

Water Security for the Mining Industry

**2013 Mining Expo and Conference
Safari Hotel Conference Centre
Windhoek, Namibia
23 – 24 May 2013**

**Kuiri F Tjipangandjara
General Manager: Engineering and Scientific Services
Namibia Water Corporation, Windhoek, Namibia**



What is the State of Water Security in the Namibian Mining Industry?

What Is being done to Improve Water Security in the Mining Industry?



Presentation

Outline:

1. Water Security: Definition
2. Assess the State of Water Security at the Mines Supplied by NamWater
3. Discuss Causes for the Observed Trends
4. Elaborate on Measures Initiated / Proposed to Improve on Water Security: Short- and Long-term Solutions
5. Conclusion
6. Questions and Comments



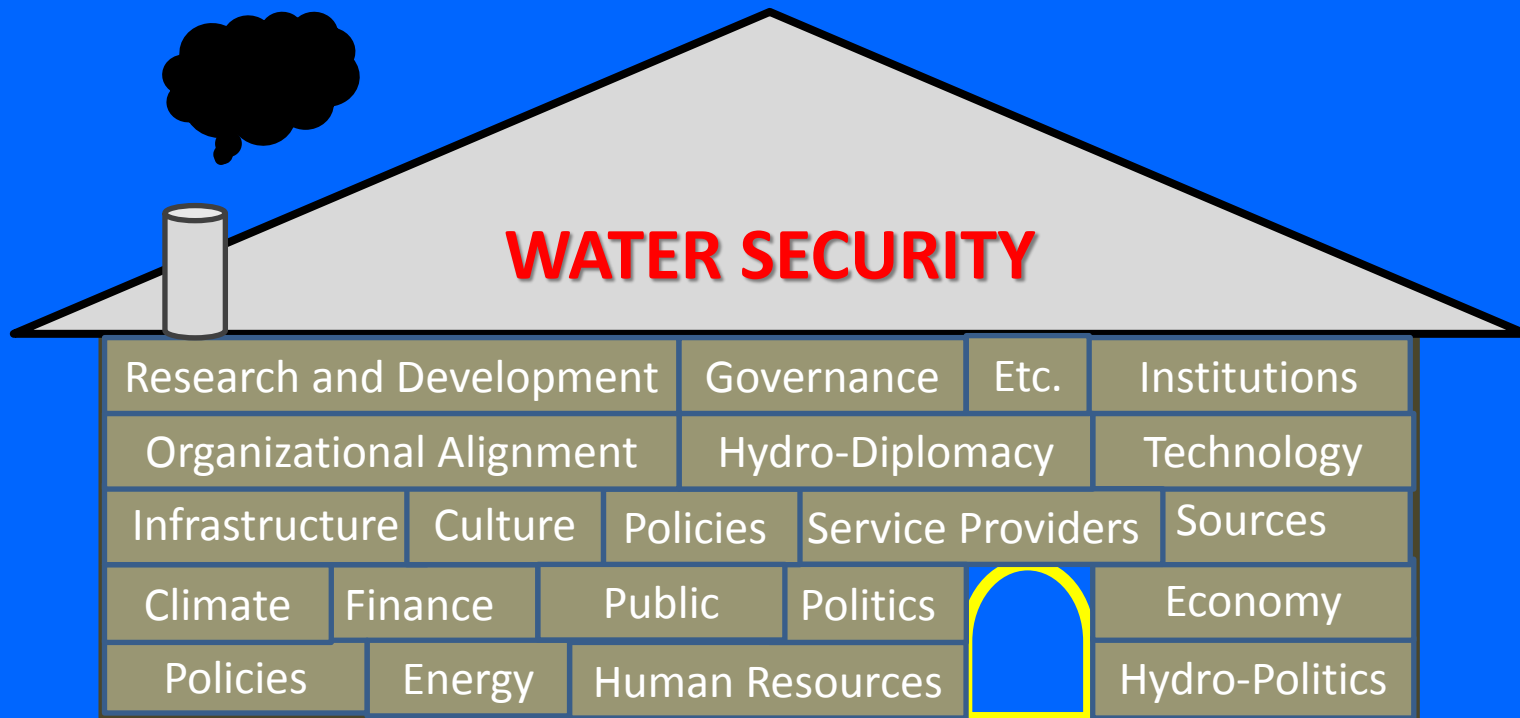
Water Security

Definition:

- ❑ *“sustainable access, on a watershed basis, to adequate quantities of water of acceptable quality, to ensure human and ecosystem health.”* Water Security: A Primer – Canadian Water Network (2010)
- ❑ *“the reliable availability of an acceptable quantity and quality of water for health, livelihoods and production, coupled with an acceptable level of water-related risks”* Grey & Sadoff, 2007); DBSA (2009).



Water Security: Building Blocks



Water Security: Assessment (1)

Mining Operations

No	Name of Mine	Water Demand (Mm ³ /a)
1	Skorpion Zinc	2.76
2	Rosh Pinah	1.00
3	Otjihase	0.20
4	Okorusu* (projection)	0.13
5	Navachab	1.09
6	Rossing	3.14
7	Langer Heinrich	1.12
8	Husab (Under Construction)	



Water Security: Assessment (2)

Criteria

No	Criteria	Percentage Weight
1	Water Quantity	20
2	Water Quality	15
3	Infrastructure : Condition and Maintenance - Shared	15
4	Infrastructure : Condition and Maintenance – Dedicated	15
5	Power Supply: Availability; Quality; Quantity	15
6	Scheme Insensitivity to Climate and Weather Changes	10
7	NamWater - Customer Relations	10

Water Supply Index: 1 - 5



Water Security: Assessment (3)

Summary of Results: Water Security Index

No	Name of Mine	Score (1 - 5)
1	Skorpion Zinc	3.8
2	Rosh Pinah	3.7
3	Otjihase	3.4
4	Okorusu	3.6
5	Navachab	3.3
6	Rossing	2.6
7	Langer Heinrich	2.8
8	Husab (Under Construction)	

- Water Quantity
- Infrastructure
- Power Supply
- Climate/Weather



What Is being done to Improve Water Security to the Mining Industry - Central Namibia Area?



Water Security: Risks and Solution (1)

Situation at the Coast: Implications

Mining:

- Disruptive to the Operations

Investors

- Low Confidence Level

Supplier – Customer Relation

- Strained

Supplier

- Operational Nightmare
 - “Supply Water in Drops”



Water Security: Risks and Solution (1)

Situation at the Coast: Some Facts

❑ Size of Operation

- Rössing + LHM : 45% of Water Demand (2013)
- Rössing + LHM + Husab: 68% of Water Demand (2016)

❑ Impact on the Economy

- Massive



Water Security: Risks and Solution (2)

Situation at the Coast: Serious

➤ Causes:

- ❖ Source (Quantity & Quality)
- ❖ Storage
- ❖ Conveyance System
- ❖ Non-integration Water Supply Systems
- ❖ Power Supply



Water Security: Risk and Solution (3)

Situation at the Coast: “Resolution”

NDTF - Mile 6 Desalination Plant (BOOT)

○ Resolution of Outstanding Issues

- *Procurement*
- *Technical*
- *Financial*
- *Commercial*

- Make an Award before Dec 2013
- Construction Start in early 2014
- Water Flow by late 2015

**SCHEDULE
REALISTIC ?**



Water Security: Risk and Solution (4)

Situation at the Coast: Serious

➤ Concern About Further Delays

**INITIATE THE NEGOTIATION
WITH AREVA FOR EXCESS
WATER FROM THE EDC
PLANT**



Water Security: Interim Solution (1)

Engagement with AREVA: Progress

- 2009** – No Progress; Project Abandoned
- Late 2011** – Resumed; Slow
- Mid 2012** – Noticeable Progress
- Late 2012** - Mines Accepted Offer by AREVA
- All Technical Works for Tie-in Completed**
- Refine the Commercial Agreements**
 - ✓ June: Flow of **300m³/h (0.17Mm³/y)**
- Water for the Construction of the Husab Mine**



Water Security: Interim Solution (2)

Engagement with AREVA: Progress

Sources Limitation:

Abstraction Permit for Omdel to Expire Soon

- Abstraction to Reduce to 4.5Mm³/y
- No Inflows in the Omdel (4yrs)

Water Levels in the Omdel is Dropping

- Environmental Risk

➤ **Must Find Another Source to**

- Replace the Omdel Water - Rössing and LHM
- Supply the Local Authorities (emergencies)



Water Security: Interim Solution (3)

Engagement with AREVA: Progress

Replacement Water:

- ❑ **Technical Work in Progress – 10Mm³/y**
 - Connect AREVA Pipe to the Omdel Pipe
- ❑ **Commercial Agreements in Progress**
 - ✓ Q2 of 2013 (August): **6Mm³/y**
 - ✓ Q4 of 2014 (Dec): **(6 + 4) = 10Mm³/y**
- **2016 : Mining Demand > Supply**
 - If Mile 6 Plant is **NOT** in place



Water Security: Interim Solution (4)

AREVA Desalination Plant: Fresh Look

Plant Capacity & Water Demand	Production Mm ³ /y	Production Mm ³ /y (Upgrade)
Desal. Plant Capacity	20	25
Mining Demand (2016)	12 - 15	12 - 15
Excess Capacity	8 - 5	13 - 10

- ❑ This Quantity CANNOT be moved to Swakop Base
- ❑ Limitation of Omdel-Swakopmund Pipeline
 - Poor Condition & Capacity
- Construction of a New Pipeline (NamWater) ?
 - Risky: Plant Ownership (AREVA)



Water Security: Long-Term Solution(s)

Some Facts: Availability and Needs

- ❑ EDC Plant has Plenty of Water: No User
- ❑ NamWater Needs Water: Nothing to Supply
- ❑ Poor Water Security: Implications
 - Mining Operations Being Derailed
 - Some Investments on Hold
 - Coastal Towns' Expansion Limited



POSSIBLE SOLUTIONS



Water Security: Long-Term Solution(s)

“Possible Solution(s) – PLAYING WITH IDEAS”

1. NamWater Purchases the AREVA Plant

- Construction of New Pipeline and Storage
- Supply all the Mining Demands from EDC Plant

2. Finalise the Procurement Process for the “Mile 6 Plant”

- Delay Construction
- Favourable Increase in Uranium Price:
 - Developments New Uranium Mines
 - Expansion of Production by Existing

3. Construct the “Mile 6 Plant” and Wlotskasbaken

- Savings on Intake & Power Supply Costs : Off-set by New Pipeline
- Less Impact on the Environmental



“PLAYING WITH IDEAS”



Water Security for the Mining Industry

Conclusion:

1. Water is Key to the Mining Industry
2. Poor Water Security is a Risk to Mining Operations in Namibia
3. Poor Water Security is a Major Risk to Mining Operations in the Coastal Area of Namibia
4. Integrated Approach to Water Supply can Improve Water Security
5. Broad Participation Stakeholder is Essential



THANK YOU

