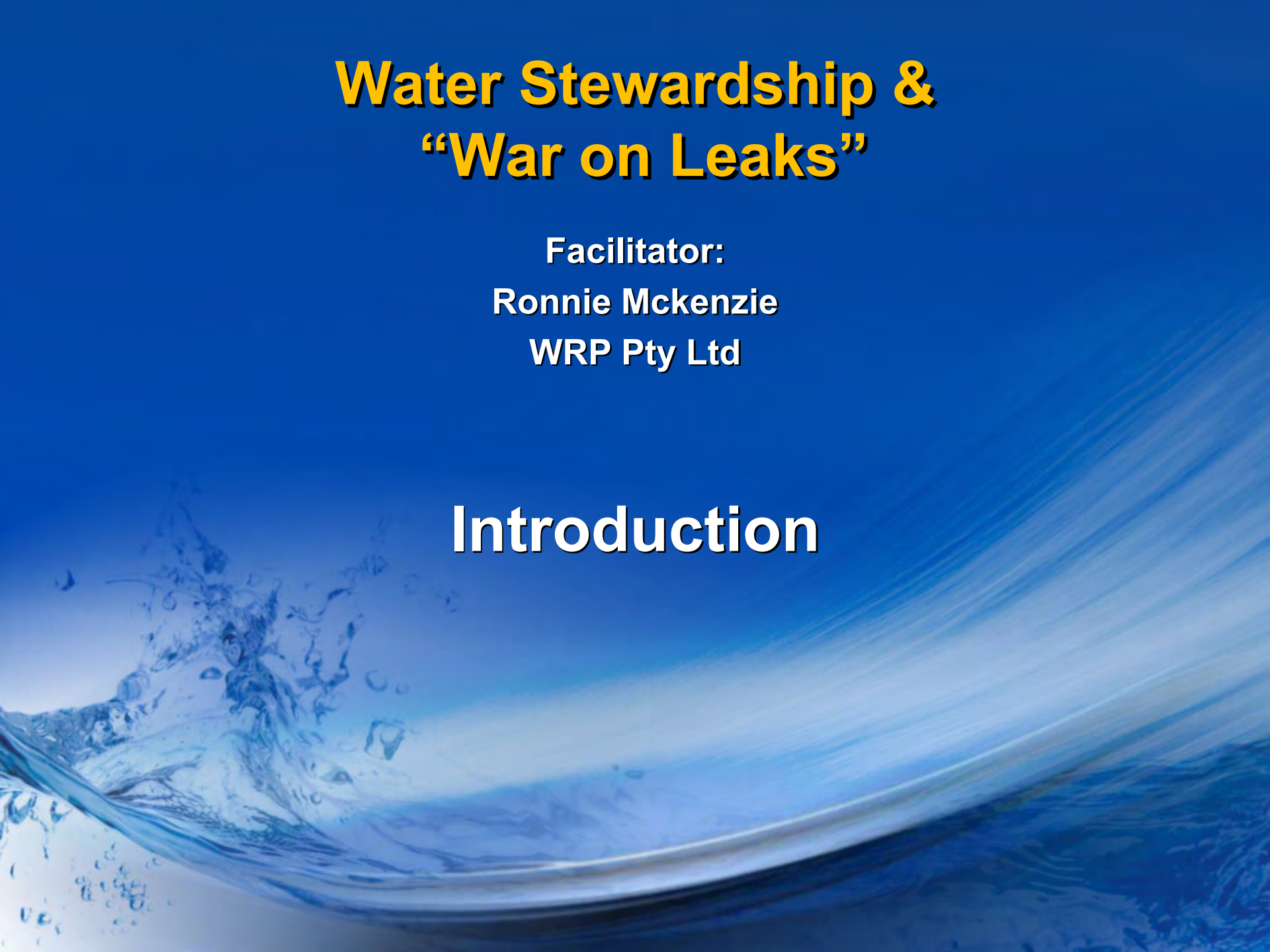


Water Stewardship & “War on Leaks”

**Facilitator:
Ronnie Mckenzie
WRP Pty Ltd**

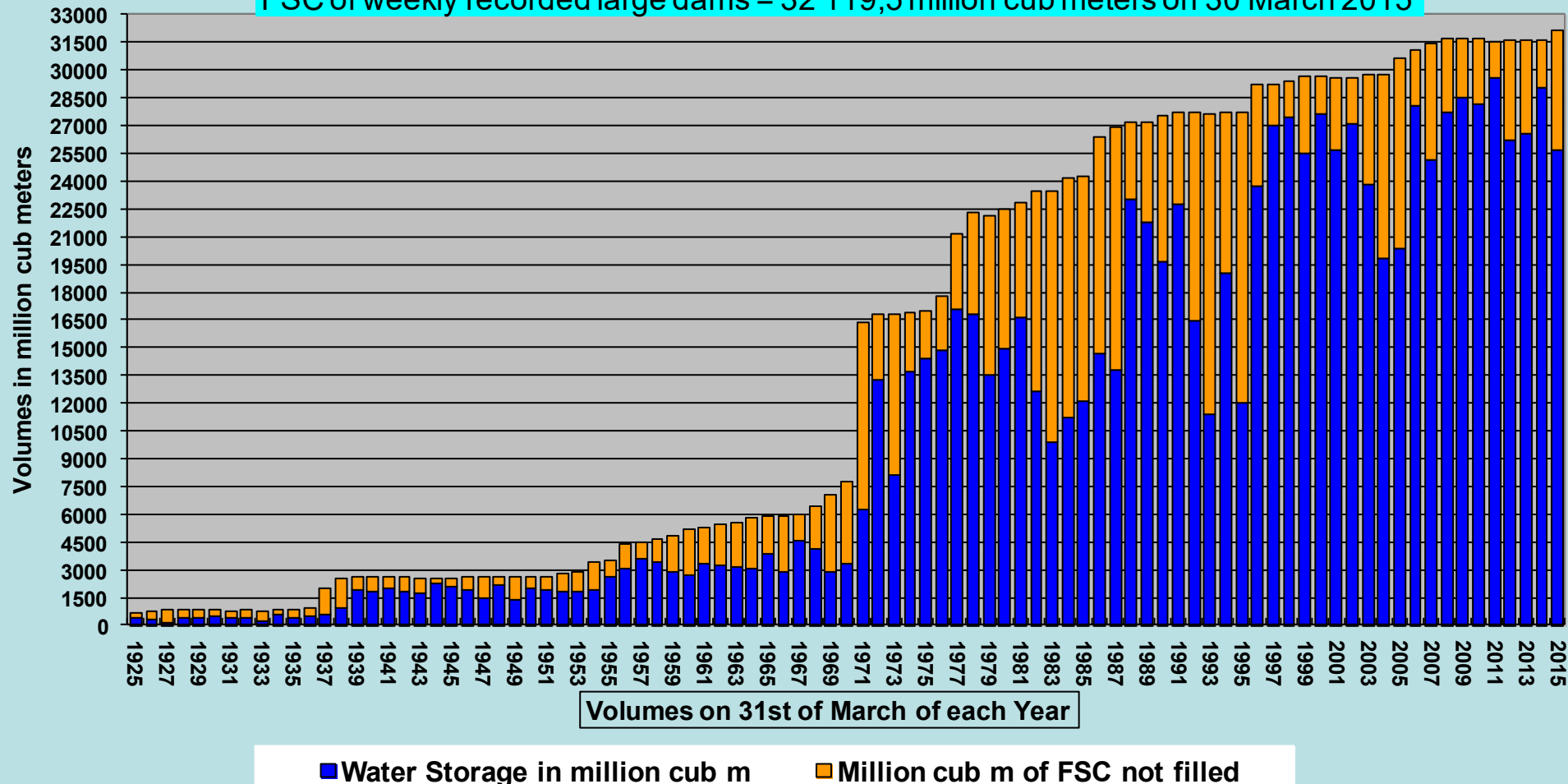
Introduction



Water Storage in Major RSA Dams

Volume Water Storage and Volume Available Capacity (31 March 1925 to 30 March 2015)

FSC of weekly recorded large dams = 32 119,5 million cub meters on 30 March 2015





water affairs

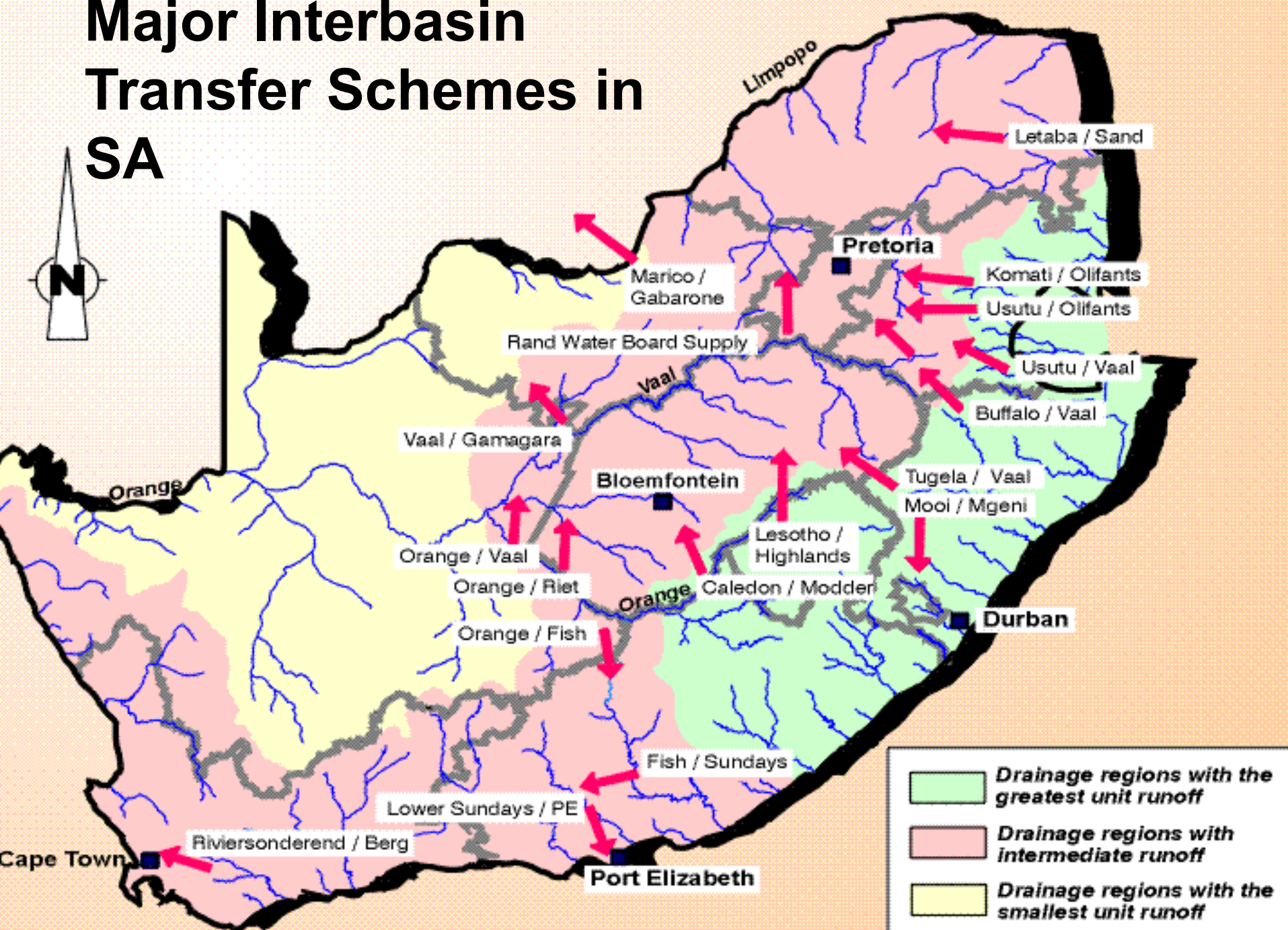
Department:
Water Affairs
REPUBLIC OF SOUTH AFRICA

Integrated Water Resources System Model

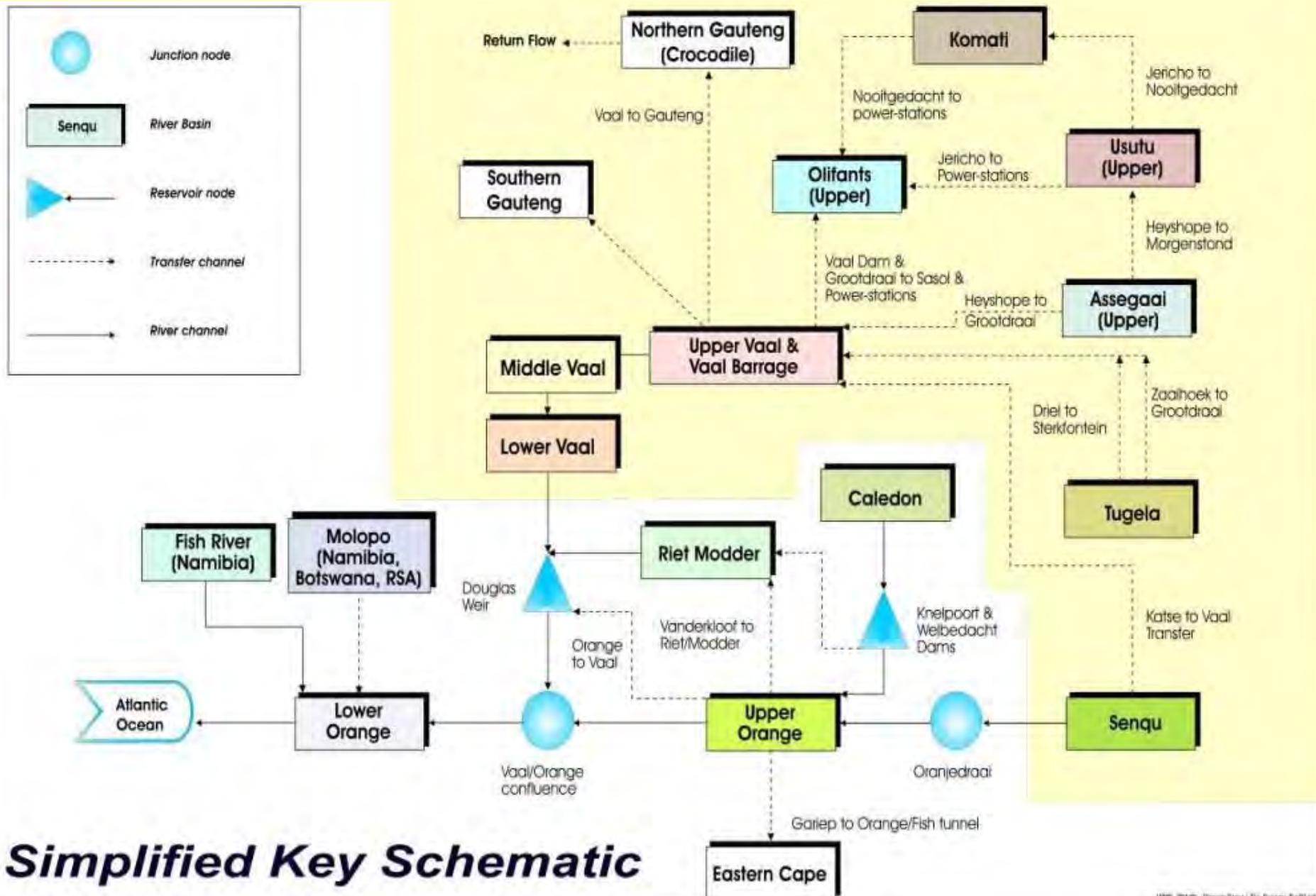


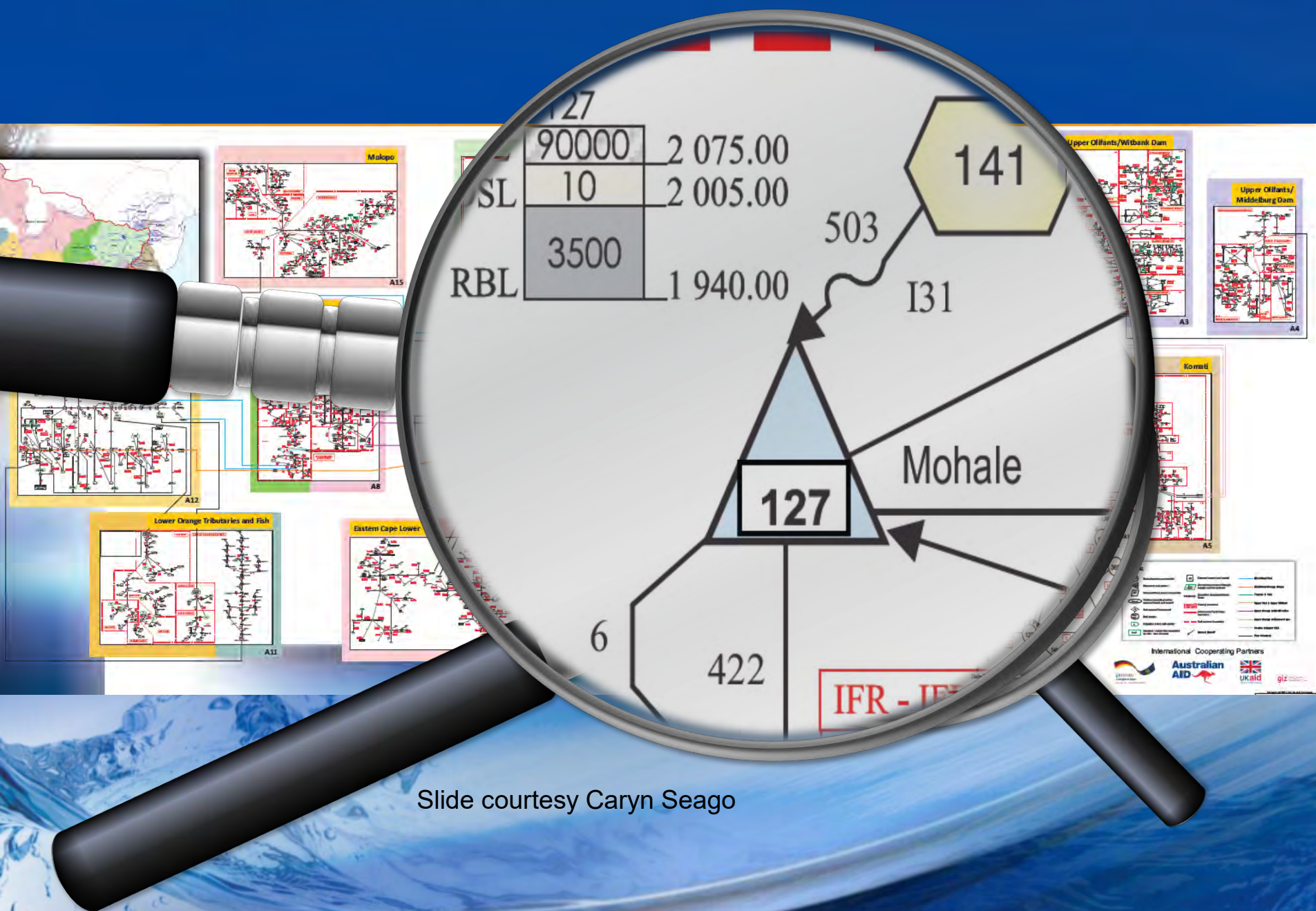


Major Interbasin Transfer Schemes in SA



Integrated Orange /Vaal system





Slide courtesy Caryn Seago

Orange/Senqu Water Resource System

- 💧 **4 Countries** (Botswana, Lesotho Namibia and SA)
- 💧 **87 Large Dams**
- 💧 **279 Small Dams**
- 💧 **\pm 1 250 Abstractions/Demand Centres**
- 💧 **8 integrated subsystems**
- 💧 **\pm 4 000 channels/arcs**
- 💧 **Over 300 naturalized streamflow records**
- 💧 **Over 300 point rainfall time series**



Photo DWAF

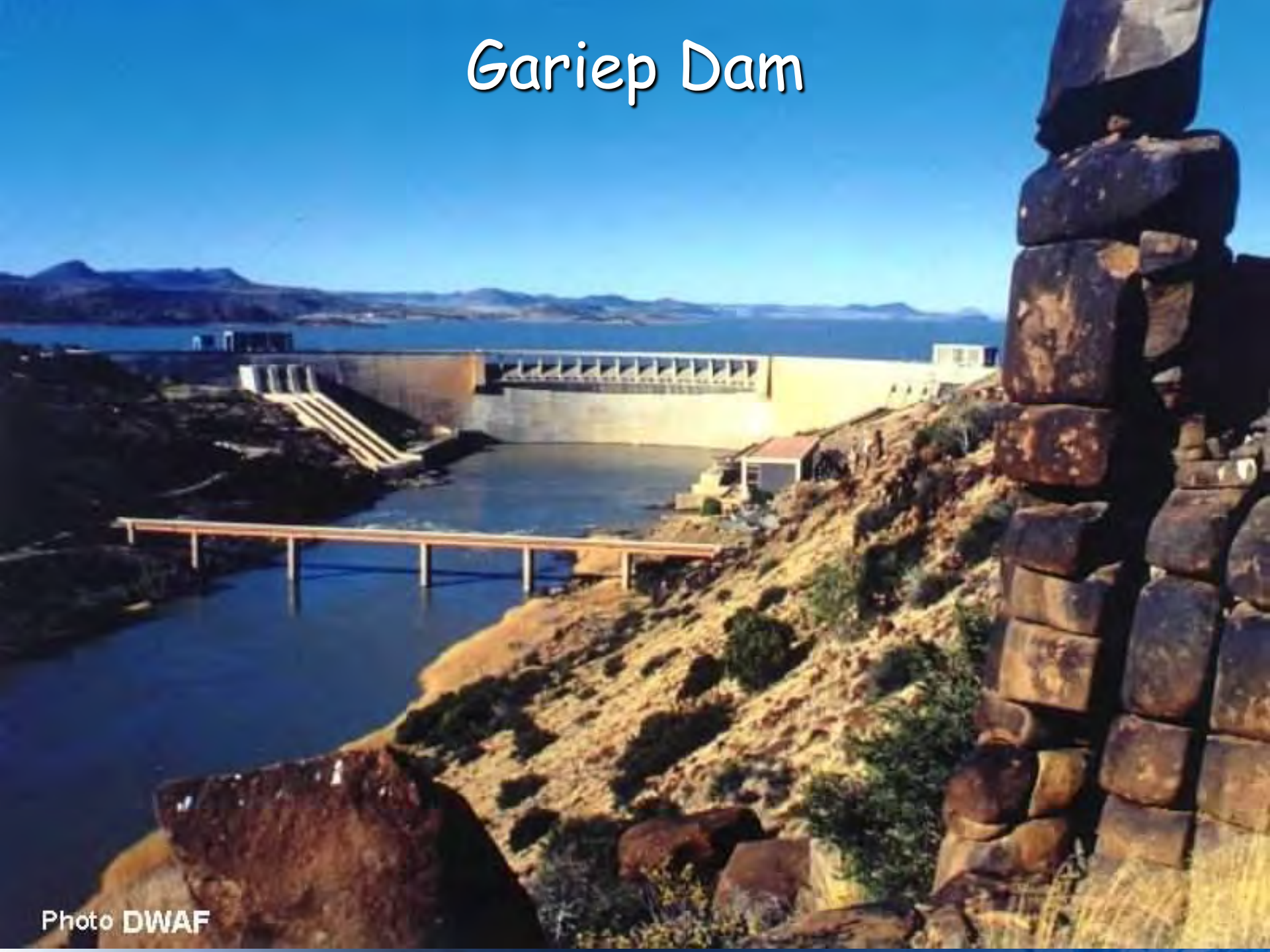


Vaal Dam

Bloemhof Dam



Gariep Dam



Vanderkloof Dam





Orange Fish Tunnel

Photo DWAF

*One of longest water transfer tunnels in the
World (over 80km)*

Mohale Dam



Katse Dam



Katse Tunnel (85km @ 4.5m Diameter)



Photo DWAF



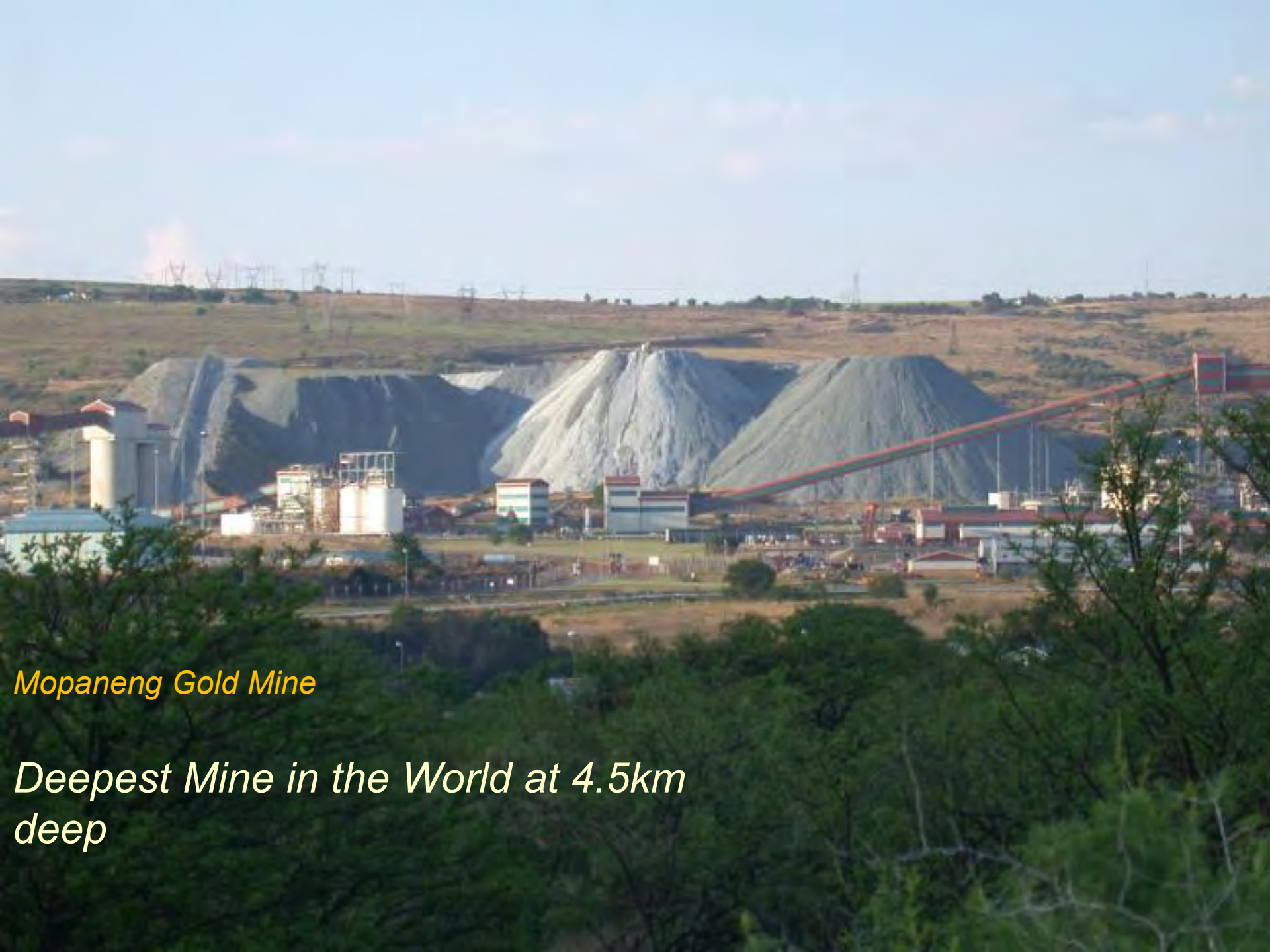
SA has some of largest coal mines in the world

Rustenberg Platinum Mines

World's largest Platinum Deposits



21 5 2002



Mopani Gold Mine

*Deepest Mine in the World at 4.5km
deep*



Sasol Petrochemical Plant Secunda

- *Produces >30% of SA's Petrol/Diesel from coal*
- *Largest synthetic fuel plant in world*

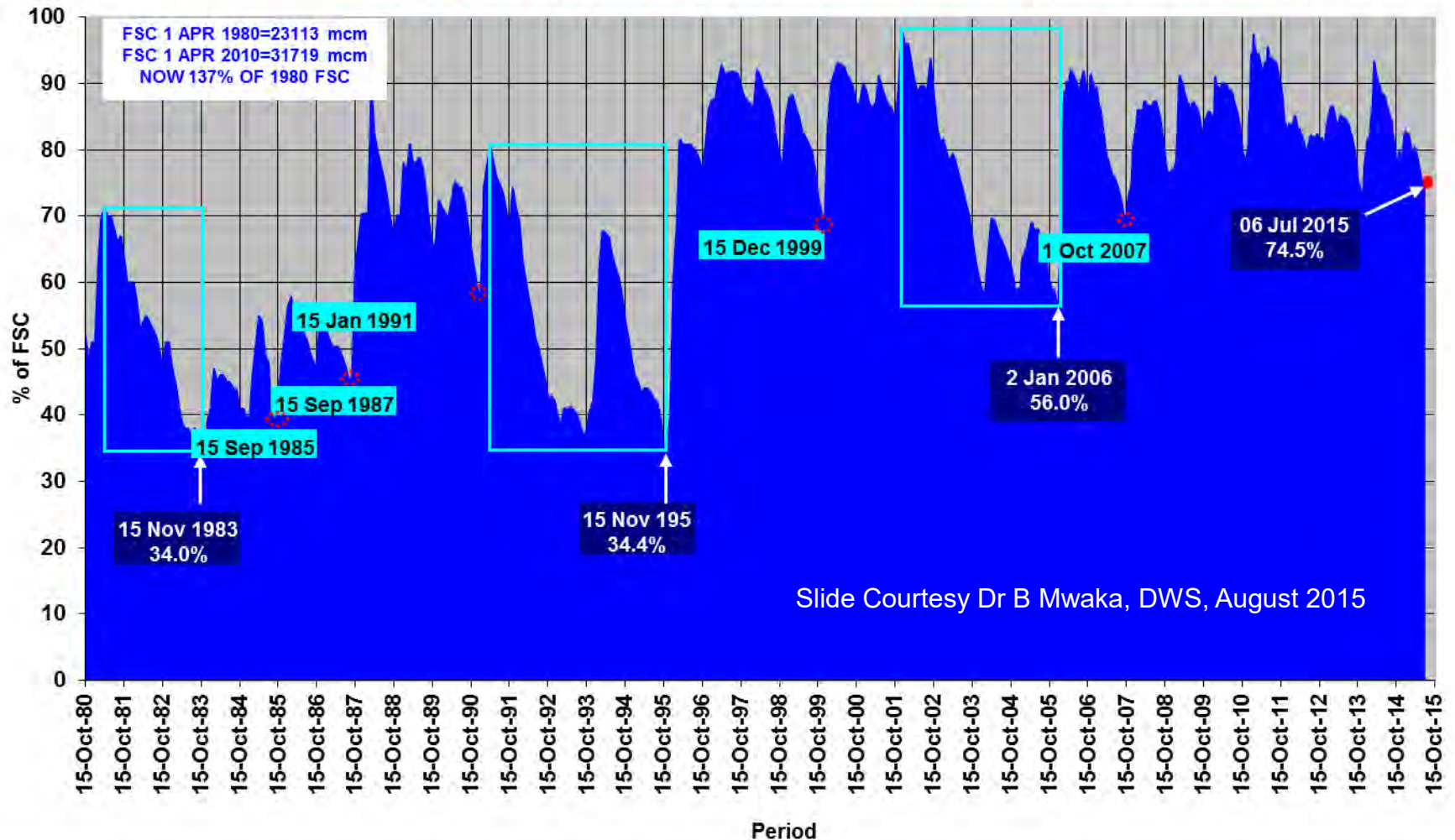


Power Stations

*SA generates over 50% of electricity
in Africa
> 40 000 MW*

National Dams: Water Storage: The Storage for 06 July 2015 since August 1981 (Weekly values since 4/10/04)

06 July 2015: STORAGE = 74.5% FSC; Median for July since 1981 = 77.0% FSC



Water Storage Status of Major Reservoirs in SA on

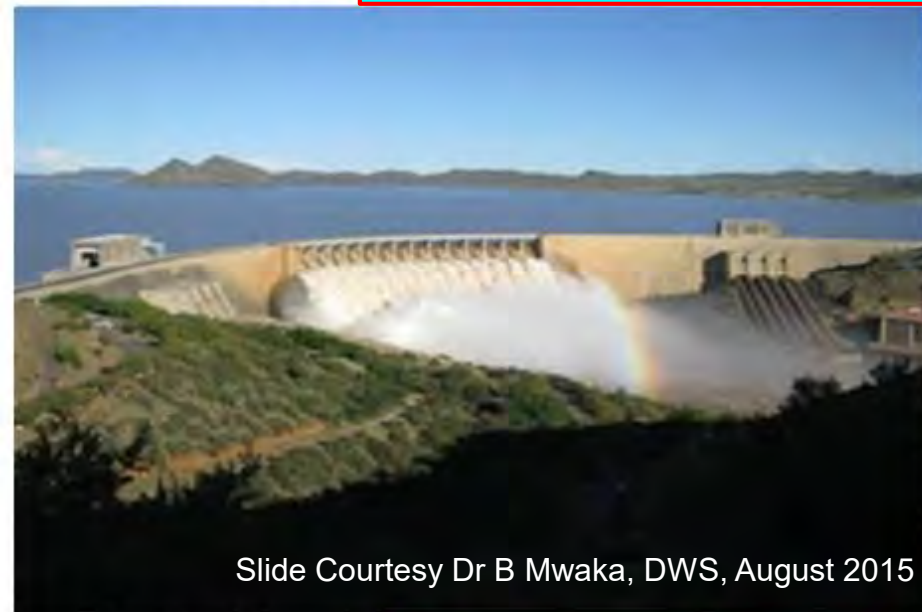
06 July 2015



Vaal Dam = 69.9%, Last Year 92.0%

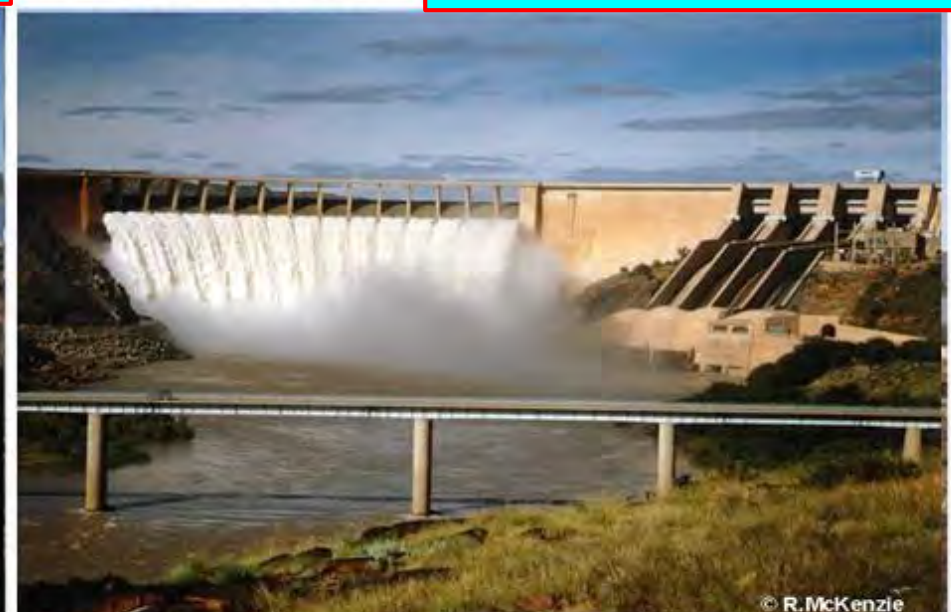


Bloemhof Dam = 63.9%, Last Year 95.5%



Slide Courtesy Dr B Mwaka, DWS, August 2015

Gariep Dam = 75.1%, Last Year 89.3%



© R. McKenzie

Van der Kloof Dam = 99.8%, Last Year 98.7%

WATER LEAK SHOCK

Thousands of litres lost every day

BY NOLAN MATHIBANE
n.mathibane@wapa.co.za

WATER leaks and the pollution by the City of Tshwane is causing them to contribute to water shortages in the city – just as the water loss, the water agencies are struggling to maintain the water supply.

The water supply is a major problem in the city, with the water supply being a major problem in the city, with the water supply being a major problem in the city.

According to the water supply, the water supply is a major problem in the city, with the water supply being a major problem in the city.

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Water leaks from the street and into the street.



A water leak on the street.



Water leaks from a building, up to the clouds of the street.

PHOTO: NOLAN MATHIBANE

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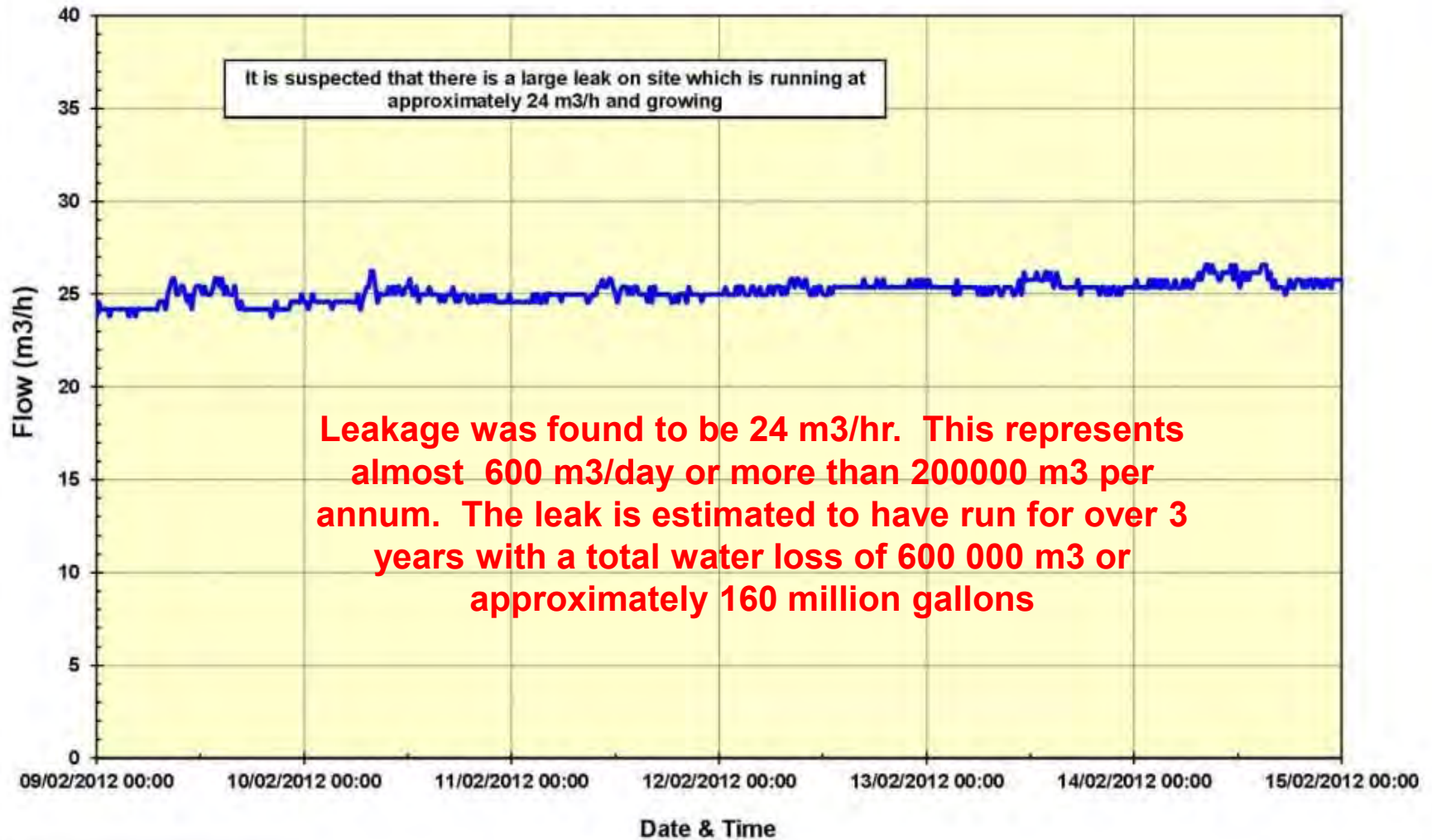
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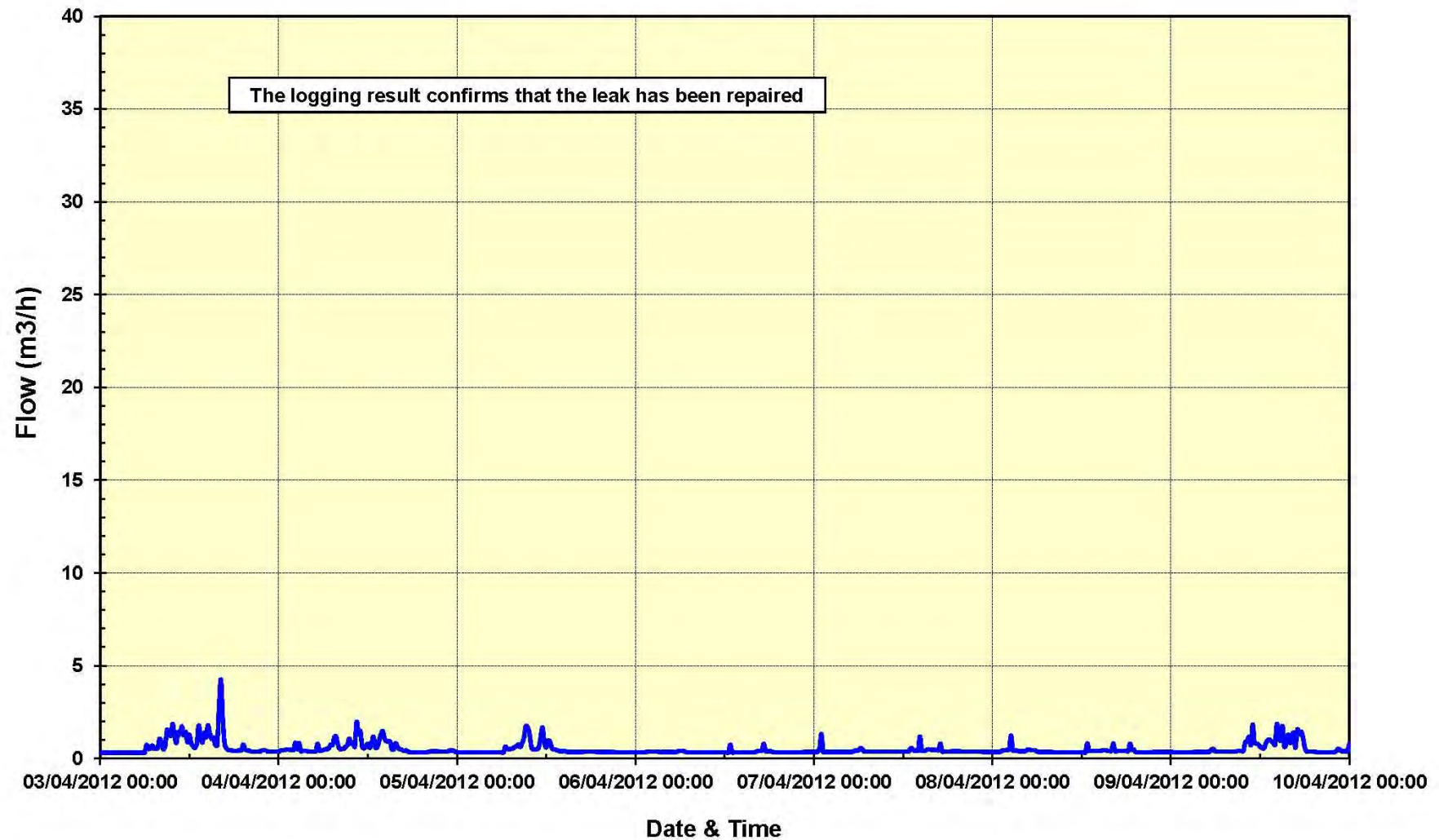
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The water supply is a major problem in the city, with the water supply being a major problem in the city, with the water supply being a major problem in the city.

Industry 1 Leak – Before

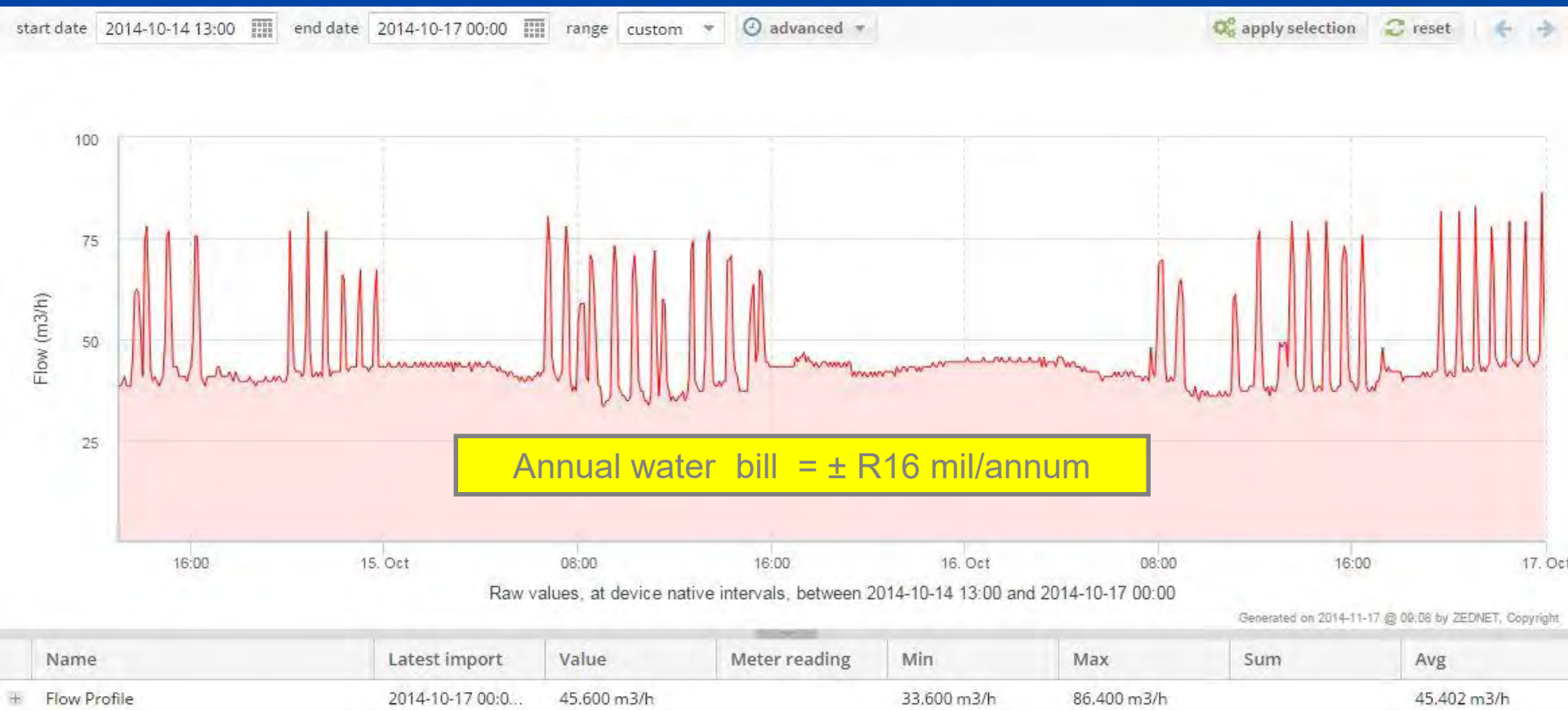


Industry 1 Leak – After



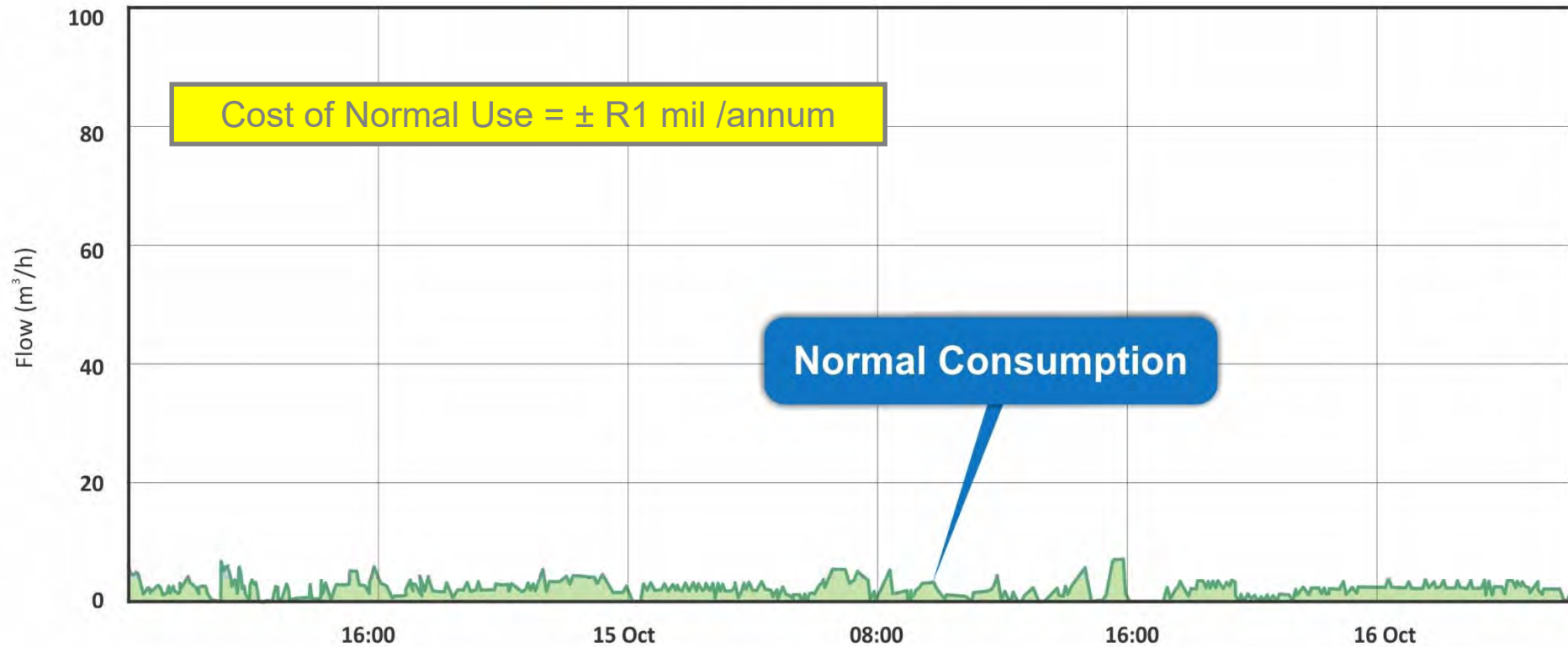


Industrial Water Use



Actual Usage

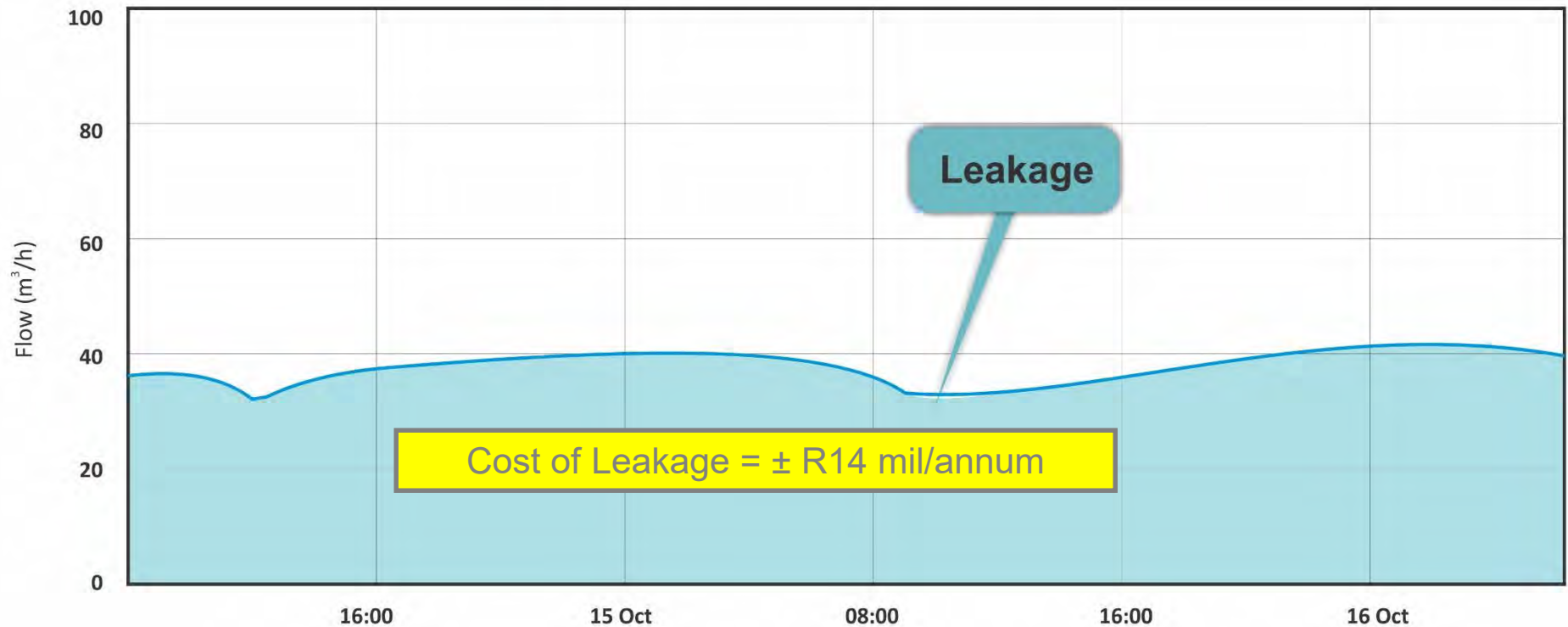
start date 2014-10-14 08:30:00 end date 2014-10-21 08:30:00 range custom advanced apply selection reset



Raw values, at device native intervals, between 2014-10-14 08:30:00 and 2014-10-21 08:30:00

Leakage

start date 2014-10-14 08:30:00 end date 2014-10-21 08:30:00 range custom advanced apply selection reset

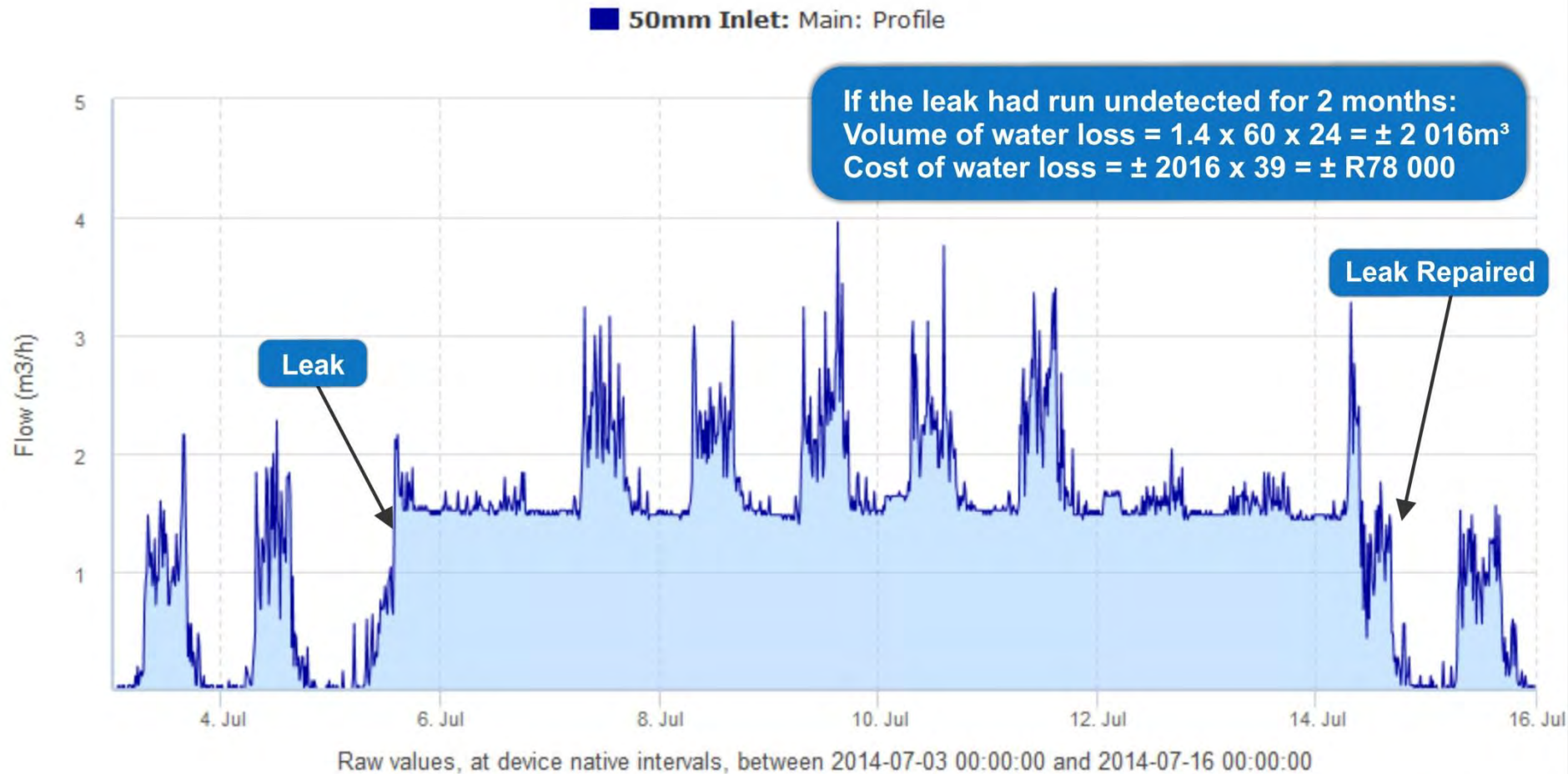


Raw values, at device native intervals, between 2014-10-14 08:30:00 and 2014-10-21 08:30:00

Industry 2 Leak – Before and After

Channel data

start date 2014-07-03 00:00:00 end date 2014-07-16 00:00:00 range custom advanced apply selection reset



Climate Change

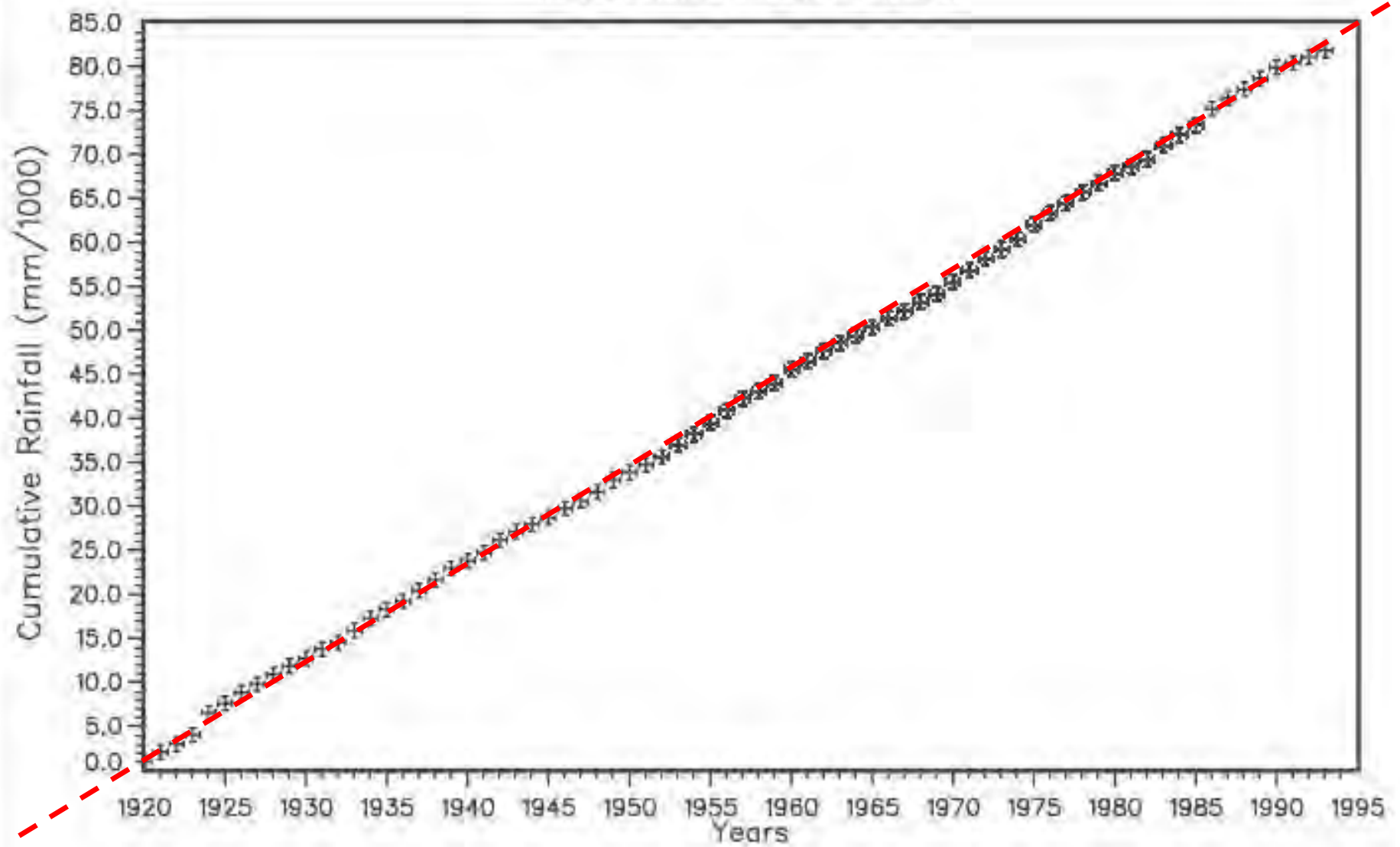
What is happening and what impact will it have on water resources ?



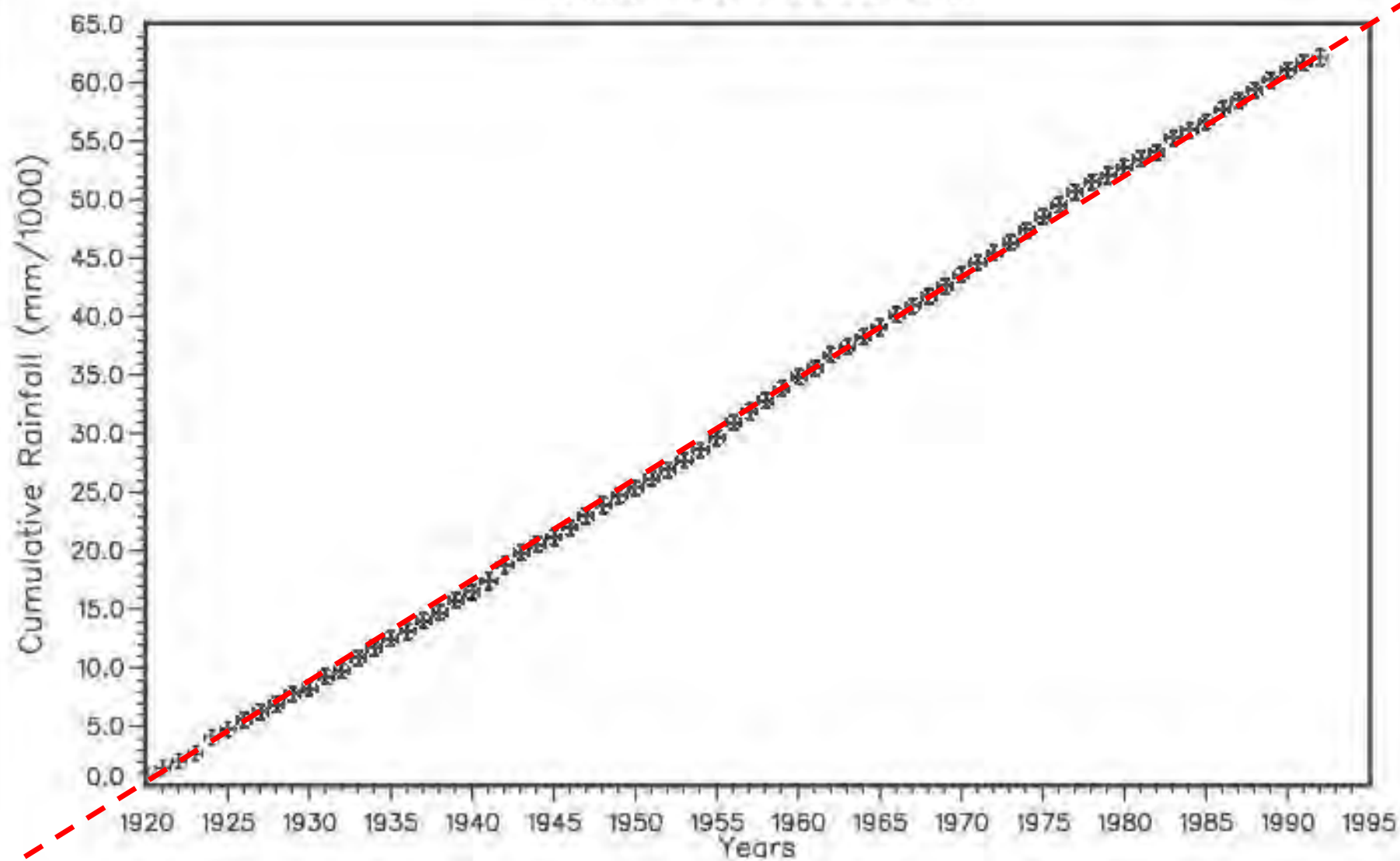
Positive proof of global warming.



MASS PLOT: 0272127W

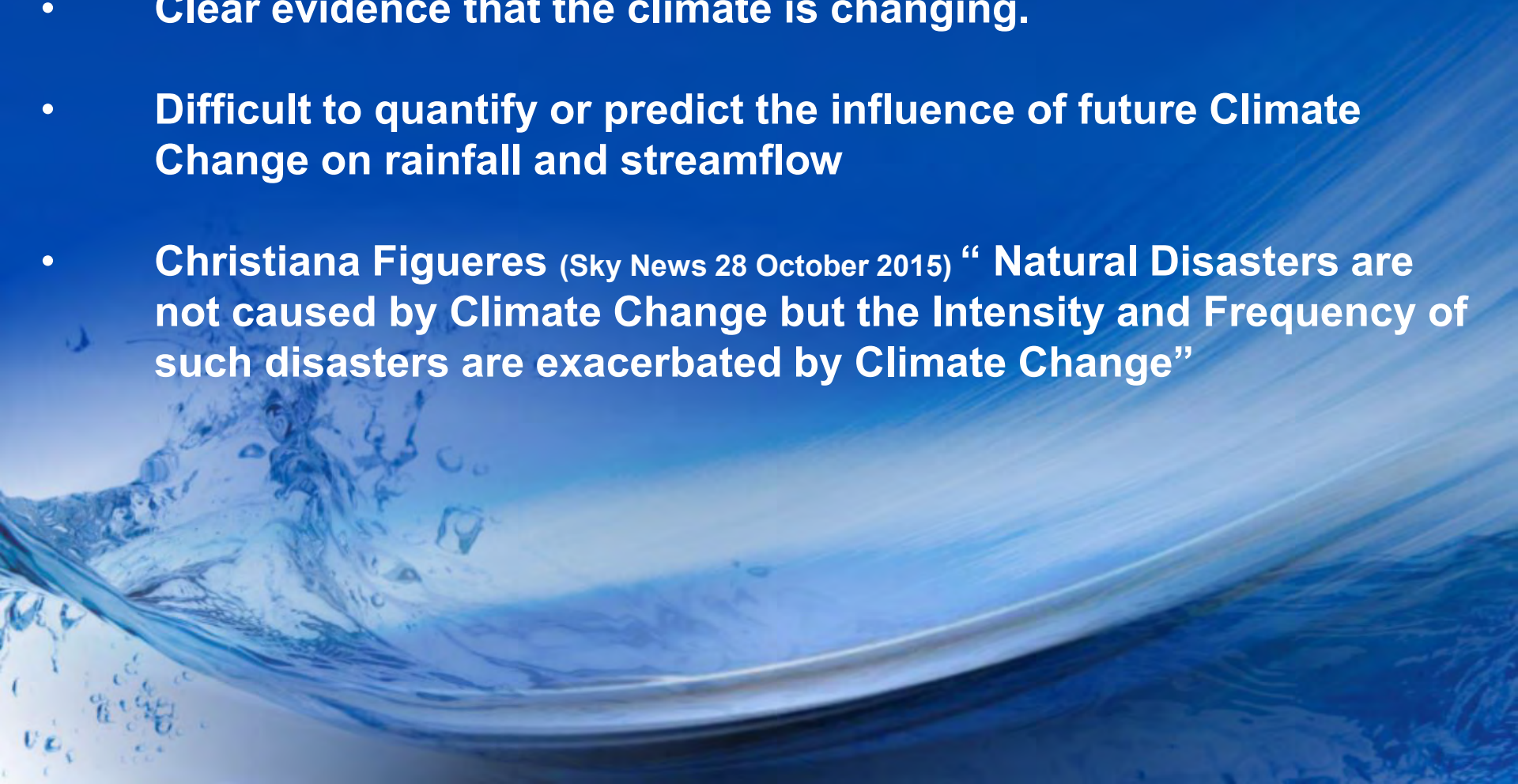


MASS PLOT: 0303127W



Climate Change

- Clear evidence that the climate is changing.
- Difficult to quantify or predict the influence of future Climate Change on rainfall and streamflow
- Christiana Figueres (Sky News 28 October 2015) “ Natural Disasters are not caused by Climate Change but the Intensity and Frequency of such disasters are exacerbated by Climate Change”



Enhancing Water Security

- **Water Use Efficiency: Priorities**
 - **Repair reported leaks quickly**
 - **Reduce pressures**