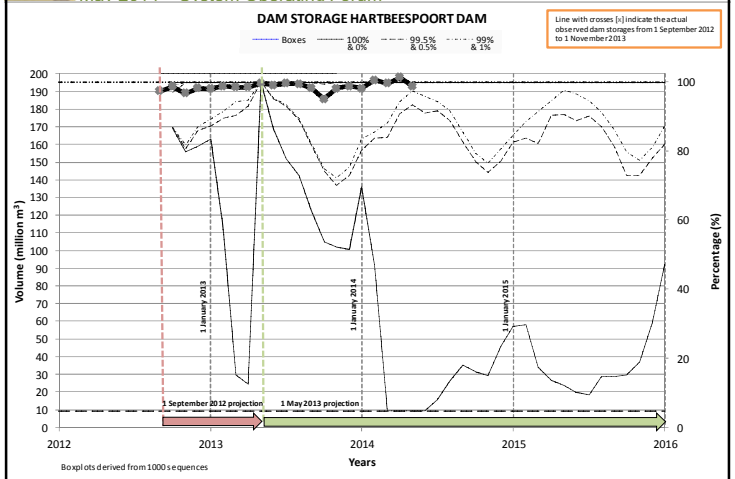
- Release water to maintain Roodekopjes Dam at 85% during the summer months.
- Analysis showed little impact on assurance of supply under ***current excess*** conditions.
- This rule need to be reviewed once the utilisation of the system increases.



Monitoring Example

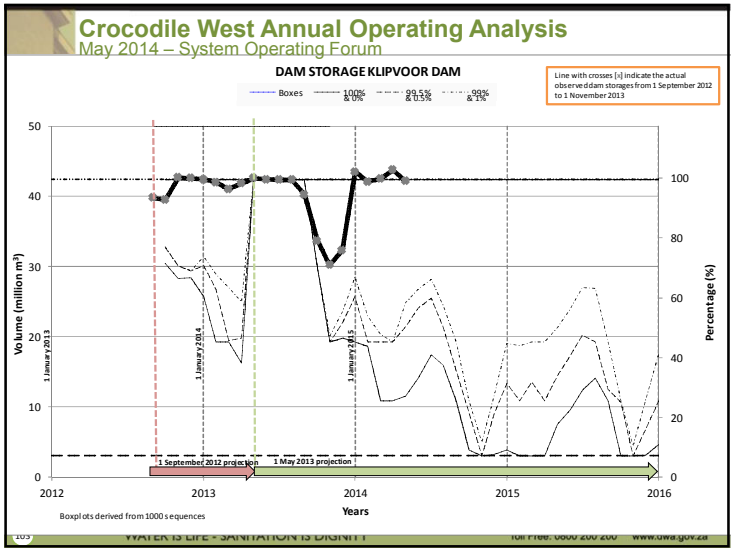
Crocodile West Annual Operating Analysis

May 2014 – System Operating Forum



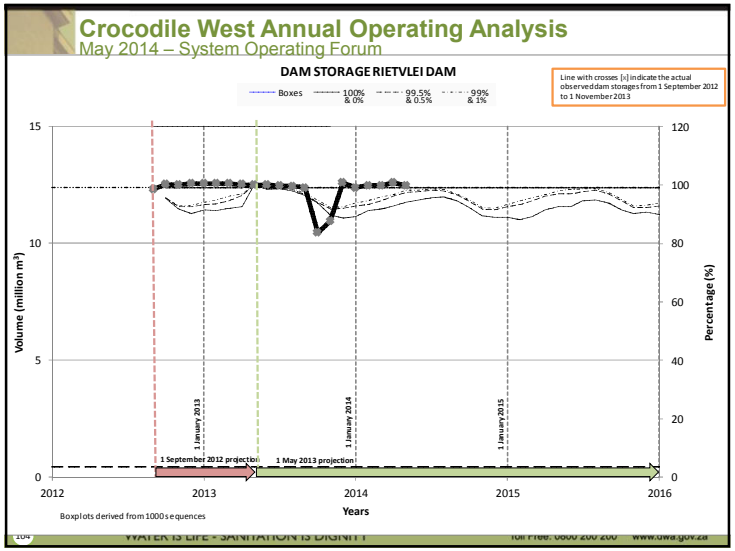
Crocodile West Annual Operating Analysis

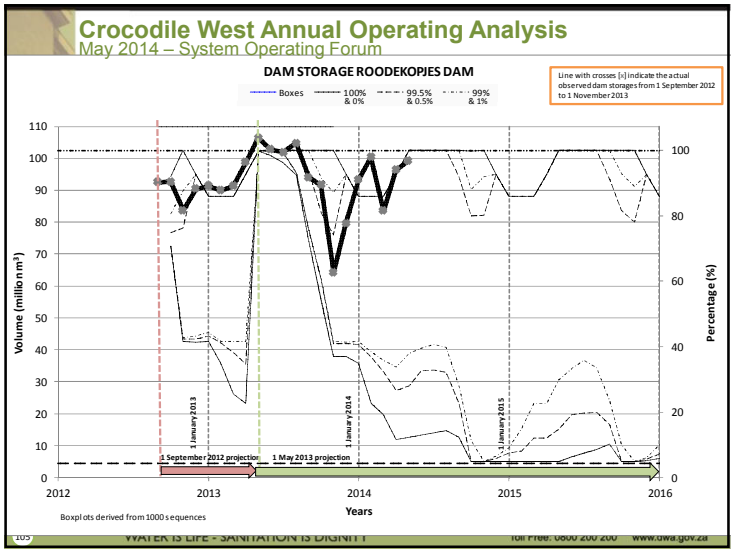
May 2014 – System Operating Forum



Crocodile West Annual Operating Analysis

May 2014 – System Operating Forum




Crocodile West Annual Operating Analysis
May 2014 – System Operating Forum
DAM STORAGE ROODEKOPJES DAM
Boxes
100% & 0%
99.5% & 0.5%
99% & 1%
Line with crosses [x] indicate the actual observed dam storages from 1 September 2012 to 1 November 2013
Volume (million m³)
Percentage (%)
1 January 2013
1 January 2014
1 January 2015
1 September 2012 projection
1 May 2013 projection
Years
Boxplots derived from 1000 sequences
105
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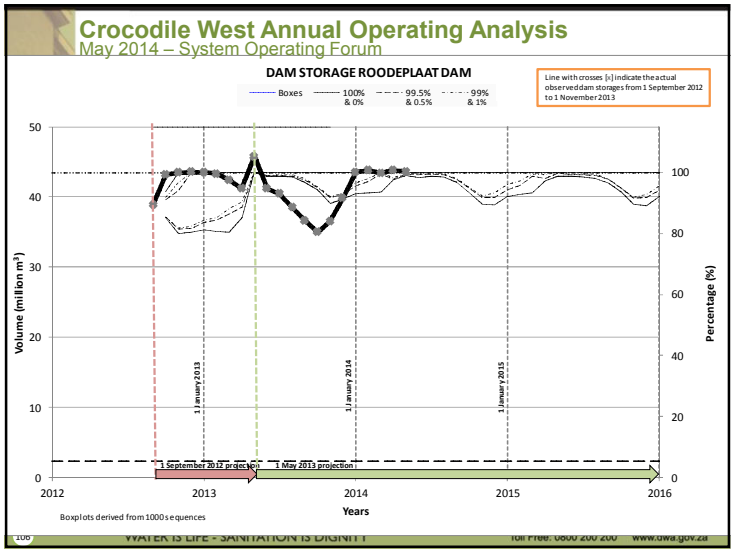
Crocodile West Annual Operating Analysis
May 2014 – System Operating Forum
DAM STORAGE ROODEPLAAT DAM
Boxes
100% & 0%
99.5% & 0.5%
99% & 1%
Line with crosses [x] indicate the actual observed dam storages from 1 September 2012 to 1 November 2013
Volume (million m³)
Percentage (%)
1 January 2013
1 January 2014
1 January 2015
1 September 2012 projection
1 May 2013 projection
Years
Boxplots derived from 1000 sequences
106
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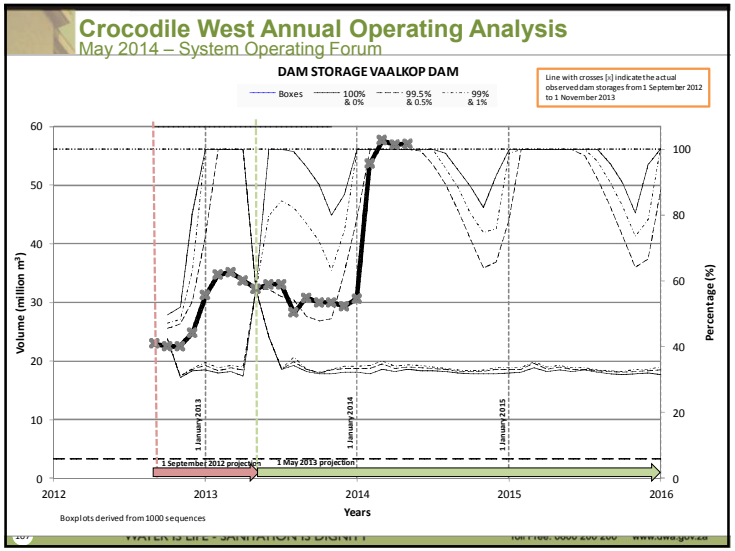
Crocodile West Annual Operating Analysis
May 2014 – System Operating Forum
DAM STORAGE VAALKOP DAM
Boxes
100% & 0%
99.5% & 0.5%
99% & 1%
Line with crosses [x] indicate the actual observed dam storages from 1 September 2012 to 1 November 2013
Volume (million m³)
Percentage (%)
1 January 2013
1 January 2014
1 January 2015
1 September 2012 projection
1 May 2013 projection
Years
Boxplots derived from 1000 sequences
107
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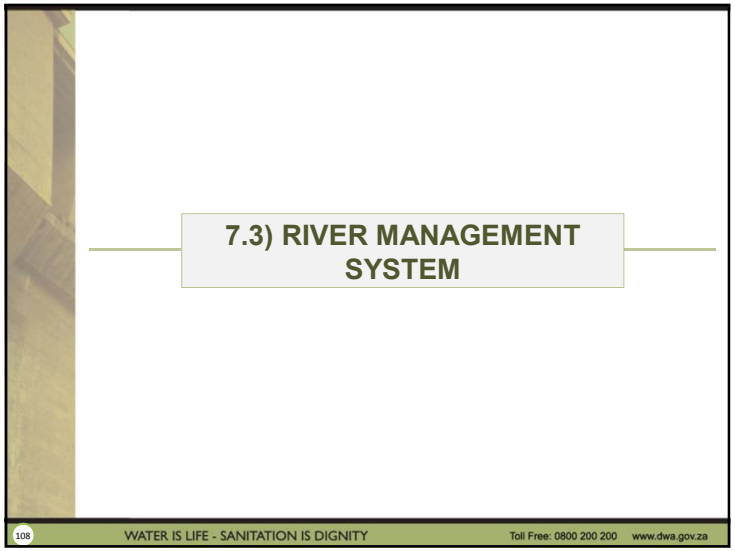
7.3) RIVER MANAGEMENT SYSTEM
108
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RIVER MANAGEMENT SYSTEM

Purpose

To monitor, control and manage the:
- releases into the river;
- the flows in the river;
- abstractions from the river including all abstractions within the so-called "red-line" zone.

Application

It will apply to the:
- Crocodile River (West) between Hartbeespoort Dam and Vlieëpoort Abstraction Works, including the releases and spills from such Works;
- Moretele River from Klipvoor Dam to the confluence with the Crocodile River (West); and
- Elands River from Vaalkop Dam to the confluence with the Crocodile River (West).

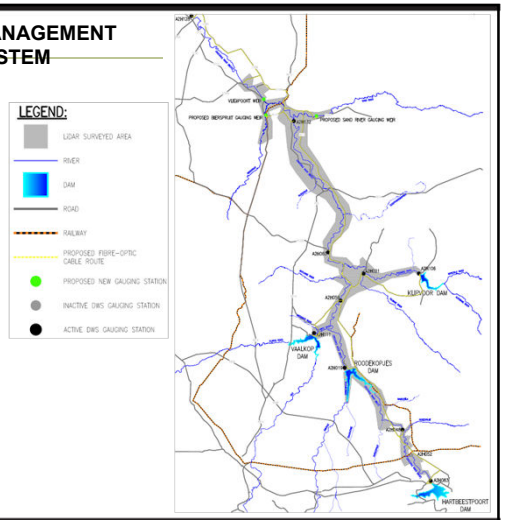
Servitude of Aqueduct

- A servitude of aqueduct will be acquired in terms of the NWA (sections 64 and 65) over the aforesaid river stretches.

RIVER MANAGEMENT SYSTEM

Infrastructure
- 4 Existing dams;
- Possible new river outlet at Hartbeespoort Dam or revised operating procedures;
- Possible new river outlet at Roodekopjes Dam or revised operating procedures;
- 13 Existing river gauging stations;
- 2 new river gauging stations;
- Smart metering of direct abstraction;
- Smart metering of indirect abstraction (boreholes);
- Conveyance capacity in Croc (West) river channel;
- Data communication network;
- Decision support system;
- Integrated operational centre.

RIVER MANAGEMENT SYSTEM



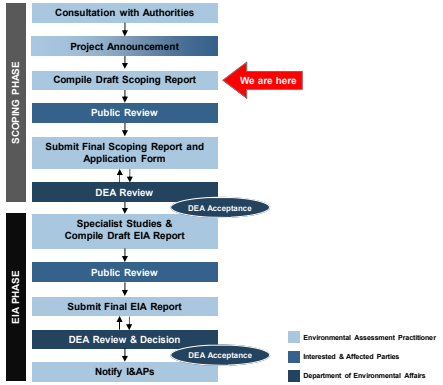
8) ENVIRONMENTAL IMPACT ASSESSMENT

8.1) ENVIRONMENTAL LEGAL FRAMEWORK

	MCWAP-2 Components	NEMA[1]	MPRDA[2]	NWA[3]
1	Water Transfer Infrastructure	Scoping & EIA	-	Water Use Authorisation Process
2	Borrow Pits	Scoping & EIA		
3	River Management System	Possibly multiple applications	-	
4	*Bulk Power Supply*	*Basic Assessment*		

1 - National Environmental Management Act (No. 107 of 1998)
2 - Mineral and Petroleum Resources Development Act (Act No. 28 of 2002)
3 - National Water Act (No. 36 of 1998)

8.2) SCOPING & EIA PROSES

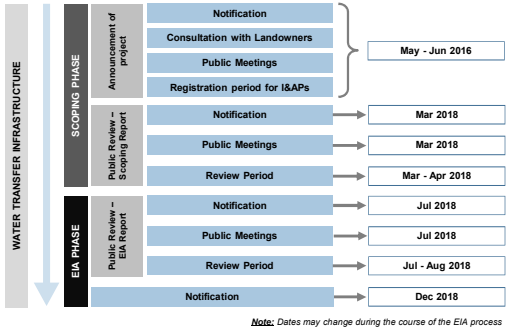


8.2) SCOPING & EIA PROSES

❖ **Scoping Phase aims –**

- Prioritisation of environmental **issues and impacts**
- Select suitable & feasible **alternatives** to be investigated further
- Identification of relevant **specialist studies**
- Determine **public participation** requirements
- Determine scope of ensuing EIA phase

8.3) EIA PROGRAMME



Note: Dates may change during the course of the EIA process

8.4) SPECIALIST STUDIES

- Terrestrial Ecological Impact Assessment
- Heritage Impact Assessment
- Aquatic and Riverine Impact Assessment
- Agricultural Impact Assessment
- Socio-Economic Impact Assessment
- Wetland Assessment and Delineation

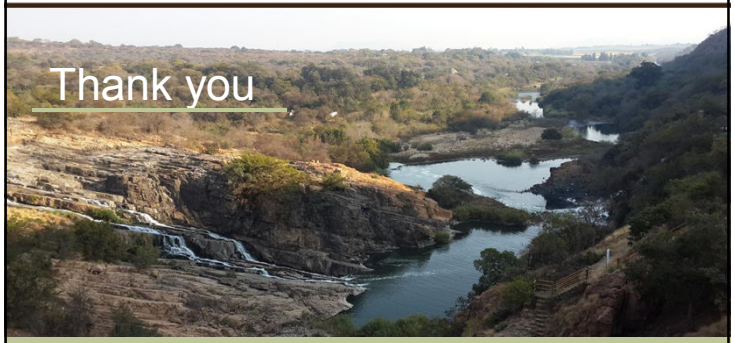
LW –

- *Previous studies – Visual Impact Assessment & Noise Study*
- *Access required*

9) RELATED MATTERS

water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

TCTA
A new word for water



Please visit the project website for further information:

https://www.dwa.gov.za/projects/mcwap/

WATER IS LIFE, SANITATION IS DIGNITY

NEMAI CONSULTING	**DRAFT MINUTES OF MEETING** **Environmental Impact Assessment: Focus Group Meeting – Hartbeespoort Irrigation Board**	**Queries:**	Donavan Henning ☎ 011 781 1730 🖷 011 781 1731 ✉ donavanh@nemai.co.za
Client:	water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA TCTA A new word for water	**Project Name:**	Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)
Date:	24 January 2018	**Time:**	09:00 – 12:00
Chairman:	F. Vogel	**Place:**	DWS Hartbeespoort Area Office (New Office Board Room)

Note: *The minutes are not intended as a verbatim transcript of the meeting, but rather a summary of the salient discussions which took place at the meeting.*

ATTENDANCE
Refer to the completed Attendance Register contained in Appendix A.

Item	Description	Action	Target Date
1.	**Opening and Welcome**		
1.1	H. Barnard opened the meeting with a prayer. F. Vogel opened the meeting and welcomed everyone. F. Vogel emphasised the following: • The meeting will be held in Afrikaans but the presentations will appear on the screen in English. Questions can be asked in the language of preference; • The meeting is held with the Hartbeespoort Irrigation Board, with a specific focus on water-related issues; • The Focus Group Meeting is part of the Environmental Impact Assessment (EIA) Process; and • Issues must be written down and will be recorded as part of the EIA Process, in the Comments and Responses Report.	-	-
2.	**Attendance and Apologies**		
2.1	F. Vogel stated that apologies were recorded for the following persons: R. Botha and O van den Berg, both from DWS. F. Vogel added that the members of the project team would be introduced when they do their presentations. Refer to the attendance register attached as Appendix A.	-	-
3.	**Aims of the Meeting**		
3.1	F. Vogel indicated that the objectives of the focus group meeting include the following: • To provide background to the proposed MCWAP-2A; • To provide an overview of the findings of previous and related studies; • To provide information regarding the proposed River Management System; • To provide an overview of the EIA Process; and	-	-

Item	Description	Action	Target Date
	• To provide an opportunity for discussions on project-related issues.		
4.	**Confirmation of Agenda**		
4.1	The draft agenda was accepted without any changes.	-	-
5	**Project Overview**		
Refer to a copy of the presentation attached in Appendix B.			
5.1	<u>Background and Motivation</u>		
5.1.1	J. Kroon presented the following: • National development context; • Need for extra water in the Lephalale area; • Project overview; and • Managing national resources.	-	-
5.2	<u>Proposed Project Layout</u>		
5.2.1	J. Kroon presented the following: • MCWAP-2A components - o Water transfer scheme infrastructure – ▪ Vlieëpoort weir and Abstraction Works; ▪ Balancing Dams; Desilting Works, High-lift Pump Station; ▪ Transfer Scheme; ▪ Break Pressure Reservoir; ▪ Operational Reservoir; and ▪ Access Roads. o Borrow pits.	-	-
5.2.2	<u>Discussion</u> D. van Vuuren asked why a large dam could not be built at Vlieëpoort. J. Kroon explained that the topography is steep on both sides at the proposed weir site, however, the conditions for a foundation are poor. A large portion of the water consists of return flows that create a constant stream and only a weir is thus required to allow for abstraction. The costs associated with building a dam due to the foundation conditions renders this option as economically unviable. F. Vogel also noted that the 4 to 6 m weir already creates a backwater effect. A dam will increase this effect, which will result in significant impacts on upstream infrastructure such as roads, railway line and access to the mine. There is thus a restriction on the volume of water that can be stored at this point.	-	-
6	**Verification of Existing Lawful Water Uses in the Crocodile River (West)**		
6.1	S. Ndwandwe presented the following: • Background to existing lawful water uses; • Verification process; and • Preliminary results.	-	-
6.2	<u>Discussion:</u> J. Kroon asked whether DWS will issue a Water Use Licence at the end of the validation process. S. Ndwandwe explained that there are forms of water use entitlements, namely a General Authorisation, a	-	-

Item	Description	Action	Target Date
	Water Use Licence and an Existing Lawful Use, which is being verified as part of this process. When an Existing Lawful Use is identified a Section 34 letter is issued to the water user and DWS' database is updated with the verification results. This letter from DWS acknowledges that there is an Existing Lawful Water Use and the recipient may then lawfully use the water. J. Kroon noted that the verification and validation process will feed into the River Management System. F. Vogel agreed and indicated that the results will be used in the water resource modelling. N. Fourie asked what will happen to the farmers that over-abstract. S. Ndwandwe indicated that when such a person is identified the matter will be referred to the appropriate unit within DWS and the water used by this party will then be monitored. He noted that he did know the intricate details of this process. He stated however that this is a problem to the downstream water users when water is over-abstracted upstream. F. Vogel noted that the situation in the Crocodile River (West), where there has been a surplus of water for many years, may change and that this may not be the case in the future. It will form part of the Irrigation Board's responsibility to ensure that water is available. H. Barnard asked if the verification process included the Makoppa water users. S. Ndwandwe indicated that the process is being undertaken for the entire Limpopo area, up to the start of the Olifants River. J. Kroon asked about the validity period of the Section 34 letter. S. Ndwandwe indicated that this letter is not comparable to a Water Use Licence, as it does not contain conditions pertaining to its renewal. DWS may in the future request that all users apply for new Water Use Licences. The letter thus remains valid for an unspecified period. N. Fourie asked why does DWS not just issue a licence. S. Ndwandwe explained that the letter forms part of the authorisation in terms of the National Water Act for an Existing Water Use. He explained that these uses relate to a transition period between the 1956 and 1998 Acts.		
7	**Key Issues related to the Proposed Project**		
7.1	<u>Availability of water in the Crocodile River (West)</u>		
7.1.1	P. van Rooyen presented the following: • Context of study; • DWS Studies - Crocodile River (West) System; • Analysis Methodology; • Development process for the Reconciliation Strategy; • Risk analysis of the Crocodile River (West) System; • Annual Water Resource Balance (Scenarios); • Reconciliation Strategy; and • Summary.	-	-
7.1.2	<u>Discussion:</u> D. van Vuuren asked about the actual capacity of Hartbeespoort Dam. He also enquired about the volume of silt in the dam. *Post meeting note: the capacity of the dam is 186,5 million cubic meters.*	-	-

Item	Description	Action	Target Date
	P. van Rooyen indicated that a silt analysis was taken into consideration. D. van Vuuren indicated that 75 million cubic meters of water will be required from Hartbeespoort Dam. He noted that the Hartbeespoort Irrigation Board has an annual allocation of 80 million cubic meters, without losses. He asked what will happen if the same situation arises in the system as what is being experienced in the Western Cape. He also asked whether preference will be given to the irrigators or the Medupi Power Station. H. Barnard asked how the water used by the farmers along the river will be monitored. He also asked how much water is being abstracted. F. Vogel and P. van Rooyen indicated that the presentation to follow will attempt to provide answers to these questions. N. Fourie asked wat will happen if there is an increase in the re-use of return flows in Tshwane and Johannesburg, especially as water becomes scarcer. P. van Rooyen explained that this is exactly why the strategy exists. DWS approved the first phase of Tshwane's re-use project, however, the Department indicated that if any further phases of re-use are contemplated by the municipality then they will need to submit this to DWS to ensure that it forms part of the reconciliation strategy and projections.		
7.2	<u>Management of Impacts regarding to Existing Lawful Water Uses (Operating Rules)</u>		

7.2.1	P. van Rooyen presented the following:
	• Operation of the system -
	  o Goals; and
	  o Principles and Processes.
	• Overview of Analysis Methodology -
	  o Simulation Model; and
	  o Insurance of the Supply Criteria.
	• Monitoring example.
		-	-

7.2.2	<u>Discussion:</u> D. van Vuuren asked about the period in May during the wet season, as indicated in the presentation. It was explained that the Irrigation Board's new allocations only commence in September / October. If the dam is full at the end of May and water is only abstracted by the farmers in October then the board will need to adjust the rules as large volumes of water will be lost due to quotas only being allocated to farmers during the driest periods. P. van Rooyen noted that DWS does not want to make a decision already in March or April regarding water restrictions as water may still flow into the dam thereafter. Although there is some flexibility the date of 1 May is anchored, based on the resource availability. J. Kroon indicated that Mokolo Dam also has a rule related to 1 May of every year. P. van Rooyen noted that they had analysed this rule prior to setting up the model and had confirmed that the rule is acceptable and does not need to change. As another example, when Tzaneen Dam in the Letaba area was analysed it was found that there is a rule that when the dam is 95% full then half of the demand gets restricted. Variations in the restriction rules and the implications to specific users	-	-

Item	Description	Action	Target Date
	are analysed. It is important that the restrictions are not too severe to prevent the proper utilisation of water in the dam, or that the rules are not severe enough. Hence, it needs to be evaluated.		
7.3	River Management System		
7.3.1	J. Kroon presented the following: • Purpose; • Application; • Servitude of aqueduct; and • Infrastructure.	-	-
7.3.2	Discussion: N. Fourie stated that the Bierspruit and Sand River run dry within one week and have insufficient water. F. Vogel indicated that the point is that the Makoppa irrigators must use the water that is available in the Bierspruit and Sand River. The Vlieëpoort Abstraction Weir will also receive water from these watercourses and water must thus be measured to ensure that the Makoppa irrigators that abstract water further downstream receive sufficient water and that their water is not pumped to the power station. J. Kroon indicated that the Irrigation Board need to take note that the draft Master Plan is available on the DWS website. It is important for the agricultural sector to comment on this document.	-	-
8	**Environmental Impact Assessment**		

8.1	D. Henning presented the following:
	• Legal framework;
	• EIA Process –
	  ○ Water Transfer Scheme Infrastructure;
	  ○ Borrow pits; and
	  ○ River Management System.
	• EIA programme;
	• Public Participation Process; and
	• Specialist studies.
		-	-

8.2	Discussion: F. Vogel asked whether the questions raised during these meetings will automatically be recorded in the EIA. D. Henning explained that the minutes of the focus group meetings form part of the EIA process and will also be incorporated into the Comments and Responses Report. The Comments and Responses Report will be updated as the EIA process progresses and will include comments from the Announcement, Scoping and EIA phases. The responses provided during meetings can be elaborated on in the Comments and Responses Report, as more information becomes available. N. Fourie asked in the comments provided in 2016 will be included in the Comments and Responses Report. D. Henning confirmed that will be the case. Comments received in writing or during meetings will be included in the Comments and Responses Report. J. Kroon added that the Comments and Responses Report will be appended to the draft Scoping Report that will be lodged in the public domain in March 2018. This will allow the parties that commented to determine whether the responses provided are adequate. D. Henning stated that he is obligated to include these comments in the		

Item	Description	Action	Target Date
	EIA and that the competent environmental authority will then scrutinise the Comments and Responses Report during decision-making to ensure that they are satisfied with the responses provide to the issues raised.		
9.	**Closure**		
9.1	F. Vogel thanked everyone for their positive participation and valuable input. The meeting was concluded at approximately 11:30.	-	-

Appendices
Appendix A – Attendance Register
Appendix B – Presentations

APPENDIX A

ATTENDANCE REGISTER

NEMAI CONSULTING	**ATTENDANCE REGISTER –** Environmental Impact Assessment: Focus Group Meeting – Hartebeespoort Irrigation Board	**Queries:**	Donavan Henning ☎ 011 781 1730 011 781 1731 donavanh@nemai.co.za
Clients:	water & sanitation Department Water and Sanitation REPUBLIC OF SOUTH AFRICA TCTA A new word for water	**Project Name:**	Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)
		Project No.:	10580
Date:	24 January 2018	**Time:**	09h00 – 12h00
Chairperson:	F. Vogel	**Place:**	DWS Hartbeespoort Area Office (New Office Board Room)

Representative Name and Surname	Name of Organisation	Designation	Contact Details	Sign	Apologies
Fanie Vogel		Meeting Chairman	☎ 082 325 3519 Fanie.vogel@gmail.com		
Ockie van den Berg	DWS	Acting Director: Options Analysis	☎ 012 336-8613 082 809 2011 VanDenBergO@dws.gov.za		✓
Ronald Gillmer	DWS		☎ 012 336 6933 082 791 0833 GillmerR@dws.gov.za		
Hannes Pretorius	DWS	Area Manager: Hartbeespoort	☎ 012 253 1093 082 806 3681 PretoriH@dws.gov.za		
Rens Botha	DWS Limpopo-North West Proto CMA	Chief Engineer: Water Resources Management	☎ 012 392 1308 082 808 9560 BothaR@dws.gov.za		
Azwianewi Nelwamondo	TCTA	Environmental Manager	☎ 012 683 1200 082 809 5101 ANelwamondo@tcta.co.za		
Kgopotso Mabitsela	TCTA	Project Manager	☎ 012 683 1200 kmabitsela@tcta co za		
Andries Thebe	TCTA	Land Acquisition Manager	☎ 012 683 1200 athebe@tcta.co.za		
Jaap Kroon	TCTA/Aurecon		☎ 083 627 5911 jaap@kroon.co.za		

Representative Name and Surname	Name of Organisation	Designation	Contact Details	Sign	Apologies
Pieter van Rooyen	WRP Consulting Engineers	Water Resources Specialist	☎ 012 346-3496 • 082 321 3446 ✉ Pieterv@wrp.co.za		
Christian Van Der Hoven	Nemai Consulting	EIA Public Participation	☎ 011 781 1730 • ✉ ChristianVdH@nemai.co.za		
Donavan Henning	Nemai Consulting	EIA Project Leader	☎ 011 781 1730 • 082 891 0604 ✉ donavanh@nemai.co.za		
THEMBANI MASHIANE	TCTA.	PROJECTS COORDINATOR	☎ 0126831223 • 0786962564 ✉ thembania@tcta.co.za		
SEGO KELEFETSWE	TCTA	PROJECT ENGINEER	☎ 012 653 1200 • 082 884 9554 ✉ skelefetswe@tcta.co.za		
Sihongiseni Ndwandwe	DWS	Environmental Officer: Verification of Existing Lawful water use	☎ 012 253 1026 • 079 684 2286 ✉ NdwandweS@dws.gov.za		
Petrus Venter	DWS	DRD: IWRM & Catchmt Strategies	☎ 012 2531046 • 082 807 6098 ✉ venterp@dws.gov.za		
Nick Fourie	HBP Irrig. Board	Chief Manager	☎ 082 332 3223 • ✉ nick@hbpib.co.za		
Dewald v. Vuuren	" " "	Chairman of Board	☎ 0828379979 • ✉ stella@vodamail.co.za		
Hennie Barnard	" " "	Member of Board	☎ 0832356250 • ✉ mbarnard75@gmail.com		
			☎ • ✉		

APPENDIX B

PRESENTATIONS

NEMAI CONSULTING	**DRAFT MINUTES OF MEETING** **Environmental Impact Assessment: Focus Group Meeting – Crocodile River (West) Irrigation Board**	**Queries:**	Donavan Henning ☎ 011 781 1730 🖷 011 781 1731 ✉ donavanh@nemai.co.za
Client:	water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA TCTA A new word for water	**Project Name:**	Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)
Date:	24 January 2018	**Time:**	14:00 – 17:00
Chairman:	F. Vogel	**Place:**	Koedoeskop Farmers Union Hall

Note: *The minutes are not intended as a verbatim transcript of the meeting, but rather a summary of the salient discussions which took place at the meeting.*

ATTENDANCE
Refer to the completed Attendance Register contained in Appendix A.

Item	Description	Action	Target Date
1.	**Opening and Welcome**		
1.1	L. Scheepers opened the meeting with a prayer. F. Vogel opened the meeting and welcomed everyone. F. Vogel emphasised the following: • The meeting will be held in Afrikaans but the presentations will appear on the screen in English. Questions can be asked in the language of preference; • The meeting is held with the Crocodile River (West) Irrigation Board, with a specific focus on water-related issues; • The Focus Group Meeting is part of the Environmental Impact Assessment (EIA) Process; and • Issues must be written down and will be recorded as part of the EIA Process, in the Comments and Responses Report.	-	-
2.	**Attendance and Apologies**		
2.1	F. Vogel stated that apologies were recorded for the following persons: R. Botha and O van den Berg, both from DWS. F. Vogel added that the members of the project team would be introduced when they do their presentations. Refer to the attendance register attached as Appendix A.	-	-
3.	**Aims of the Meeting**		
3.1	F. Vogel indicated that the objectives of the focus group meeting include the following: • To provide background to the proposed MCWAP-2A; • To provide an overview of the findings of previous and related studies; • To provide information regarding the proposed River Management System; • To provide an overview of the EIA Process; and • To provide an opportunity for discussions on project-related issues.	-	-

Item	Description	Action	Target Date
4.	**Confirmation of Agenda**		
4.1	The draft agenda was accepted without any changes.	-	-
5	**Project Overview**		
Refer to a copy of the presentation attached in Appendix B.			
5.1	Background and Motivation		
5.1.1	J. Kroon presented the following: • National development context; • Need for extra water in the Lephalale area; • Project overview; and • Managing national resources.	-	-
5.2	Proposed Project Layout		
5.2.1	J. Kroon presented the following: • MCWAP-2A components - o Water transfer scheme infrastructure – ▪ Vlieëpoort weir and Abstraction Works; ▪ Balancing Dams; Desilting Works, High-lift Pump Station; ▪ Transfer Scheme; ▪ Break Pressure Reservoir; ▪ Operational Reservoir; and ▪ Access Roads. o Borrow pits.	-	-
5.2.2	Discussion J. Steenkamp asked why is a new dam not being planned to store the water. F. Vogel explained that various options were initially considered when the transfer scheme was envisaged. This included, amongst others, building new dams and increasing existing dams, but some of these were not economically viable. Refer to presentation by P van Rooyen in terms of the additional delivery of water in the system.	-	-
6	**Verification of Existing Lawful Water Uses in the Crocodile River (West)**		
6.1	R. Botha presented the following: • Background to existing lawful water uses; • Verification process; and • Preliminary results.	-	-
6.2	Discussion: K. Schutte asked how the Validation and Verification of water use in the Crocodile (West)-Marico catchment is being undertaken. F. Vogel explained that the original arrangement (approximately 1998) was that the individual irrigators that formed part of the Crocodile River (West) Irrigation Board did not have to provide proof of water use. However, the schedule of the Board and the list of taxable surface area, with up to date payments, needed to be provided to DWS, which would serve as verification of the area's water users. J. Swanepoel indicated that the table in the presentation pertaining to existing water use in quaternary catchment A21J, where 452 000 cubic	-	-

Item	Description	Action	Target Date
	meters of water is indicated, does not tally with what is the reality on the ground. S. Ndwandwe explained that this value reflects what the Department currently assumes to be the existing water use, as determined during the Validation and Verification process. Requested clarity on the value of 1 040 389 cubic meters shown in the table. S. Ndwandwe explained that this value indicates the potential existing water use in this particular quaternary catchment. F Vogel noted that the process is still underway and that the values reflected in the presentation may change.		
7	**Key Issues related to the Proposed Project**		
7.1	<u>Availability of water in the Crocodile River (West)</u>		
7.1.1	P. van Rooyen presented the following: • Context of study; • DWS Studies - Crocodile River (West) System; • Analysis Methodology; • Development process for the Reconciliation Strategy; • Risk analysis of the Crocodile River (West) System; • Annual Water Resource Balance (Scenarios); • Reconciliation Strategy; and • Summary.	-	-
7.1.2	<u>Discussion:</u> F. Stander asked whether the department is happy with the water quality of the water pumped back into the river. L. Scheepers asked about the statement in the summary of the presentation that indicates that there will be sufficient water for irrigators. Is this only applicable to the Crocodile River (West) scheme, or does it also apply to the irrigators downstream of the Vlieëpoort Abstraction Weir? P. van Rooyen presented the Water User Priority Classification. He indicated that this will not be the case and noted that the water users downstream of the proposed Vlieëpoort Abstraction Weir only have access to the incremental flow downstream of the weir. This is currently the case and will remain the same in the future. K. Schutte asked if the return flows from Lephalale can also be used? This will certainly also increase. P. van Rooyen and J. Kroon explained that when the system of MCWAP-1 and MCWAP-2A were integrated, it was estimated that domestic water was less than 15% of the total demand, with industrial demand at 85%. The reuse of water in Lephalale can certainly be considered but when the total picture is analysed, it is very little. F. Vogel also added that there are already mines which utilize the return water from the municipality, which thus reduces the need to use water from the Crocodile River.	-	-
7.2	<u>Management of Impacts regarding to Existing Lawful Water Uses (Operating Rules)</u>		

7.2.1	P. van Rooyen presented the following:
	• Operation of the system -
	  ○ Goals; and
	  ○ Principles and Processes.
	• Overview of Analysis Methodology -
	  ○ Simulation Model; and
	  ○ Insurance of the Supply Criteria.
	• Monitoring example.
		-	-

Item	Description	Action	Target Date
7.2.2	Discussion: P. van Rooyen explained why no dams were built in the area. He explained that if Klipvoor Dam would increase for example, it would be a significant expense for very little additional delivery. Another dam will not provide adequate delivery because the river system is already well utilized by the existing dams in the system, and the available volume of water is already stored in those dams. J. Swanepoel raised three questions: 1. A dam is only considered in the case of a new irrigation scheme. The volume of water that flows past in a year is about two and a half times of the volume of Roodekopjes Dam, which justifies another dam. There is 200 million cubic meters of water that flows past, which is currently in the calculations as runoff; 2. There is really only one dam (Roodekopjes Dam) in the whole system with sluices. If a sluice mechanism can be built at Klipvoor Dam, it will assist significantly; and 3. How many units are to be commissioned at the Medupi Power Station? P. van Rooyen explained that the water stored within a dam needs to be converted into a steady supply, which must also take into account evaporation. A single dam of 200 000 000 cubic meters will not ensure the same steady delivery as there is no river system that works like this. The water that currently flows past is due to Hartbeespoort Dam being "too full". F. Vogel added that, over the years, numerous analyses have been done and costs calculated to build another dam in the system and it was found to be economically unviable. J. Kroon answered the last question and explained that the need for 75 million cubic meters per year provides for all 6 new units at the Medupi Power Station. The transfer capacity is unlikely to be necessary immediately, but it is the long-term plan by 2040. F. Vogel added that 75 million cubic meters a year does not represent the full need, as the capacity allows for other developments apart from the Medupi Power Station. B. Breedt asked whether the Hartbeespoort Dam would be used as a normal storage dam and not as a recreational dam for tourism, which is currently the case and that it will not be kept 100% full all the time but can also be utilised throughout the year. F. Vogel stated that the system uses the dam as a normal storage dam. H. Pretorius added that the dam is not 100% full for tourism, but it is always full because large volumes of return flow upstream of the dam. J. Steenkamp mentioned that the graphs in the presentation show that their dam (Roodekopjes Dam) becomes full and then empty, but the level of Hartbeespoort Dam shows that only a little water is withdrawn. In the past when their dam level drops water could not be supplied from Hartbeespoort Dam. He also asked what will happen if they experience the same situation that is happening in the Cape, and if the system does not work as planned, what is going to be "Plan B". He further asked if the irrigators are in the low priority list. F. Vogel explained that all irrigators in South Africa fall under the same low priority level. P. van Rooyen indicated that according to the Roodekopjes Dam White Paper the 70/30 rule (100% volume available for 70% of the time and 70% of the volume is available for 30% of the	-	-

Item	Description	Action	Target Date
	time) applies. J. Kroon added that White Papers were drafted when Roodekopjes Dam was built which state that Hartbeespoort Dam does not supplement Roodekopjes Dam. In the MCWAP-2A system the water flows through the Roodekopjes Dam and the River Management System is going to release water to ensure that the rights of lawful water users are protected. The confirmation of legal water users will assist the system in this regard. It was mentioned that when Medupi requires water, water will be released from Hartbeespoort Dam and will be conveyed via Roodekopjes Dam and the proposed MCWAP-2A. P. van Rooyen explained that there is currently a problem as not all of the water in the system is being utilised. Water must be released from Hartbeespoort Dam to allow the system to utilise the stored water, based on the additional demand. The assurance of supply is 90% for irrigators. J. Steenkamp stated that a plan must be in place to release water to Roodekopjes Dam before this dam is empty. P. Van Rooyen explained the River Management System aims to avoid this situation and to ensure that everyone can use their lawfully allocated water. B. Breedt asked what percentage of the Mokolo Dam's water is required for the project. J. Kroon explained that water from the Crocodile River (West) would not be transferred to the Mokolo Dam. The existing rule for the Mokolo irrigators that utilise this dam is that they may receive their full quota if the dam is at least 60% full at the beginning of the irrigation season, but if the dam it is not at 60% no water can be abstracted. The plan is to provide Medupi Power Station with water from the Crocodile River (West) in the future. Mokolo Dam will be utilised by its supply area, especially by Lephalale Municipality, as the water quality of the Mokolo River is better and easier to purify for domestic use.		
7.3	<u>River Management System</u>		
7.3.1	J. Kroon presented the following: • Purpose; • Application; • Servitude of aqueduct; and • Infrastructure.		
7.3.2	<u>Discussion:</u> F. Vogel mentioned that the irrigation boards should play an integral role in the River Management System. F. Furstenberg asked whether the flow in the river will be higher and more constant, based on volume of 75 million cubic meters per year that is required. F. Vogel explained that the current changes that the irrigators experience will still be there, with the additional water needed for abstraction, which will grow with time. J. Kroon explained that the water needed is a fraction of the water currently in the system, and in his opinion the water should always flow as Eskom's water needs should be constant in any year. A servitude of aqueduct will be required to protect the state as well as the landowner's rights. Efforts will be made to stop releases when floods occur in certain river reaches. J. Steenkamp asked what is Plan B or Plan C if the project fails. P. van Rooyen explained that the team endeavours to determine risks that are		

Item	Description	Action	Target Date
	as realistic as possible. The model was also built with knowledge from other areas. F. Vogel emphasised the need for regular monitoring of the system as well as for the involvement of the Irrigation Board, which was echoed by P. van Rooyen. P. van Rooyen further stated that the system must be managed efficiently to ensure that it is optimally utilised. J. Swanepoel stated that the Irrigation Board will convene a meeting with its members and thereafter their formal comments will be forwarded to D. Henning for inclusion into the EIA process. It was mentioned that the impacts to permanent crops and irrigation systems were not discussed, which need to be considered further. J. Kroon indicated that the Irrigation Board need to take note that the draft Master Plan is available on the DWS website. It is important for the agricultural sector to comment on this document.		
8	**Environmental Impact Assessment**		

8.1	D. Henning presented the following:
	• Legal framework;
	• EIA Process –
	  ○ Water Transfer Scheme Infrastructure;
	  ○ Borrow pits; and
	  ○ River Management System.
	• EIA programme;
	• Public Participation Process; and
	• Specialist studies.
		-	-

9.	**Closure**		
9.1	F. Vogel thanked everyone for their participation and valuable input. The meeting was concluded at approximately 17:00.	-	-

Appendices
Appendix A – Attendance Register
Appendix B – Presentations

APPENDIX A

ATTENDANCE REGISTER

NEMAI CONSULTING	**ATTENDANCE REGISTER –** **Environmental Impact Assessment:** **Focus Group Meeting – Crocodile River West Irrigation Board**	**Queries:**	Donavan Henning ☎ 011 781 1730 📠 011 781 1731 ✉ donavanh@nemai.co.za
Clients:	water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA TCTA A new word for water	**Project Name:**	Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)
		Project No.:	10580
Date:	24 January 2018	**Time:**	14h00 – 17h00
Chairperson:	F. Vogel	**Place:**	Koedoeskop Agricultural Union Hall

Representative Name and Surname	Name of Organisation	Designation	Contact Details	Sign	Apologies
Fanie Vogel		Meeting Chairman	☎ 082 325 3519 Fanie.vogel@gmail.com		
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Hannes Pretorius	DWS	Area Manager: Hartbeespoort	☎ 012 253 1093 082 806 3681 PretoriH@dws.gov.za		
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Kgopotso Mabitsela	TCTA	Project Manager	☎ 012 683 1200 kmabitsela@tcta.co.za		
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Jaap Kroon	TCTA/Aurecon		☎ 083 627 5911 jaap@kroon.co.za		

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F.J. Furstenburg			0836560632		
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Representative Name and Surname	Name of Organisation	Designation	Contact Details	Sign	Apologies
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RONALD GILLMER	DWS		0837910833	[signature]	
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SOON STEENEKAMP	KWBR	RAADSWERKER	0827680354	[signature]	

ATTENDANCE B

PRESENTATIONS

NEMAI CONSULTING	**DRAFT MINUTES OF MEETING** **Environmental Impact Assessment: Focus Group Meeting – Makoppa Agriculture (Irrigators)**	**Queries:**	Donavan Henning ☎ 011 781 1730 🖷 011 781 1731 ✉ donavanh@nemai.co.za
Client:	water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA TCTA A new word for water	**Project Name:**	Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)
Date:	25 January 2018	**Time:**	09:00 – 12:00
Chairman:	F. Vogel	**Place:**	Kumba Bioscope Hall, Thabazimbi

Note: *The minutes are not intended as a verbatim transcript of the meeting, but rather a summary of the salient discussions which took place at the meeting.*

ATTENDANCE
Refer to the completed Attendance Register contained in Appendix A.

Item	Description	Action	Target Date
1.	**Opening and Welcome**		
1.1	W. Potgieter opened the meeting with a prayer. F. Vogel opened and welcomed everyone to the meeting. F. Vogel emphasised the following: • The meeting will be held in Afrikaans but the presentations will appear on the screen in English. Questions can be asked in the language of preference; • The meeting is held with the Makoppa Irrigators, with a specific focus on water-related issues; • The Focus Group Meeting is part of the Environmental Impact Assessment (EIA) Process; and • Issues must be written down and will be recorded as part of the EIA Process, in the Comments and Responses Report	-	-
2.	**Attendance and Apologies**		
2.1	F. Vogel stated that apologies were recorded for the following persons: O van den Berg from DWS. F. Vogel added that the members of the project team would be introduced when they do their presentations. Refer to the attendance register attached as Appendix A.	-	-
3.	**Aims of the Meeting**		
3.1	F. Vogel indicated that the objectives of the focus group meeting include the following: • To provide background to the proposed MCWAP-2A; • To provide an overview of the findings of previous and related studies; • To provide information regarding the proposed River Management System; • To provide an overview of the EIA Process; and • To provide an opportunity for discussions on project-related issues.	-	-

Item	Description	Action	Target Date
4.	**Confirmation of the Agenda**		
4.1	F. Vogel stated that the draft agenda provides for the addition of further items that can be discussed. An attendee of the meeting asked when the Vlieëpoort weir would be built and that it should be included in the agenda. The agenda was amended accordingly. G. Bauer requested that the minutes of public meetings held in 2016 be sent together with the minutes of the focus group to all the attendees. D. Henning said that previous minutes of the public meetings and the minutes of this focus group meeting will be distributed.	-	-
5	**Project Overview**		
Refer to a copy of the presentation attached in Appendix B.			
5.1	<u>Background and Motivation</u>		
5.1.1	J. Kroon presented the following: • National development context; • Need for extra water in the Lephalale area; • Project overview; and • Managing national resources.	-	-
5.2	<u>Proposed Project Layout</u>		

5.2.1	J. Kroon presented the following:
	• MCWAP-2A components -
	  ○ Water transfer scheme infrastructure –
	  ▪ Vlieëpoort weir and Abstraction Works;
	  ▪ Balancing Dams; Desilting Works, High-lift Pump Station;
	  ▪ Transfer Scheme;
	  ▪ Break Pressure Reservoir;
	  ▪ Operational Reservoir; and
	  ▪ Access Roads.
	  ○ Borrow pits.
		-	-

5.2.2	<u>Discussion</u> J. Botes enquired about the process to remove silt from the water that is to be conveyed. J. Kroon explained that the sediment has different grain sizes, including sand and even rocks during floods, and that this cannot be pumped to the power station. In addition, the sand fraction can cause problems for the pumps. A channel is planned to return the sediment back to the river during high flow conditions. P. Welgemoed enquired about the pipeline servitude that falls on farm boundaries. J. Kroon explained that during the construction of the pipeline, the servitude (temporary and permanent) will be fenced off on both sides. After the construction period, the fences are removed and the permanent servitude protects the state's rights, but the landowner remains the legal landowner and can still conditionally use the land. Restrictions will be placed on the use of the land within the permanent servitude and access will be necessary for inspection and maintenance of the pipeline. As part of the EIA Process, a 100m wide corridor was assessed to facilitate optimisation of the pipeline route. The servitude widths are 40 m during construction (temporary) and 25 m permanent.	-	-

Item	Description	Action	Target Date
	D. Henning will show the servitude on a locality map. J. Botes explained that irrigation in the area is based on the abstraction of water from an underground sand aquifer in the river bed. The proposed project may increase the depth of the sand on top of the aquifer and may inhibit the accumulation of water. This is a major problem as it will limit water abstraction by farmers. J. Kroon explained that the desilting works have compartments where the silt fraction can be stored. D. Henning added that an analysis was undertaken to establish a quality profile of the silt to be abstracted from the Crocodile River. The results were found to be within allowable limits of various standards. This study found that the silt is not contaminated and will not decrease the quality of the water in the river. The study further indicated that the only a small percentage of the sediment will be returned to the river when compared to the existing sediment load in the river. J. Botes asked whether the sediment cannot be completely removed and suitably disposed of. He also added that sediment, no matter how it is released, will definitely cause a problem and impact on the river and sand aquifer.		
6	**Verification of Existing Lawful Water Uses in the Crocodile River (West)**		
6.1	R. Botha presented the following: • Background to existing lawful water uses; • Verification process; and • Preliminary results.	-	-
6.2	<u>Discussion:</u> J. Botes enquired about the validity period of the certificate (Section 34 letter) issued by DWS to the farmers. R. Botha explained that the certificate is a confirmation of the existing lawful use and is an important document that will remain valid until the Department requests water users to apply for new licenses. A. Pieterse asked what the purpose of the meeting was, and whether it was to inform the attendees about the proposed project or whether the project had already commenced. F. Vogel explained that the focus group meeting is part of the Scoping phase of the EIA process. The meeting serves to provide information and to obtain comments and concerns from the affected parties which will be included in the EIA. A. Pieterse asked whether the final decision to build the weir at Mooivallei had been made. F. Vogel explained that the final decision on whether the project could be implemented depends on whether Environmental Authorisation is obtained for the project. J. Kroon added that there is a proposed project layout, with options regarding the pipeline routes. The Department of Environmental Affairs (DEA) will need to review the EIA and make a decision. D. Henning explained that a separate focus group meeting will be convened with the owners of Mooivallei to discuss all their specific concerns about the project. He added that different options for the location of the weir were investigated but were discarded due to the geological conditions. A. Pieterse argued that Schoeman and Associated convened with the farmers in 2013/2014 to confirm their water uses, and at that time there	-	-

Item	Description	Action	Target Date
	was no indication that a weir was proposed at Mooivallei. At that stage, the farmers obtained a certificate of legal water use from DWS. The problem is that the water allocated by the Department will be taken away by the proposed abstraction at the weir. There is an infringement on their rights as the irrigation water available in the river is their source of life. How will the directly affected parties be compensated? It must be ensured that all the comments are included and that their concerns are taken into consideration in the EIA Process. F. Vogel explained that the verification process of existing water uses is a national project that was already launched nationwide in 2001, and that is not part of the proposed MCWAP project.		
7	**Key Issues related to the Proposed Project**		
7.1	<u>Availability of water in the Crocodile River (West)</u>		
7.1.1	P. van Rooyen presented the following: • Context of study; • DWS Studies - Crocodile River (West) System; • Analysis Methodology; • Development process for the Reconciliation Strategy; • Risk analysis of the Crocodile River (West) System; • Annual Water Resource Balance (Scenarios); • Reconciliation Strategy; and • Summary.	-	-
7.1.2	<u>Discussion:</u> It was mentioned that MCWAP Phase 4 (transfer scheme from Johannesburg Klip River Wastewater Treatment Works to head waters of Crocodile River) should become Phase 1 as there is already no water available. J. Botes explained that they are the first users downstream of the proposed weir, and they already face the problem that in dry months there is not enough water to produce two crops a year. There is enough water if you see the total sum that was calculated, however, it will be better if a dam is built upstream to store the constant flow of water. The problem is that water will be abstracted in difficult times when there is low flow, and only some farmers can then use water. This means that the volume of water available for the Makoppa irrigation area will be less with the constant abstraction for the proposed project in dry periods (7 months of the year). What will happen in the 7 month period when there is no rainfall, as farmers who abstract will not be prioritised due to the abstraction of water for the project? The modelling and analysis do not tally with what is experienced on the ground. F. Vogel explained that several previous studies have been conducted to determine whether a dam should be built for the Makoppa area. It was found that it would not be economically viable to build a dam for an area entirely dependent on the natural incremental flow from the river. The return flows from growing urban areas that feed into the Hartbeespoort Dam provide surplus water that is available for the proposed water transfer. The question that needs to be answered is if water will be abstracted at the weir, how do you ensure that the water that is available from the natural incremental runoff will reach the Makoppa area?	-	-

Item	Description	Action	Target Date
	J. Botes stated that the users believe that the water use right that existed and that was recently verified, means that a certain volume of water may be abstracted throughout the year and that is what is paid for. The proposed project will abstract a constant volume of water that the Makoppa irrigators believe will adversely affect the water that the farmers rely on and that can be lawfully used for irrigation. If it is ensured that water will flow constantly past the weir and that water will be available, as it has been for the past 20 years, then there will be no problem. The model and scenarios considered should make provision for this. W. Potgieter proposed that all the questions and issues from the Makoppa Farmers be discussed and formally captured at their next internal Makoppa Agricultural Meeting in February 2018. This will then be sent to D. Henning for feedback from the project team. F. Vogel mentioned that this is a positive proposal. The proposal was accepted by the attendees.		
7.2	<u>Management of Impacts in Relation to Existing Lawful Water Uses (Operating Rules)</u>		

7.2.1	P. van Rooyen presented the following:
	• Operation of the system -
	  ○ Goals; and
	  ○ Principles and Processes.
	• Overview of Analysis Methodology -
	  ○ Simulation Model; and
	  ○ Insurance of the Supply Criteria.
	• Monitoring example.
		-	-

7.3	<u>River Management System</u>		
7.3.1	Leading to the introduction of the presentation, F Vogel indicated that the Makoppa irrigators do not have a quota from upstream dams as is the case with the Hartbeespoort and Crocodile River (West) Irrigation Boards that can rely on releases from the dams. The Makoppa area is mainly dependent on the natural incremental flow from the Bierspruit and Sand River and the natural overflow of upstream dams. The River Management System aims to ensure, amongst others, that the flow from the two rivers remains available for the Makoppa area. J. Kroon presented the following: • Purpose; • Application; • Servitude of aqueduct; and • Infrastructure.	-	-
7.3.2	<u>Discussion:</u> J. Botes asked if information pertaining to historical flow data is available. R. Botha indicated that it can be downloaded from DWS website. An attendee (unknown) proposed that the volume of water of the Makoppa Farmers be calculated and expropriated by DWS, with financial compensation. R. Botha and F. Vogel emphasised the need for the Makoppa farmers to be involved with the River Management System. J. Kroon indicated that the project first needs to seek Environmental	-	-

Item	Description	Action	Target Date
	Authorisation before any construction can proceed. It is anticipated that a decision will be made by DEA in December 2018, and if authorisation is received the contractor will only be on the site by approximately the end of 2019. A. Pieterse mentioned that the general sentiment is that the project has already been approved and cannot be changed. Is the purpose of the focus group meeting to say what will happen or that changes can still take place? J. Kroon explained that it is a proposed project with alternatives to be assessed as part of the EIA Process, including specialist studies. D. Henning added that various options to supply the required water were considered during the Technical Pre-Feasibility and Feasibility Studies. The proposed water transfer scheme was identified to be the most preferable due to a variety of factors, and it is now being assessed as part of the EIA. Only layout alternatives are under consideration. A. Pieterse asked whether this implied that he needed to speak to the person who initially undertook these investigations to enquire how the weir site at Mooivallei was identified. D. Henning explained that all comments, questions and issues raised during public participation will be incorporated into the Comments and Responses Report and that feedback would be sought from the relevant members of the project team to provide responses. This includes the members of the technical team. J. Botes indicated that Makoppa moves into a negative use in 2024. A water shortage is already anticipated in the years 2022 to 2026. The project will take longer than seven years to complete. In those seven years everyone in Makoppa will become bankrupt. This will then cause a major socio-economic impact in the area. Why are all water supply projects and management requirements not addressed concurrently? F. Vogel explained that the analysis and scenarios for the project were based on the Department's abstraction of the return flows and not the natural flow to Makoppa. The project may also be delayed due to a lack of funding. J. Botes asked what is the volume of water to be abstracted. D. Henning indicated that it is 75 million cubic meters per year. J. Kroon added that this volume represents the estimated abstraction by 2040, which will grow over time. The reason for this is that industrial developments and population growth will increase water demand in the future. J. Kroon indicated that the Makoppa farmers need to take note that the draft Master Plan is available on the DWS website. It is important for the agricultural sector to comment on this document.		
8	**Environmental Impact Assessment**		

8.1	D. Henning presented the following:
	• Legal framework;
	• EIA Process –
	  ○ Water Transfer Scheme Infrastructure;
	  ○ Borrow pits; and
	  ○ River Management System.
		-	-

Item	Description	Action	Target Date
	• EIA programme; • Public Participation Process; and • Specialist studies.		
8.2	Discussion: G. Bauer asked whether the project team will conduct further consultation with the farmers, or will they proceed directly with the expropriation process. D. Henning explained that expropriation is a separate legal process that can only take place if Environmental Authorisation is obtained. The expropriation process will be undertaken by TCTA in accordance with the prevailing legal requirements.	-	-
8.3	D Henning indicated that Interested and Affected Parties can appoint an independent adviser to evaluate the technical information and to provide them with professional advice.	-	-
9.	**Closure**		
9.1	F. Vogel thanked everyone for their participation and valuable input. The meeting was concluded at approximately 12:15.	-	-

Appendices
Appendix A – Attendance Register
Appendix B – Presentations

APPENDIX A

ATTENDANCE REGISTER

NEMAI CONSULTING	**ATTENDANCE REGISTER –** Environmental Impact Assessment: Focus Group Meeting – Makoppa Irrigation Area	**Queries:**	Donavan Henning ☎ 011 781 1730 📠 011 781 1731 ✉ donavanh@nemai.co.za
Clients:	water & sanitation Department: Water and Sanitation REPUBLIC OF SOUTH AFRICA TCTA A new word for water	**Project Name:**	Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)
		Project No.:	10580
Date:	25 January 2018	**Time:**	09h00 – 12h00
Chairperson:	F. Vogel	**Place:**	Kumba Bioscope Hall, Thabazimbi

Representative Name and Surname	Name of Organisation	Designation	Contact Details	Sign	Apologies
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R Hresterman	St Helena	Patrysfontein Boschpoort Leeuwdrift	0827899982	[signature]	
H. Breytenbach	Tussenkomst	Tussenkomst	0836565437	[signature]	
L.M. Swanepoel	Tussenkomst	Makoppa	0835187057	[signature]	
J. Myburgh	Krokodilnest	Rooibokkraal	0731144838	[signature]	
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E.J. Lynn		Kaalbraai	083 ~~25~~ 766140		
H.S. v.d. Lande	Voorspoed	Direk.	0823319619.		
H. Endeman	MAKOPPA	Bethanie	076 156 4436		
Gerhard Bierenck	Bevarde Boerdery	Makoppa	083 502 1677		
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DANIEL GILDENHUYS	OBARO		0829298707		
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Mokolo en Krokodilrivier (Wes) Wateraanvullings Projek Fase 2A (MKWAP-2A) / Mokolo and Crocodile River (West) Water Augmentation Project (Phase 2A) (MCWAP-2A)

Omgewingsimpakbepaling: Fokusgroepvergadering – Makoppa Besproeiingsgebied	Environmental Impact Assessment: Focus Group Meeting – Makoppa Irrigation Area
Datum: 25 Januarie 2018 Tyd: 09h00 – 12h00 Plek: Kumba Bioskoopsaal, Thabazimbi	Date: 25 January 2018 Time: 09h00 – 12h00 Place: Kumba Bioscope Hall, Thabazimbi

NOTAS / NOTES:

REPRESENTATIVE Name	Organization	Designation	Contact details	Sign
T Sibongiseni Ndwandwe	DWS	Environmental officer	079 684 2286	
2 JAN VENTEL			078 04 64 736	

ATTENDANCE B

PRESENTATIONS