Water Saving Practices for the Green Industry

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FOR FURTHER INFORMATION ON WATER WISE,
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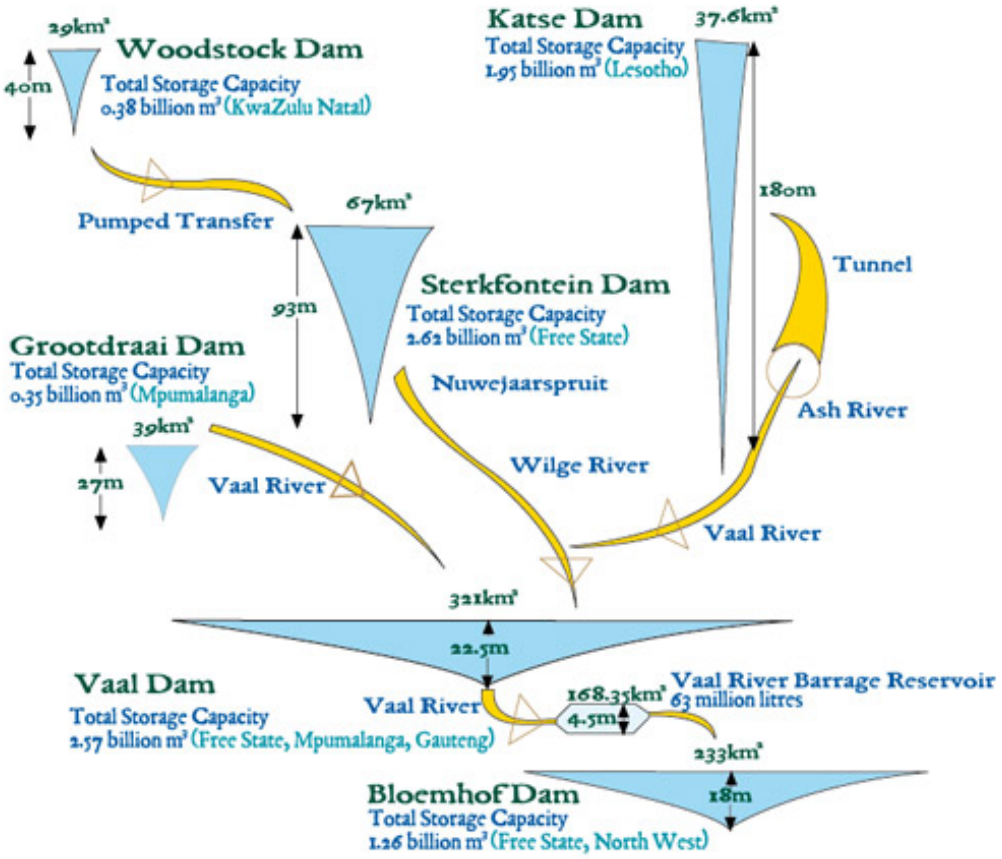
Introduction and Outline

- Where does our water comes from?
- What is the current water situation?
- The impact of Climate Change
- Water restrictions
- Implications for the Green Industry
- Concluding comments

Where does our water come from?

An introduction to Rand Water…

- Rand Water is a bulk supplier of potable (drinking) water for most of Gauteng and some neighbouring provinces.
- Rand Water receives water through the Lesotho Highlands Water Project (LHWP) and the upper Vaal River Catchment.
- This transfer scheme transports water from Katse Dam in Lesotho to the Vaal River and Dam in Gauteng.



Where does our water come from?

An introduction to Rand Water…

- Katse Dam is part of the LHWP
- It is 185m high
  (2nd highest in Africa)
- The dam supplies SA with
  30 000 litres of water per second
- The water is used to generate
  electricity in Lesotho and SA

Where does our water come from?

An introduction to Rand Water…

- Raw (untreated) water is abstracted from the Vaal Dam to the purification stations in Vereeniging and Zwartkopjes.
- It is then purified to ensure the final product meets international standards.
- It is pumped to municipal reservoirs and distributed to the end consumer.

- DWS = custodian of water resources in SA
- RW = bulk water services provider (buy and treat)
- Municipalities = provide water to end user

Where does our water come from?

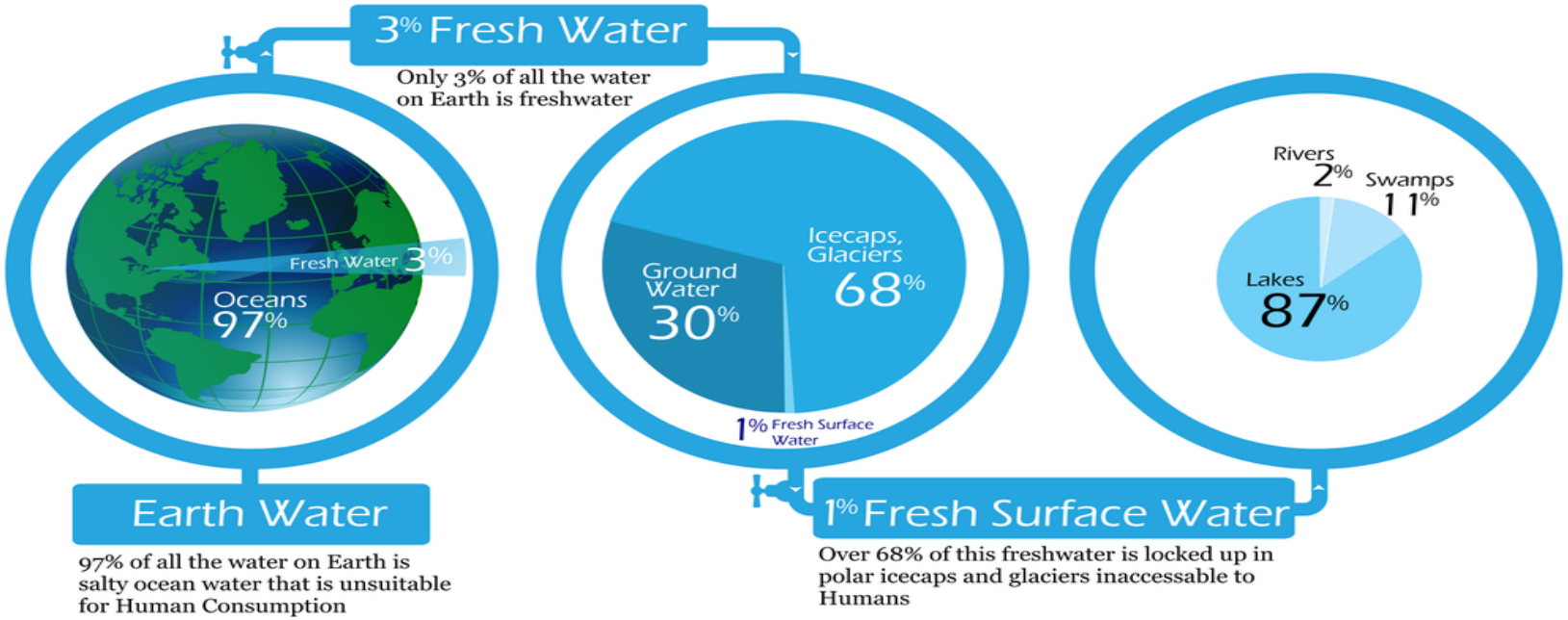
An introduction to Rand Water…

- Rand Water purifies 4 800 Megalitres of water per day
- Clean drinking water is distributed to 58 reservoirs, via 3 400 km of pipelines, to 19 municipalities
- It services over 15 million people in Gauteng and parts of Mpumalanga, North West and Free State.

What is our current water situation?

Water Availability

- 97% of all water on earth in in the oceans
- Only 3% of all water on earth is fresh water
  - 2% in in the polar ice caps
  - LESS THAN 1% is available for use in lakes and rivers



What is our current water situation?

Water Availability

- SA is classified as water stressed
  - The world average rainfall is around 860 mm per year
  - SA receives approximately 497 mm per year with 65% of the country receiving less than 500 mm per annum
  - Rainfall is not distributed evenly throughout the year
  - Rainfall is not distributed evenly throughout the province

"Rainfall records from 1900's till 1980's show that the annual rainfall has been decreasing since 1968" UNEP, 2002

"The number of disasters has increased in frequency and severity in the past 30 years" UNEP, 2002

What is our current water situation?

Water Availability

- DWA info shows: Dams levels in Gauteng and other provinces and countries are higher on average than at the same time last year.

IVRS River System State of Dams on 2017-07-24
FSC is ***full storage capacity*** in million cubic meters

Dam	FSC	This Week	Last Week	Last Year
Bloemhof Dam	1240.3	99.5	100.3	22.5
Grootdraai Dam	349.6	89.8	90.3	84.9
Katse Dam	1519.2	**34.3**	**35.6**	51.0
Mohale Dam	857.2	63.3	63.4	27.1
Nooitgedacht Dam	78.4	90.1	90.3	64.4
Sterkfontein Dam	2617.0	91.4	91.3	89.5
Vaal Dam	2603.5	93.9	94.6	36.0
Woodstock Dam	373.3	94.8	94.8	81.4
Total/Average	**9638.5**	**82.1**	**82.6**	**57.1**

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What is our current water situation?

Water Availability

- DWA info shows: Dams levels in WC are lower than at the same time last year

Western Cape State of Dams on 2017-07-24
FSC is full storage capacity in million cubic meters

Dam	FSC	This Week	Last Week	Last Year
Bellair Dam	4.3	35.9	35.9	70.6
Berg River Dam	127.1	38.2	37.3	52.7
Ceres Dam	17.3	40.7	40.9	59.8
Elandskloof Dam	11.0	26.5	25.3	54.4
Garden Route Dam	10.0	46.9	48.4	65.9
Haarlem Dam	4.7	10.2	10.6	58.5
Kwaggaskloof Dam	169.5	21.4	17.2	37.4
Steenbras Dam	33.9	81.8	71.0	86.4
Theewaterskloof Dam	479.3	20.9	20.3	42.6
Voelvlei Dam	158.6	21.9	21.3	44.9
Total	**1015.7**	**34.4**	**32.8**	**57.3**

What is our current water situation?

Water Availability

- "In most areas in of South Africa evapotranspiration is higher than the rainfall received" Winter, 2010

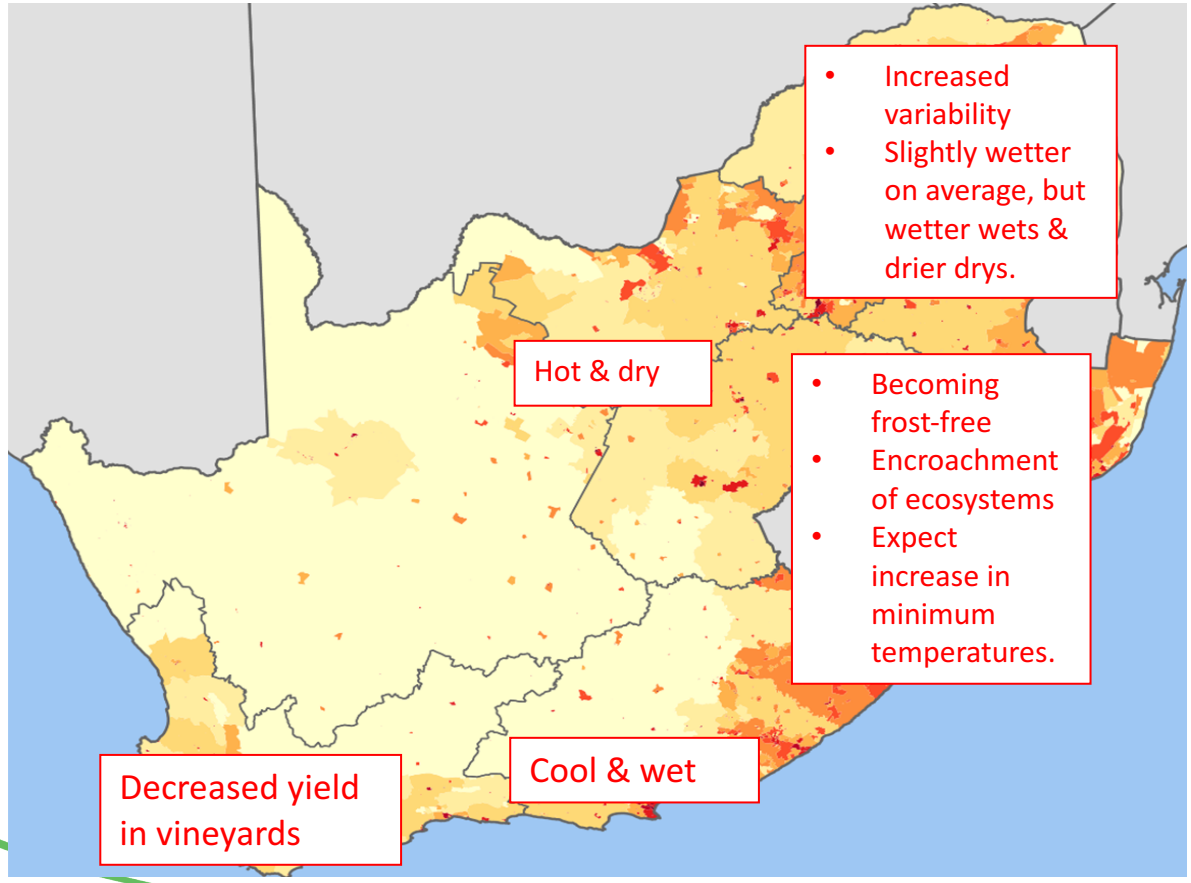
- Annual evapotranspiration ranges from 1100mm – 4000mm

- Conversion ratios of rain available as surface water: stream flow into rivers
  - Canada: 65
  - Australia: 9.8
  - South Africa: 8.6

World Bank Group, 2015

The impact of Climate Change

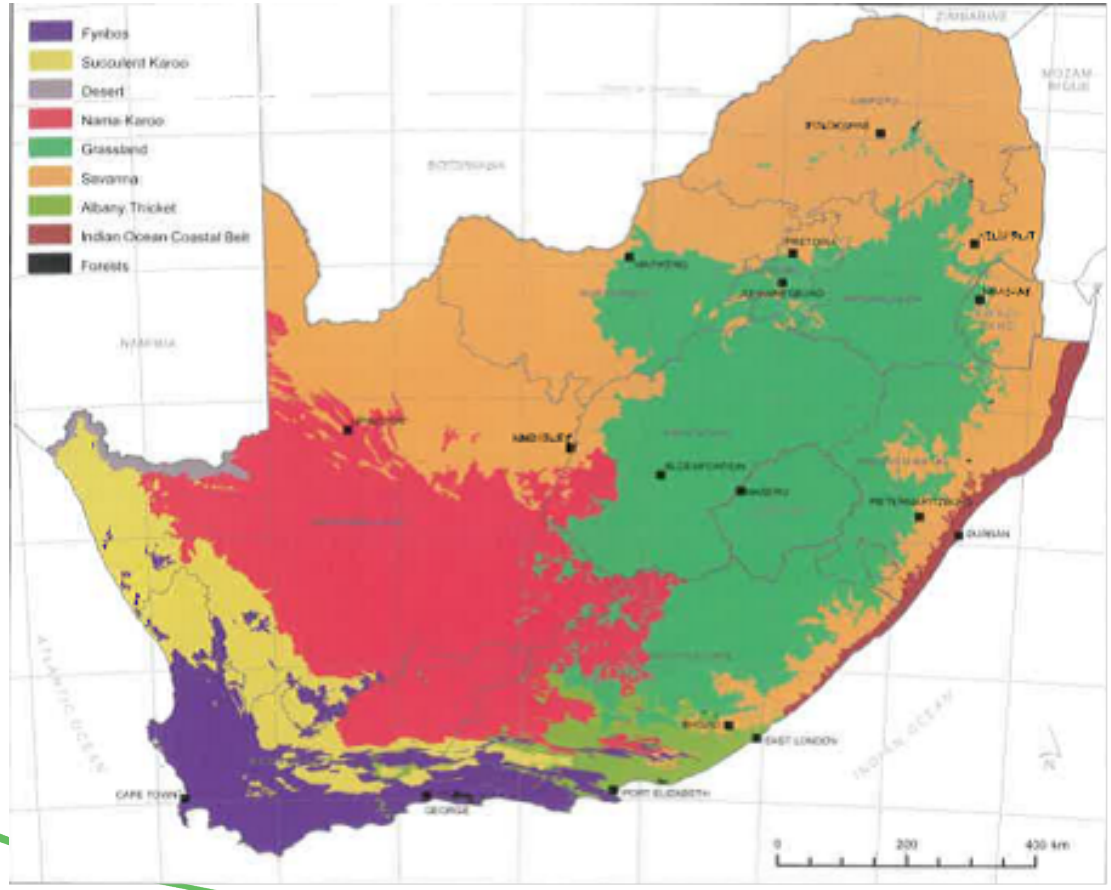
Changes in weather



- Generally hotter and drier conditions in South Africa
- Wetter Wets and Drier Drys
- Rainfall to become more unpredictable and extreme
- Northern Region prediction: 5-10% decrease in rain and increase in evapotranspiration

The impact of Climate Change

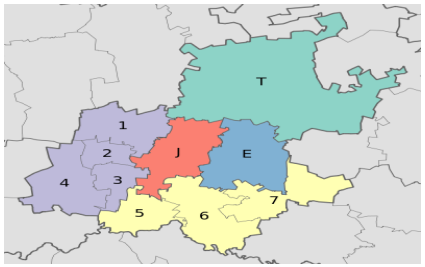
Changes in plants



- Evidence that natural biomes are changing, “some are expanding while others are retracting” Stevens *et al*, 2015
- Changes in temperature impact where agricultural crops are grown
- Impact on ornamental plants?
- Impact on biodiversity

Water restrictions

The status quo



J	City of Johannesburg Metropolitan Municipality
T	City of Tshwane Metropolitan Municipality
E	Ekurhuleni Metropolitan Municipality
5–7	Sedibeng District Municipality
1–4	West Rand District Municipality

- Level 4b restrictions implemented in the Cape until further notice
  - No hosing down of paved surfaces with municipal drinking water.
  - No irrigation/watering with municipal drinking water allowed.
  - No washing of vehicles, trailers, caravans or boats with municipal drinking water allowed. They must be washed with non-drinking water or cleaned with waterless products or dry-steam cleaning processes.
  - Private swimming pools may not be topped up or filled with municipal drinking water.
  - Use of portable play pools prohibited.
  - Water features may not use municipal drinking water.
  - Cut your water use to less than 87 litres, per person, per day.
- Restrictions in Gauteng lifted
  - Recommendations made at municipal level regarding watering times etc.

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Implications for the Green Industry

How to adapt to a changing climate

- The changing climate and limited water availability influences:
  - how we landscape
  - what we grow
  - how we grow

- You are the industry trend setters
- How do you teach this to your customers?

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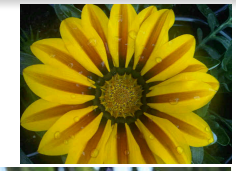
Implications for the Green Industry

Water Wise principles

- Do you practice what you preach?
  - Mulching: Do you push these sales? Cross merchandising?
  - Zoning: Do you encourage plant grouping based on water needs?
  - Irrigation: Is it changed according to season?
- How do you water your plants?
  - Do you train your plant roots for deep less frequent watering?
  - Are you teaching this to your customer?
- Do you explain the impacts of fertilisers to clients?
- Do you read you water meters in the landscape?
- Do you encourage local indigenous plants, adapted to local climate that will require no additional water?

Implications for the Green Industry

Water Wise principles



- What is a Water Wise Plant?
  - Planted in the right zone
  - Watered based on its watering needs
  - Maintained according to irrigation design

High zone	Medium zone	Low zone	No watering
Summer: 25mm/week *Spring/Autumn:* 15mm/week *Winter:* 12mm/week	*Summer:* 15mm/week *Spring/Autumn:* 12mm/week *Winter:* 7mm/week	*Summer*: 12mm/week *Spring/Autumn:* 7mm/week *Winter:* 12mm every second week (including lawns but not at all if dormant)	No watering required unless in extreme cases
Receives over 900 mm of annual rainfall. Water once a week in general, and twice or three times a week during very hot dry spells	Receives between 500-750 mm rainfall a year. If plants show signs of distress in dry times, water. Water once a month in winter.	Receives annual rainfall of between 300-500 mm rainfall. Water every 6-8 weeks	Receives less than 300mm rainfall per annum. Water only in severe cases.

Implications for the Green Industry

Water Wise principles

- Maintenance and management
  - Amount of water to apply
  - Amount of fertiliser to apply
  - Herbicides and pesticides applied correctly (biodiversity)
  - Irrigation checked for leaks
  - Spraying in correct areas
  - Timing of watering

Concluding comments

- ❑ Irrespective of the nature of your business
- ❑ Not “business as usual” with water
- ❑ Need to adapt and change
- ❑ Be open to new ideas
- ❑ Educate your customer

Questions?

Please visit our website…

- www.randwater.co.za and click on the Water Wise logo