



Mining EXPO and Conference

NamWater Infrastructure challenges for Mines in the South



**Presented by Willem Venter
26 April 2018**

Outline

- Introduction
- The water source
- Rosh Pinah & Skorpion Mines
 - Abstraction from Orange River
 - Rosh Pinah water transfer scheme
- Lower Orange River
 - Security of water supply
 - Noordoewer/Vioolsdrift dam
- Planned interventions



Length: 2,200 km
Catchment area: 973,000 km²
118% Namibia
77% South Africa

Rosh Pinah Zinc 1969
Skorpion Zinc 2002

CDM/Namdeb 1926

Hopetown-Eureka diamond 1867





Rosh Pinah (1969) &
Skorpion (2002)
NamWater schemes

Skorpion Zinc Mine

Rosh Pinah Zinc Mine

Rosh Pinah

A satellite map of a desert region in South Africa. A blue line, representing a water pipeline, runs from the top left towards the bottom right. At the top left, a yellow pushpin icon is placed next to the text 'Skorpion Zinc Mine', with a red square marker below it. Further down the pipeline, a red square marker is placed next to the text 'Rosh Pinah Zinc Mine'. To the right of this, a red location pin icon with the letter 'A' is placed next to the text 'Rosh Pinah'. The landscape is arid with reddish-brown soil and dark, rocky outcrops. A river or road is visible in the bottom right corner.

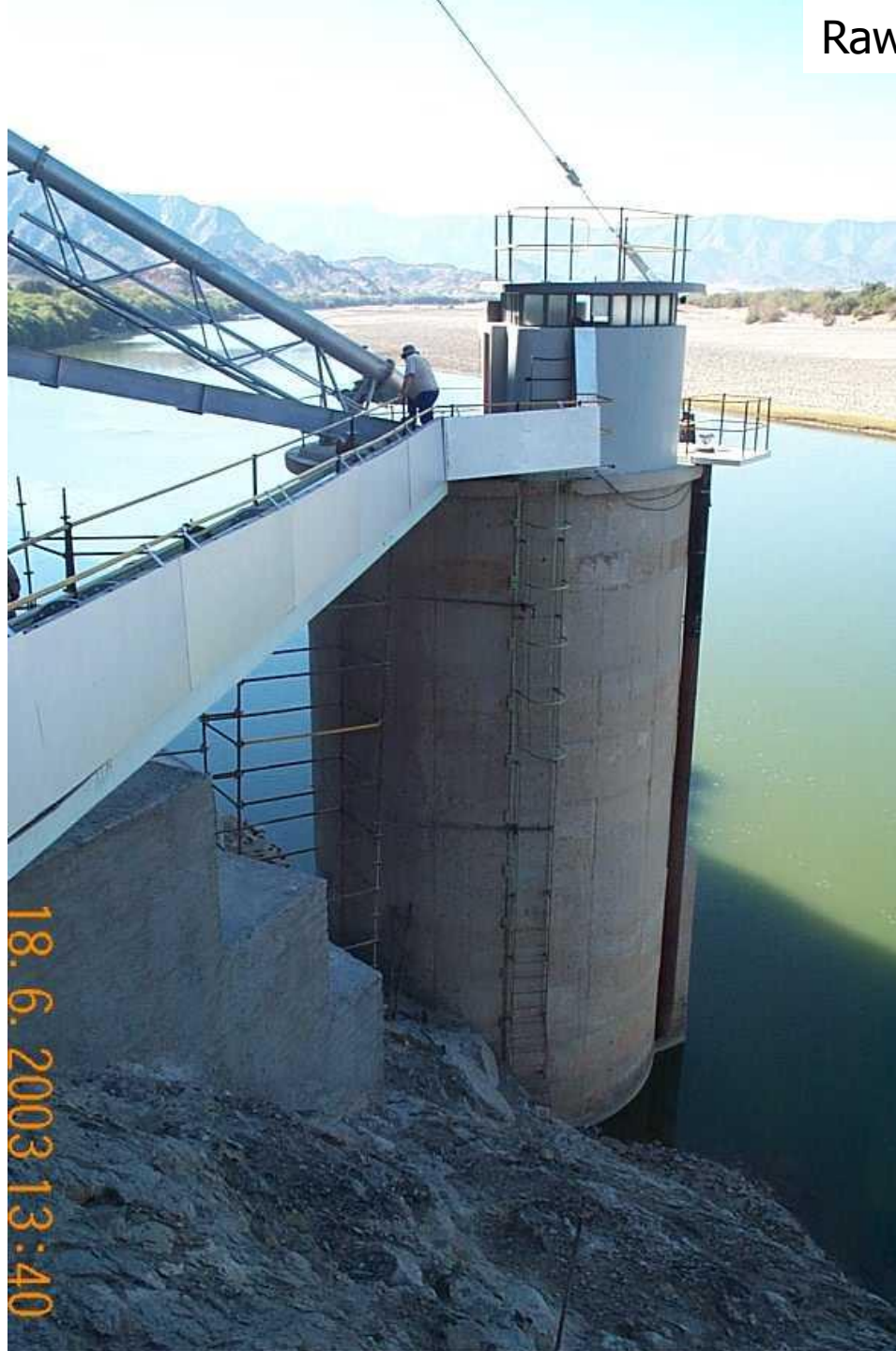
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Google earth

Raw water intake tower



Raw water intake tower



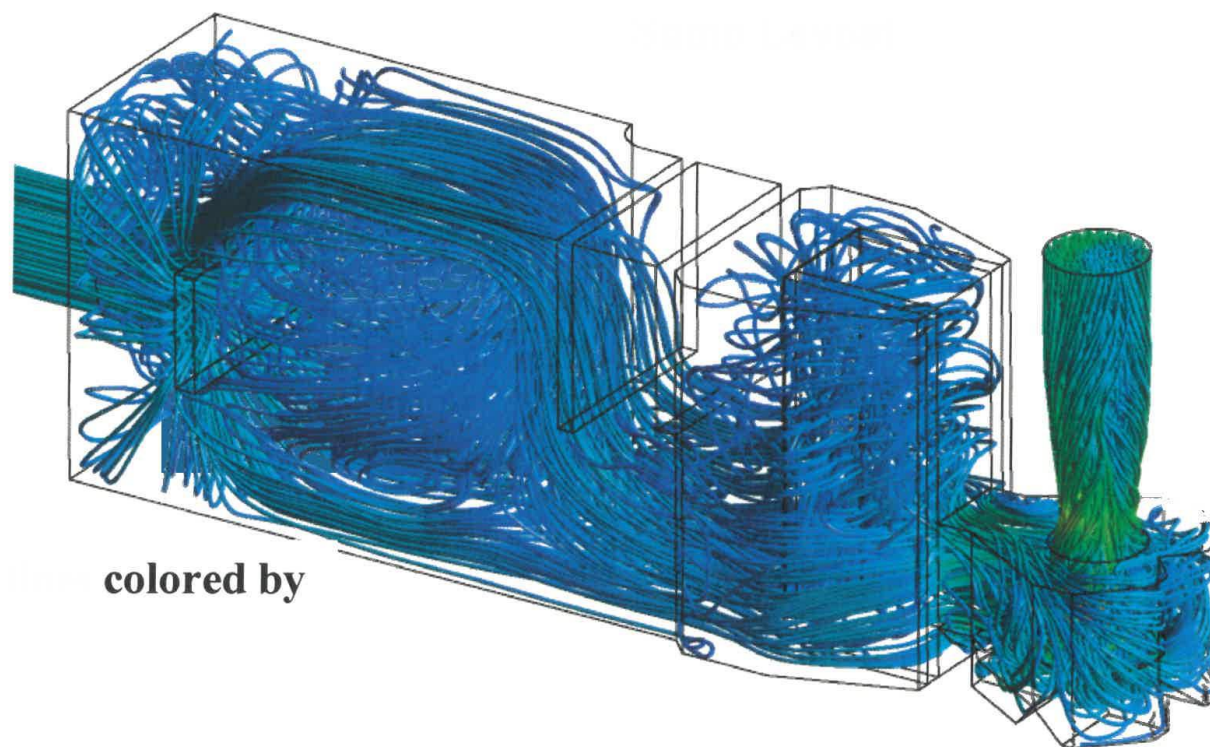
Raw water intake tower
18 Jan 2011

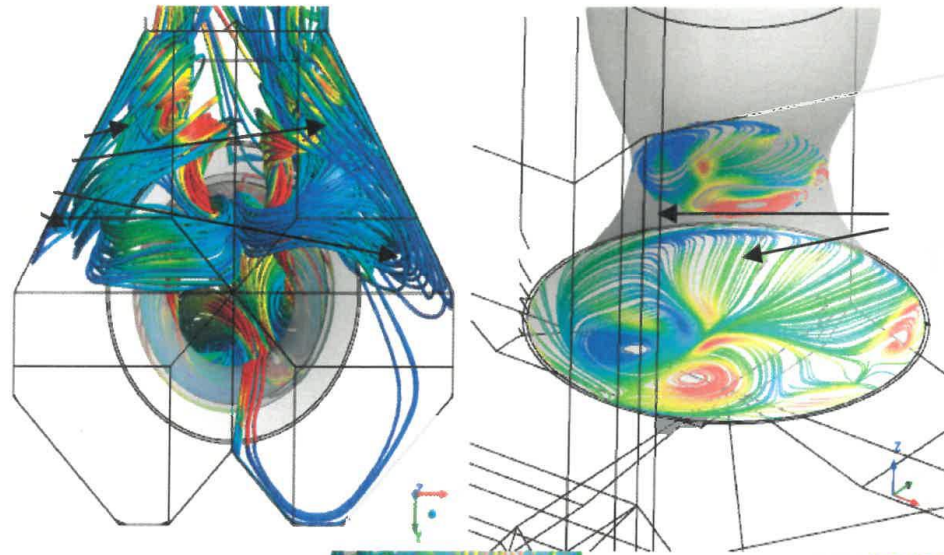


Raw water intake
pipework and pumps

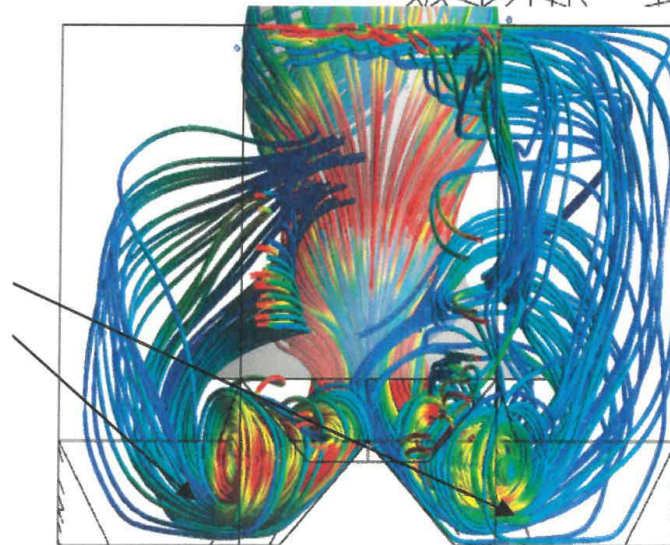


SULZER





SYS



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 The shape of the
 flow in the
 surface

Water Treatment Plant



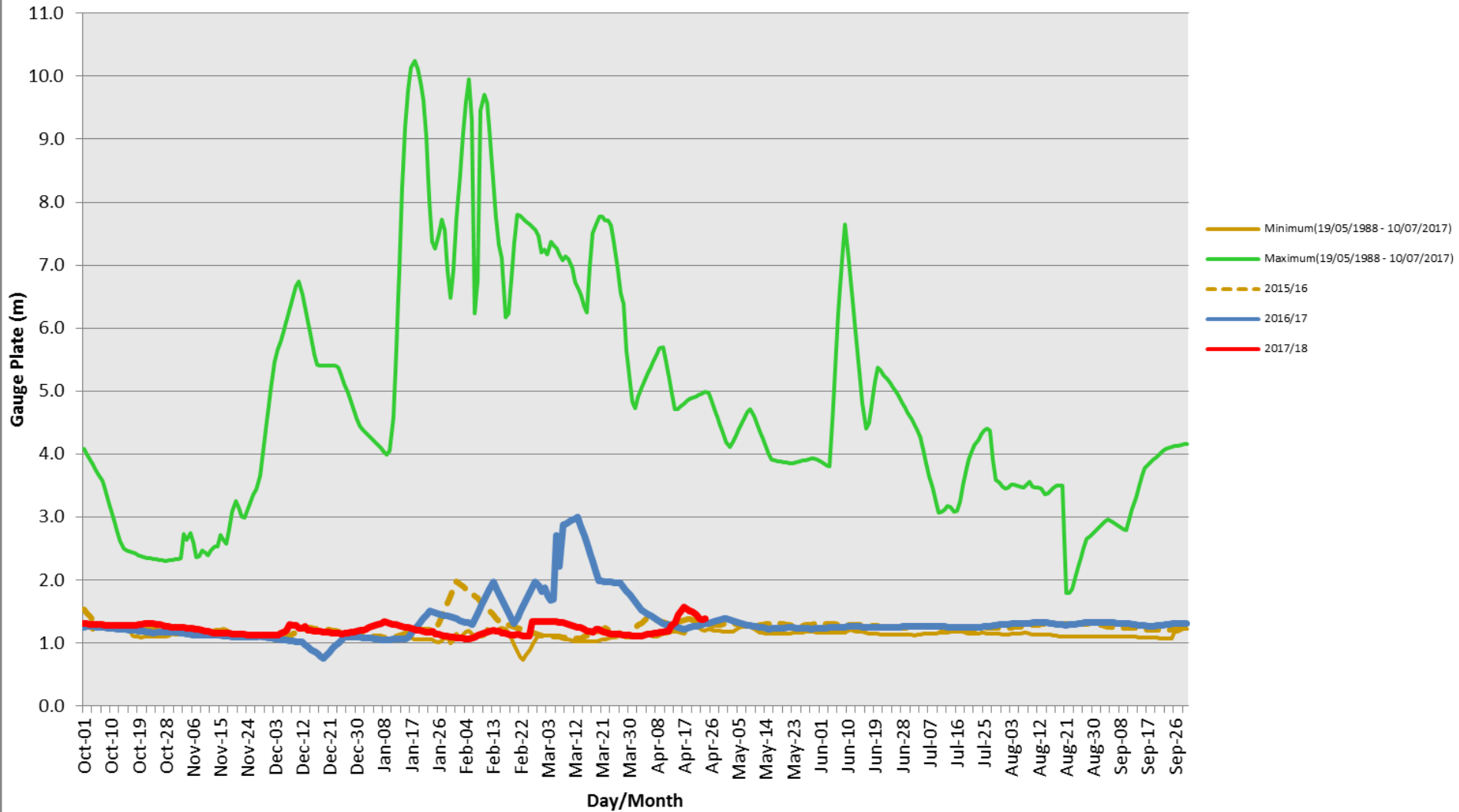
Rosh Pinah scheme:
Fibre cement pipe failure



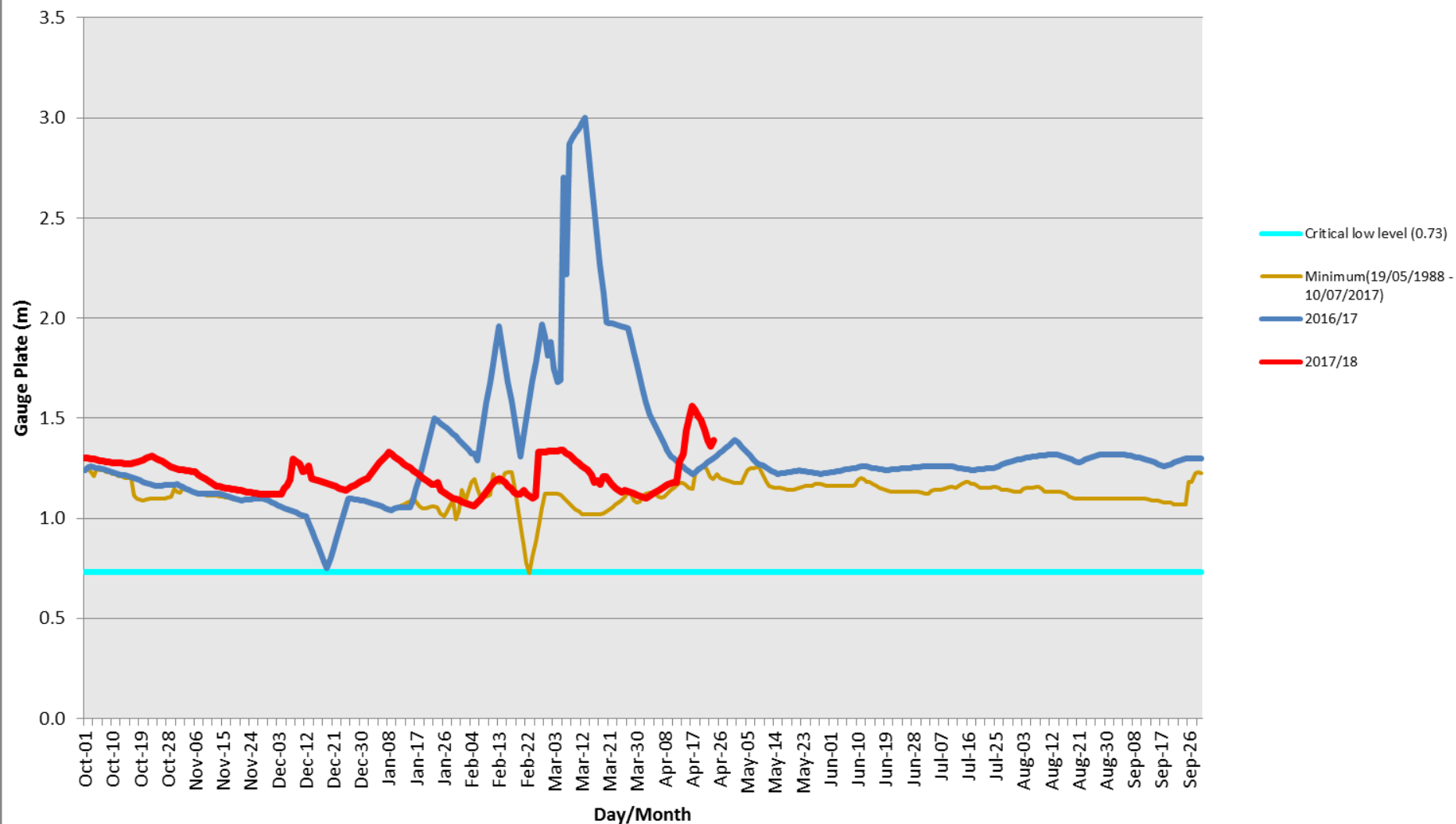
Skorpion Terminal Reservoir



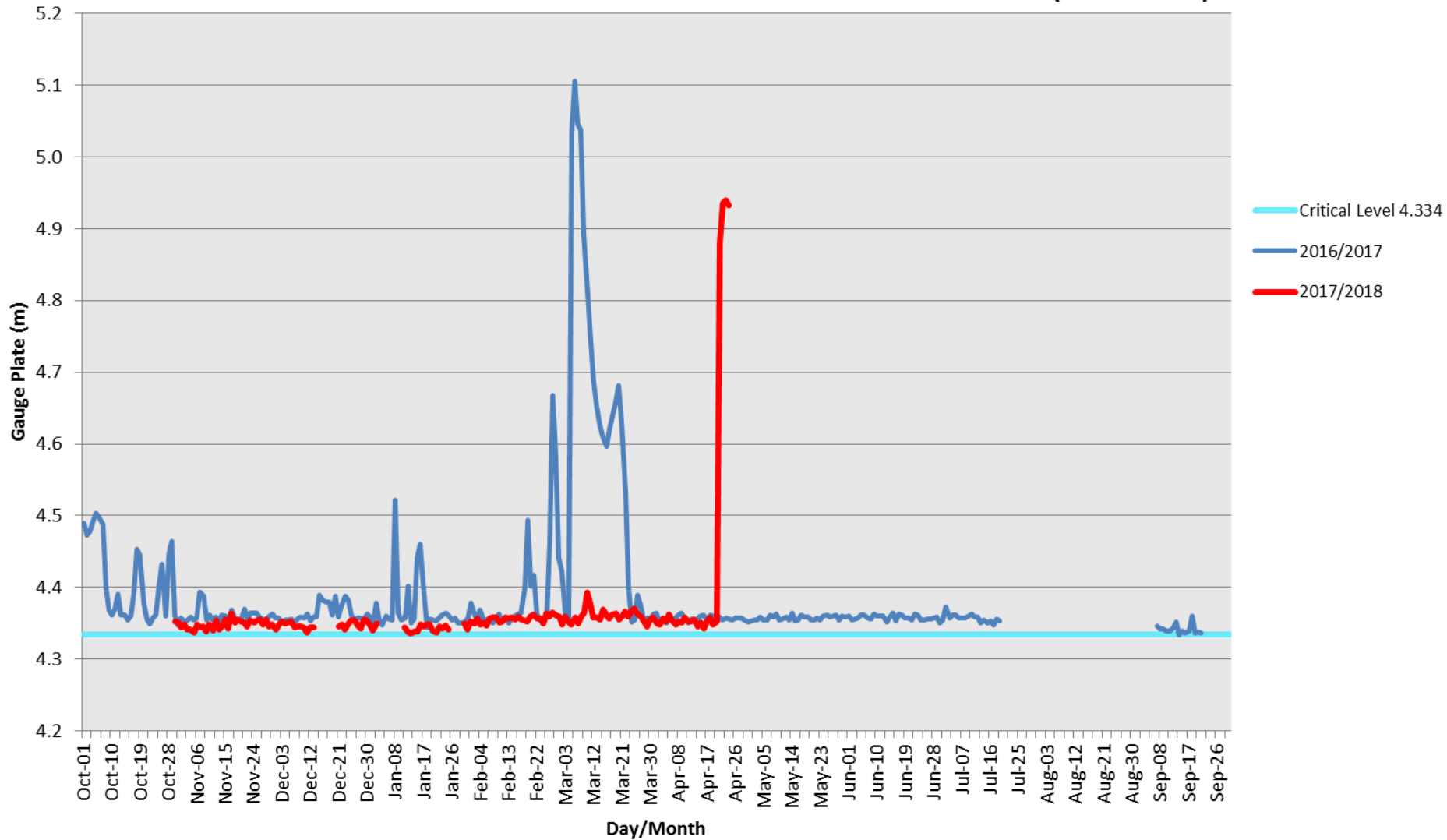
DAILY GAUGE PLATE READINGS OF THE ORANGE RIVER AT ROSH PINAH



DAILY GAUGE PLATE READINGS OF THE ORANGE RIVER AT ROSH PINAH



DAILY GAUGE PLATE READINGS OF THE ORANGE RIVER AT NEUSBERG (KAKAMAS)



Noordoewer/Vioolsdrift Dam



- 1992 – Permanent Water Commission established
- 2000 – PWC recommends Lower Orange River Management Study (LORMS)
- 2005 – LORMS recommends a re-regulating or large dam on Lower Orange River
- 2014 – PWC agree to authorize the NVD Feasibility Study
- 2015 – AECOM/WCE JV appointed to conduct NVD Study
- 2019 – Feasibility Study to be completed
- 2024 – NVD planned completion

Purpose of NVD

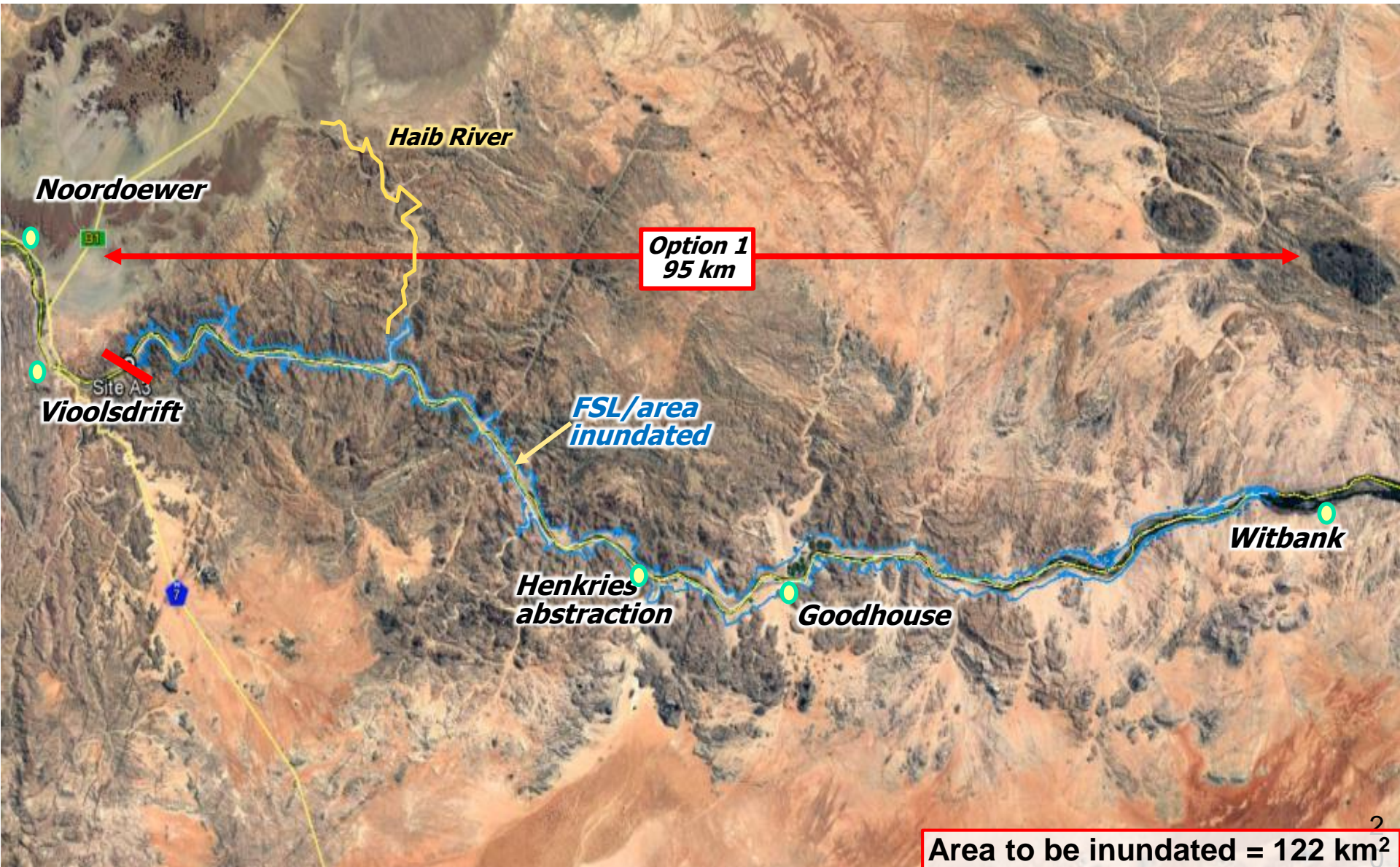


- To increase the yield of the Orange River System
- To supply the projected growth in ORS water requirements.
- To provide for the Namibian water requirements along the common border on Lower Orange River.
- To compensate for impact of implementing Reserve on ORS yield (planned 2024).
- To provide re-regulation storage on Lower Orange River – to allow for releases to correct seasonal flow distribution in accordance with Reserve and Riverine Ecological Water Requirements on Lower Orange River.

NVD FEASIBILITY STUDY FINALISATION PLAN

Area to be inundated by Option 1: Large NVD

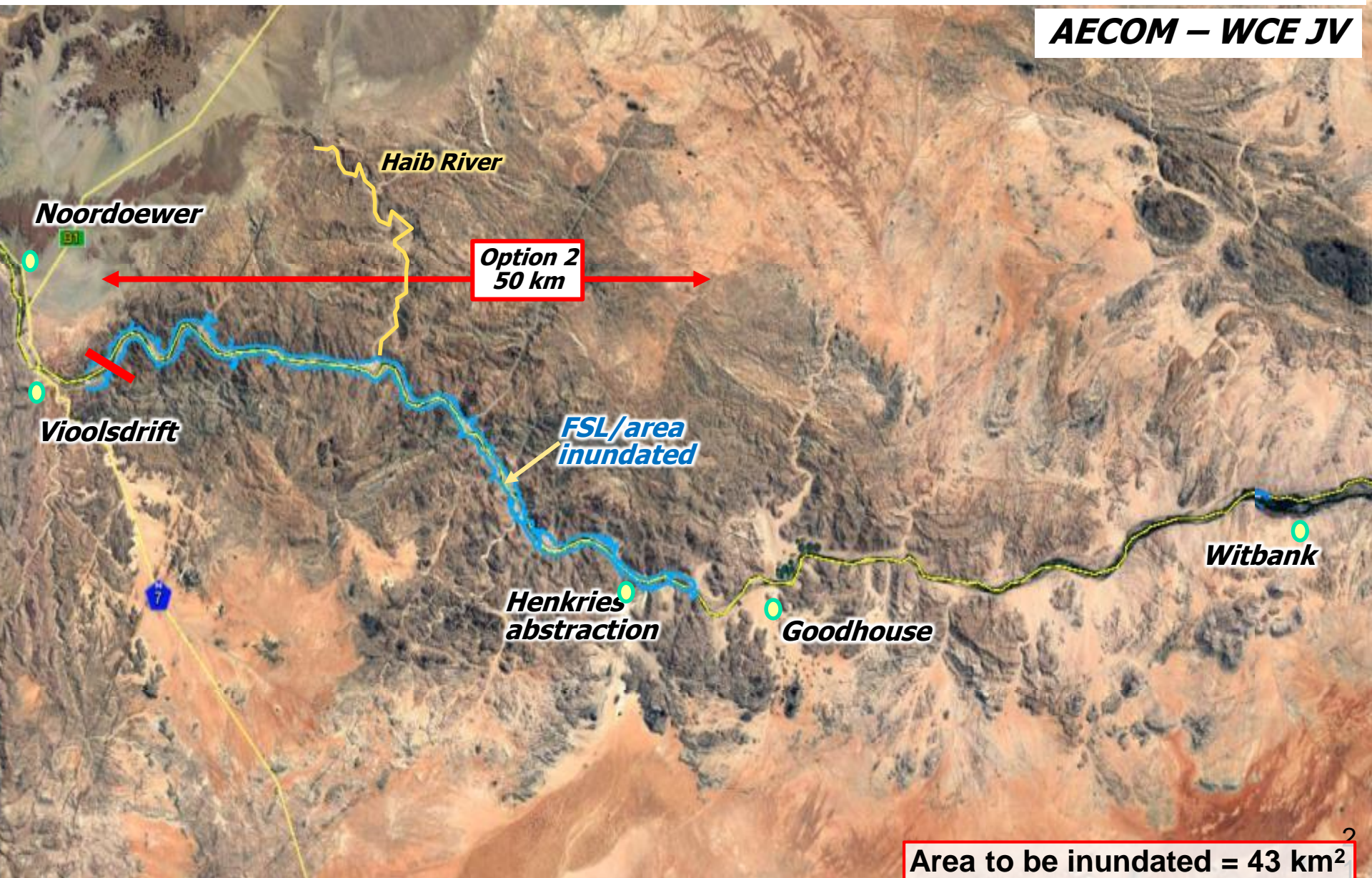
AECOM – WCE JV



NVD FEASIBILITY STUDY FINALISATION PLAN

Area to be inundated by Option 2: Largest Small NVD

AECOM – WCE JV



Options comparison

Option	Option 1: Large NVD	Option 2: Largest small NVD
Implementation/commissioning	2024	2024
NVD height to full supply level (FSL)	70.0 m	41.5 m
NVD capacity	2 800 million m3	645 million m3
Yield benefit @ 2024	666 million m3/a	± 408 million m3/a*
Implementation date of next scheme (Verbeeldingskraal Dam)	2045 (21 years after NVD)	± 2032* (± 8 years after NVD)*
Benefit-cost ratio (6% discount rate)	1.34	1.50
Hydropower generation and income at NVD (annually)	132.8 GWh (R 332 million/a)	± 75.3 GWh* (± R 188 million/a)*
Additional hydropower generation and income in ORS	105 GWh (R 263 million/a)	± 412 GWh* (± R 1 029 million/a)*
Capital Cost	R 4 926 million	± R 3 260 million*

Planned interventions

■ **Security of Supply**

- Continue consultation with MAWF (Namibia) & DWAS (South Africa) on adequate releases of water
- Support bi-lateral consultation regarding Namibia/RSA border on lower Orange River
- Support bi-lateral consultation regarding water allocation agreement to Namibia on lower Orange River
- Support bi-lateral consultation of NVD project
- Improve awareness to improve efficiency of water use (domestic and industrial)



Planned interventions



- Infrastructure reliability
 - Installation of temporary external pump station at Abstraction Tower – Target date end June 2018
 - Re-design and replace suction pipework inside Abstraction Tower
 - Continue consultation with Rosh Pinah and Skorpion Mines to align lifetime of infrastructure with planned Life of Mines
- New Business opportunity
 - Management – Oranjemund water scheme

Thank you

