

STATE OF RIVERS (2019/20) IN SOUTH AFRICA:

The River Ecostatus Monitoring Programme



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA



NATIONAL DEVELOPMENT PLAN
Our Future - make it work

OUTLINE

- Objective
- Legislation
- Background
- Importance and beneficial uses of rivers
- Interpretation of results
- Status of Rivers
 - National perspective and areas of concern
- Conclusions



OBJECTIVE

- To determine the ecological condition of South Africa's rivers:
 - Based mostly on the rapid assessment of riverine macroinvertebrates
- Present the findings of the River EcoStatus Monitoring undertaken during the 2019-20 Hydrological year
- Compare conditions to the results from previous assessments
- Compare conditions to Resource Quality Objectives (RQOs) where applicable



LEGISLATION

- The National Water Act (Act 36 of 1998) requires regulators to establish a sustainable equitable balance between the use and protection of water resources, which includes monitoring
- As the custodian of water resources, through Chapter 14 of the National Water Act, the Department of Water and Sanitation is mandated to establish monitoring systems
- As monitoring, recording, assessing and disseminating information on water resources is critically important for achieving the objectives of the National Water Act.



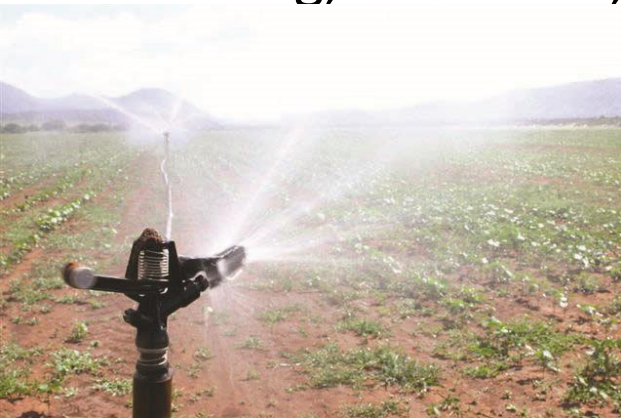
BACKGROUND

- The South African River Health Programme (RHP) was initiated in 1994
- It has since evolved into the River Ecostatus Monitoring Programme (REMP), to better align with the National Water Act
- To address the need for more detailed information on the ecological condition of SA's river ecosystems
- Measures, assesses, detects, and reports on spatial and seasonal trends
- Supporting the management of river systems
- Contributing to early detection of emerging problems.



IMPORTANCE AND BENEFICIAL USES OF RIVERS

- Healthy river systems support a diversity of plants and animals
- Provide goods and services beneficial to humans
 - For example:
 - Flood attenuation,
 - Fishing
 - Recreational Activities (boating and picnics)
 - Cultural/Spiritual Practices
 - Provide material for mats and medicine
- Water from healthy resources cuts treatment costs for drinking, mining, industries, and agriculture



INTERPRETATION OF RESULTS

- Based on % change from natural state
- Translated into categories (natural (A) to critically modified (F))

ECOLOGICAL CATEGORY	GENERIC DESCRIPTION OF ECOLOGICAL CONDITIONS
A	<u>Natural.</u> Close to natural or close to predevelopment conditions
B	<u>Largely natural.</u> Relatively little human impact. Some human-related disturbance but ecosystems essentially in good state
C	<u>Moderately modified.</u> Ecosystems in a fair state. Their ability to recover following disturbances has been maintained.
D	<u>Largely modified.</u> The resilience of the system to sustain biota and goods and services is under threat.
E	<u>Seriously modified</u> The resilience of the system is severely compromised. Only resilient biota may survive
F	<u>Critically / Extremely modified</u> Modifications have reached a critical level and the system has been modified completely

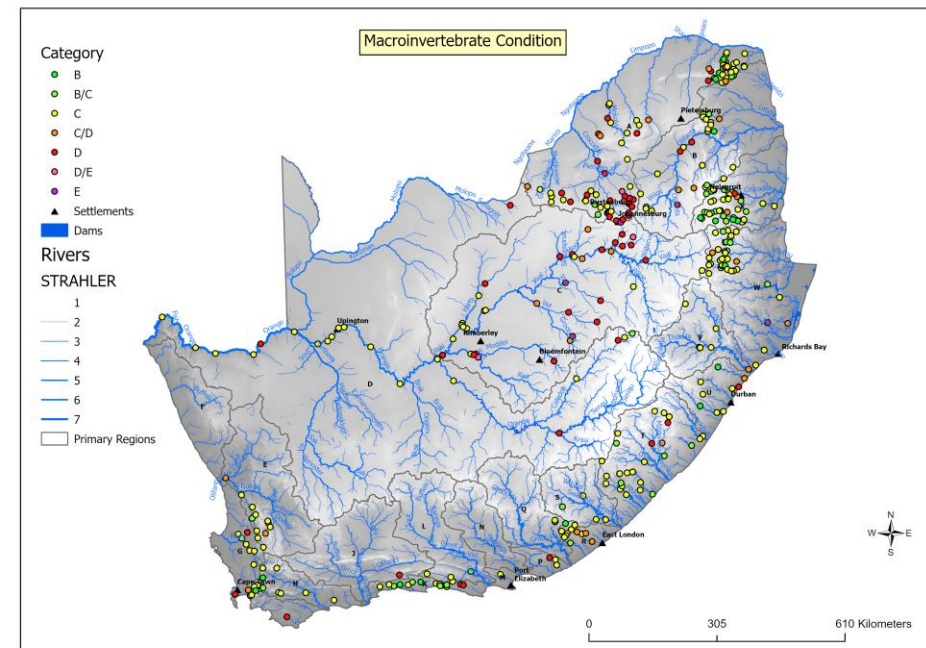
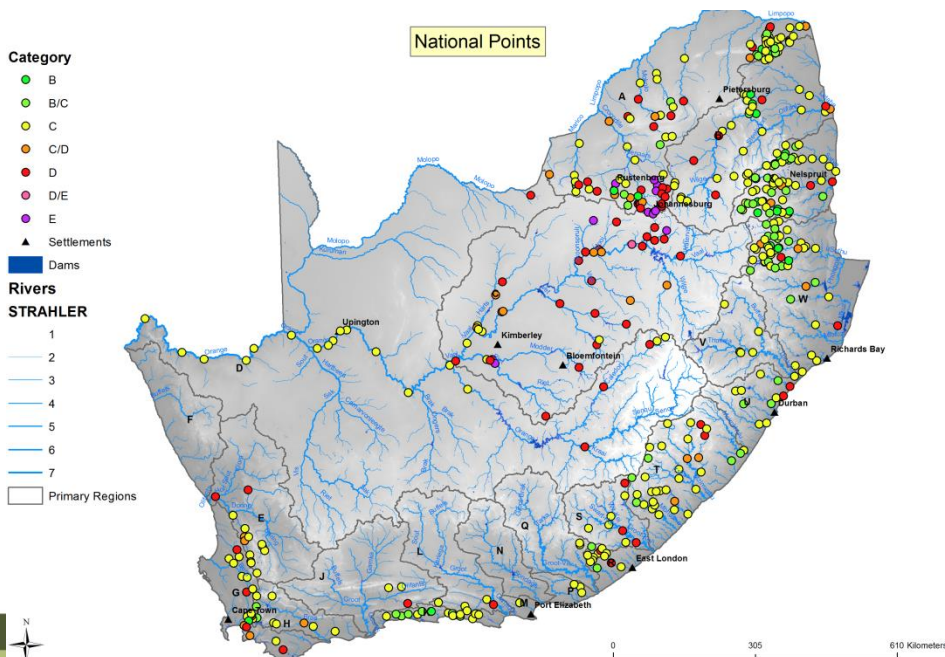
STATE OF RIVERS: NATIONAL PERSPECTIVE

2018-2019

- 453 sites
 - 451 Macroinvertebrates
 - 77 Riparian Vegetation
 - 68 Fish
 - 58 Habitat Integrity
 - 31 Fluvial Geomorphology

2019-2020

- 370 sites
 - 361 Macroinvertebrates
 - 42 Riparian Vegetation
 - 12 Fish
 - 51 Habitat Integrity
 - 13 Fluvial Geomorphology

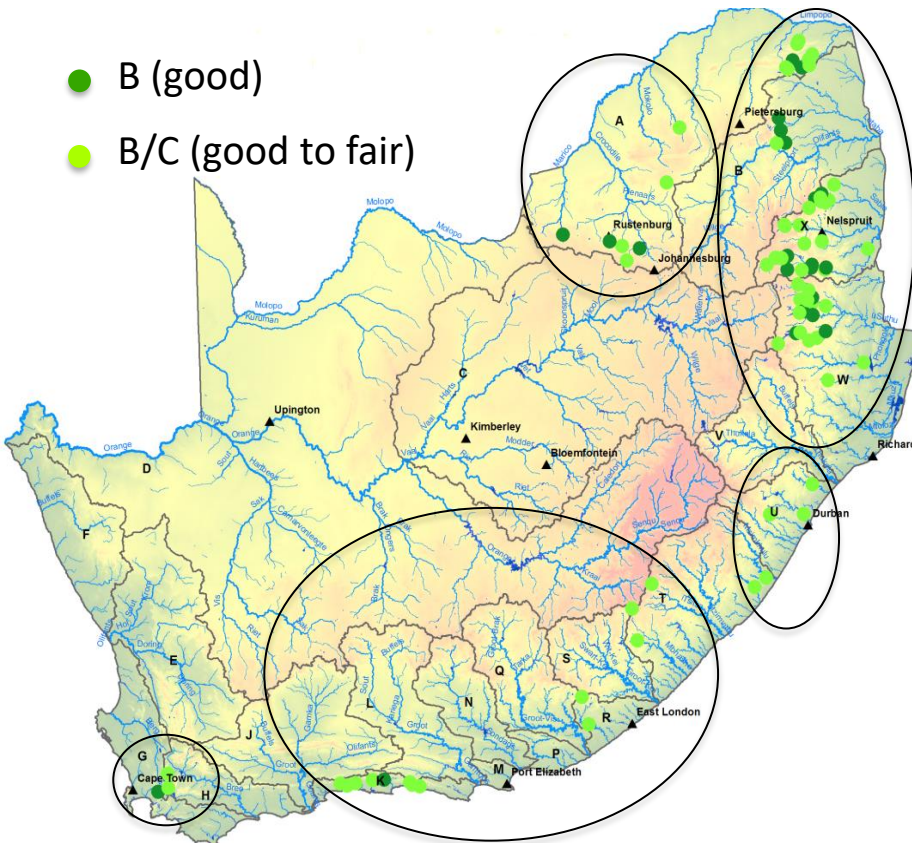


STATUS OF RIVERS: NATIONAL PERSPECTIVE

2018-2019

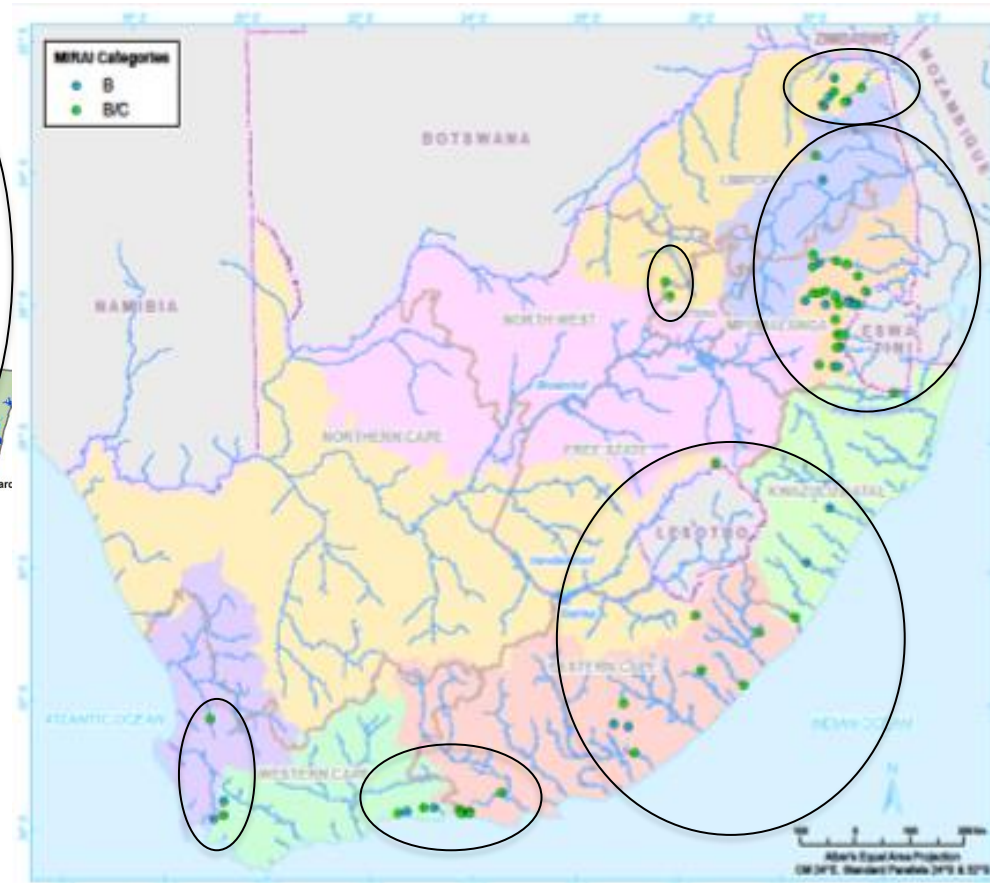
- 18% in a largely natural to good condition (B – B/C)
 - Usually in upper reaches of catchments

- B (good)
- B/C (good to fair)



2019-2020

- 19% in a largely natural to good condition (B – B/C)
 - Usually in upper reaches of catchments



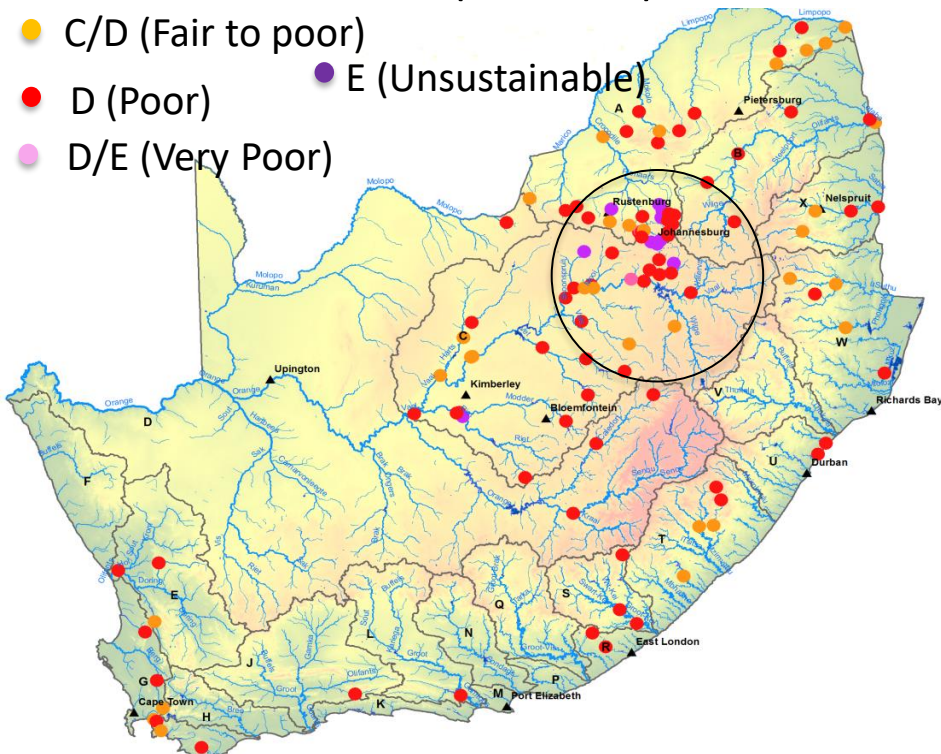
STATUS OF RIVERS: NATIONAL PERSPECTIVE

2018-2019

- 7% are in a fair to poor condition (C/D)
- 16% need to be closely monitored and impacts managed as they are nearing unsustainable conditions (D)
- 3% of the sites are in an unsustainable (D/E to E) condition

2019-2020

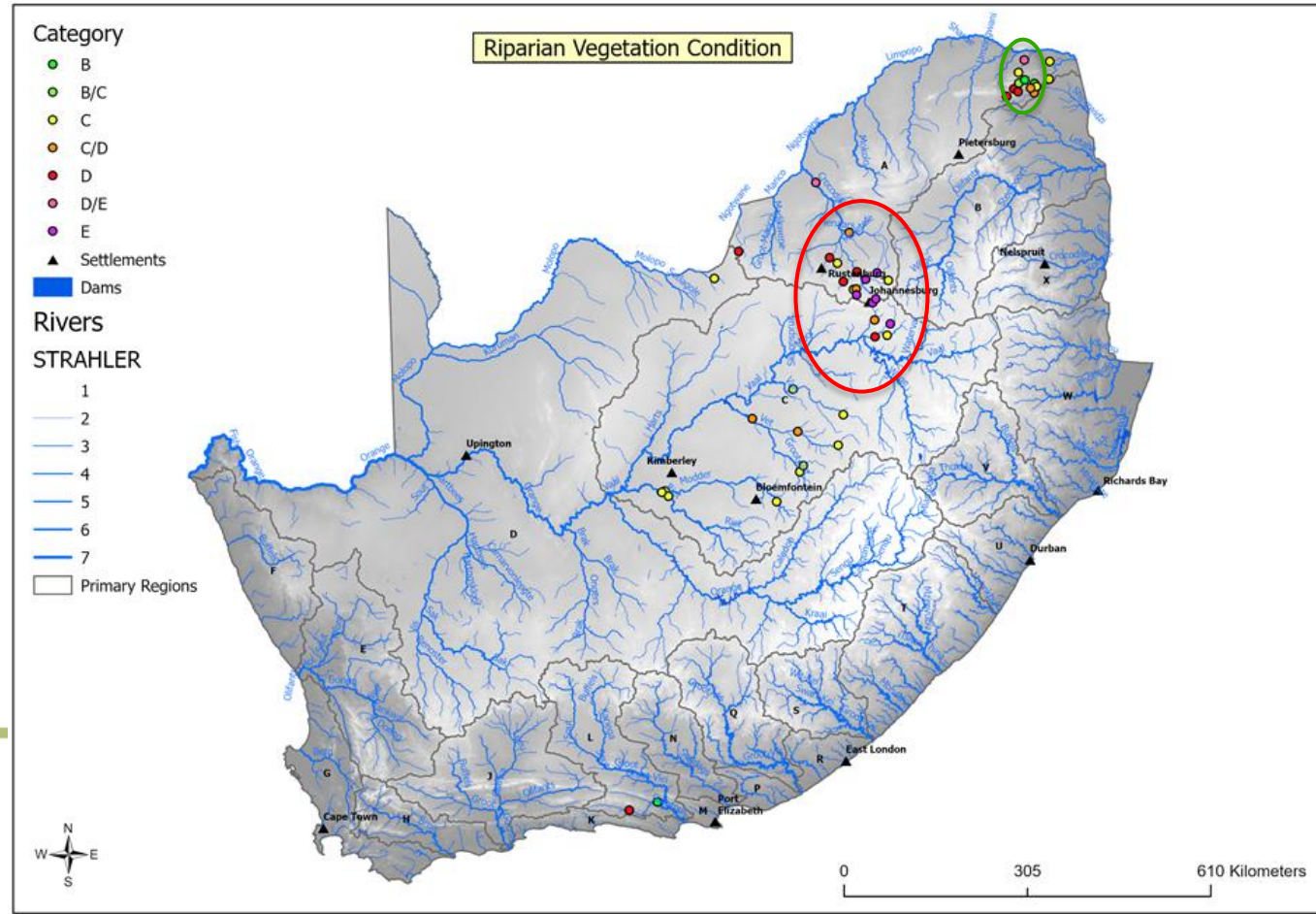
- 3% are in a fair to poor condition (C/D)
- 2% need to be closely monitored and impacts managed as they are nearing unsustainable conditions (D)
- 2% of the sites are in an unsustainable (D/E to E) condition



INDICATORS MONITORED: RIPARIAN VEGETATION

42 SITES

- Relatively good (B – B/C): 10% Mostly in the Luvuvhu catchment
- Fair (C): 33 %
- Relatively poor (C/D- D/E):43%
- Unsustainable (E): 14%



WATER IS LIFE - SANITATION IS DIGNITY



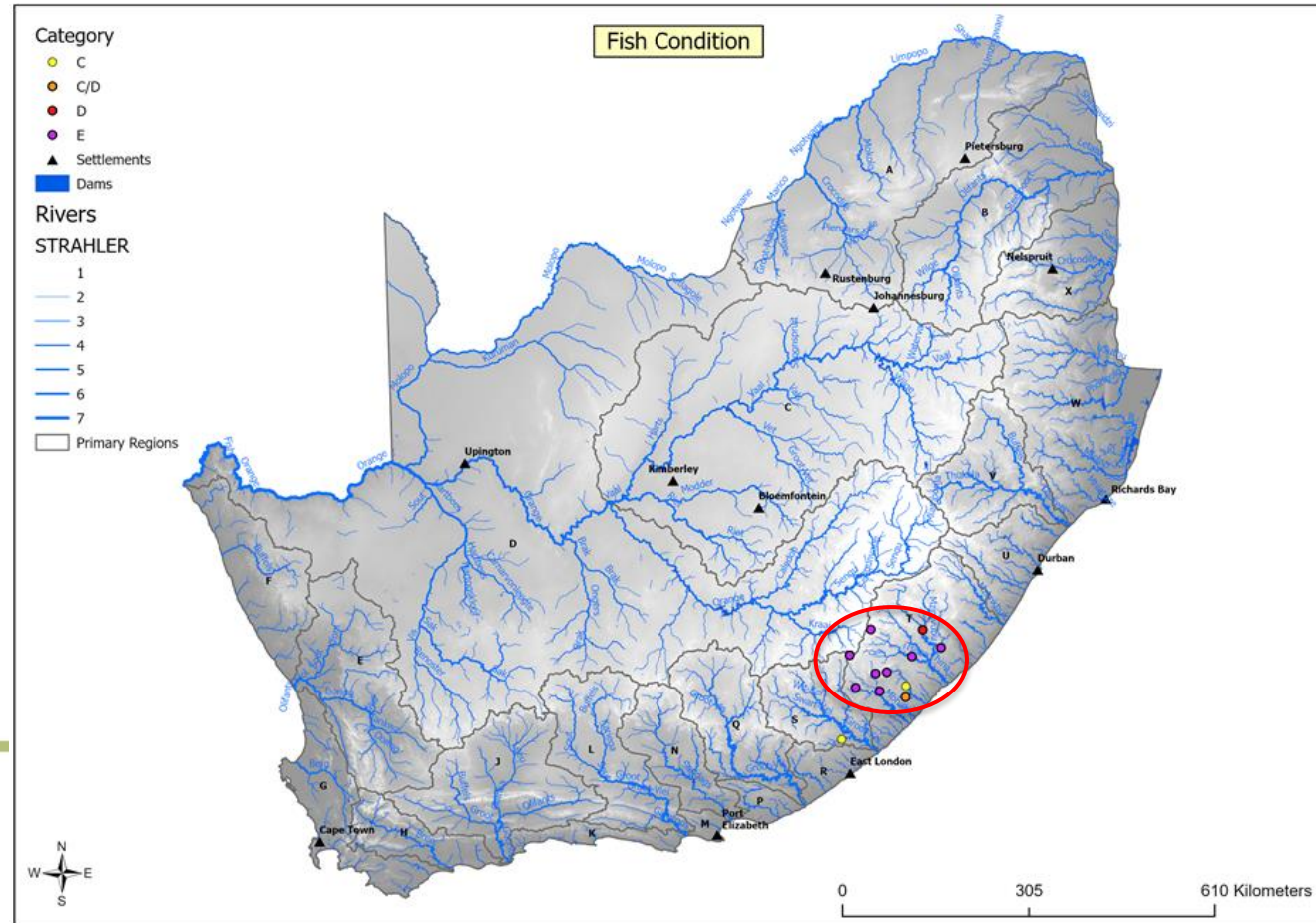
water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

INDICATORS MONITORED: FISH

12 SITES: Mzimvubu –Tsitsikamma Water Management Areas

- Relatively good (A – B/C): 0%
- Fair (C): 17 %
- Relatively Poor (C/D- D): 17 %
- Unsustainable (E): 67% (Mbhashe & Mzimvubu)



WATER IS LIFE - SANITATION IS DIGNITY



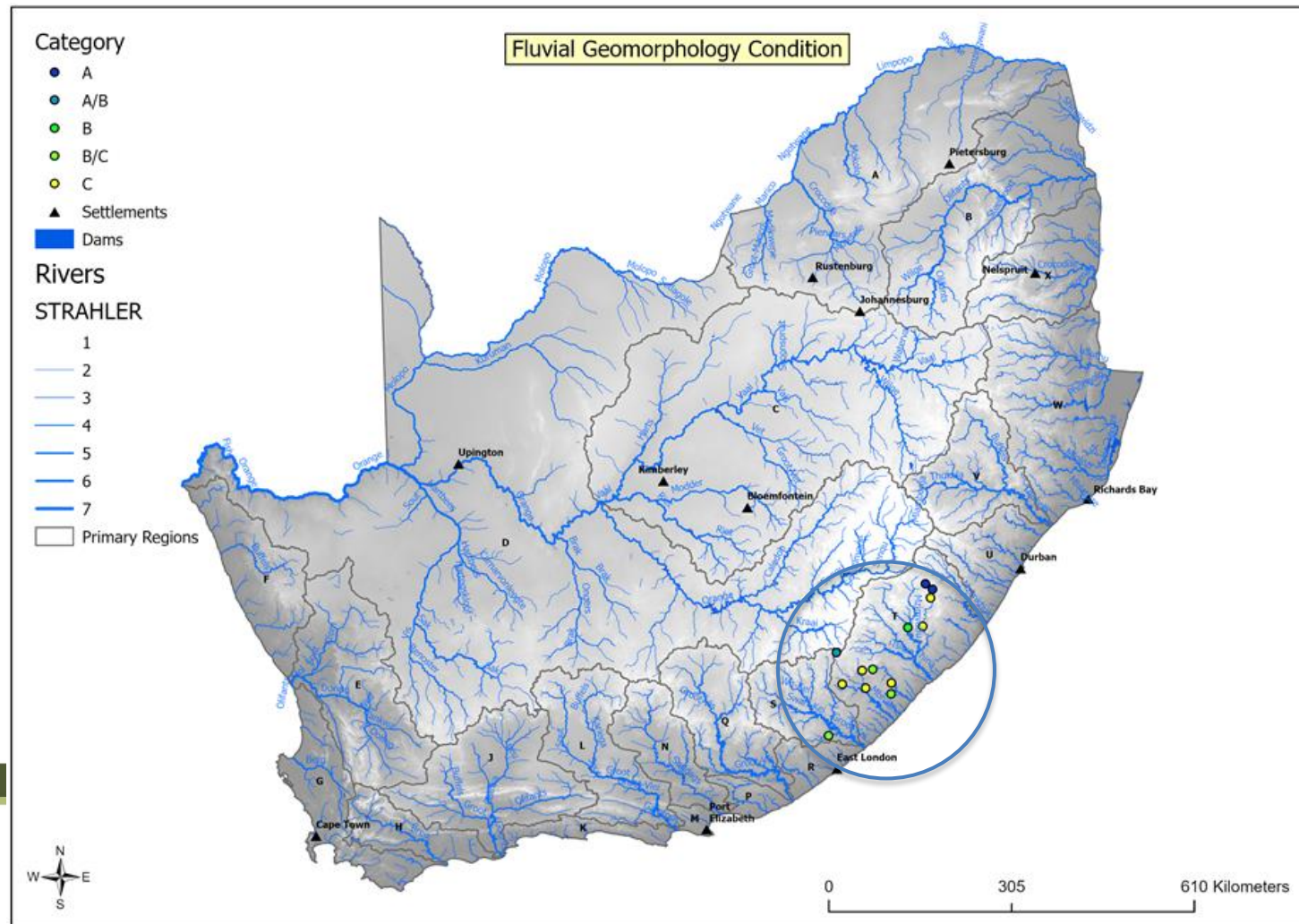
water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

INDICATORS MONITORED: GEOMORPHOLOGY

13 Sites: Mzimvubu-Tsitsikamma Water Management Area

- Relatively good (A – B/C): 54%
- Fair (C): 46%
- Relatively Poor(C/D-D): 0%



WATER IS LIFE - SANITATION IS DIGNITY



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

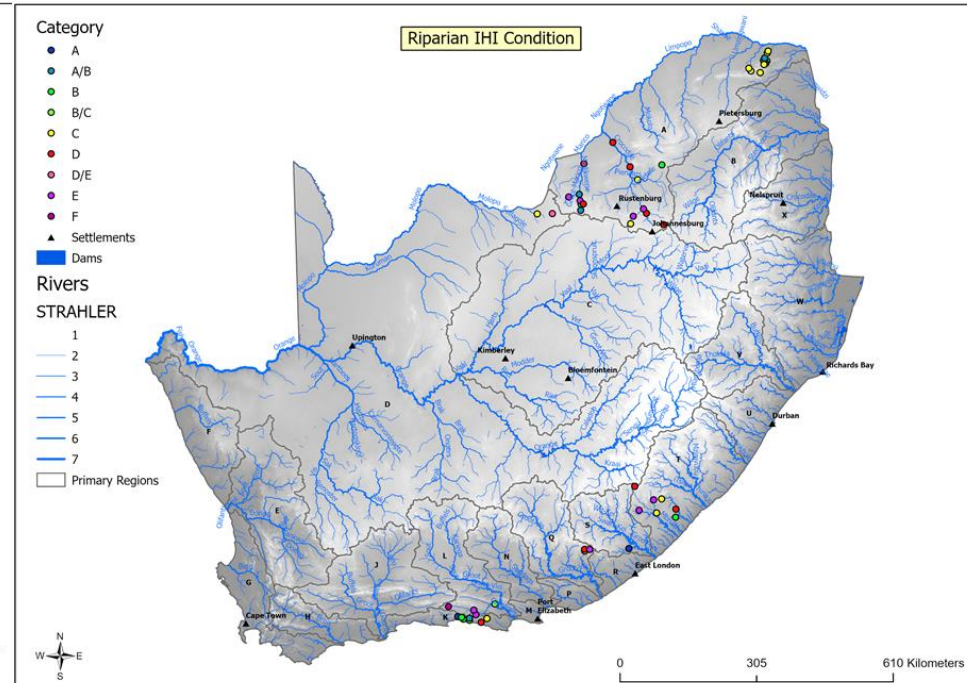
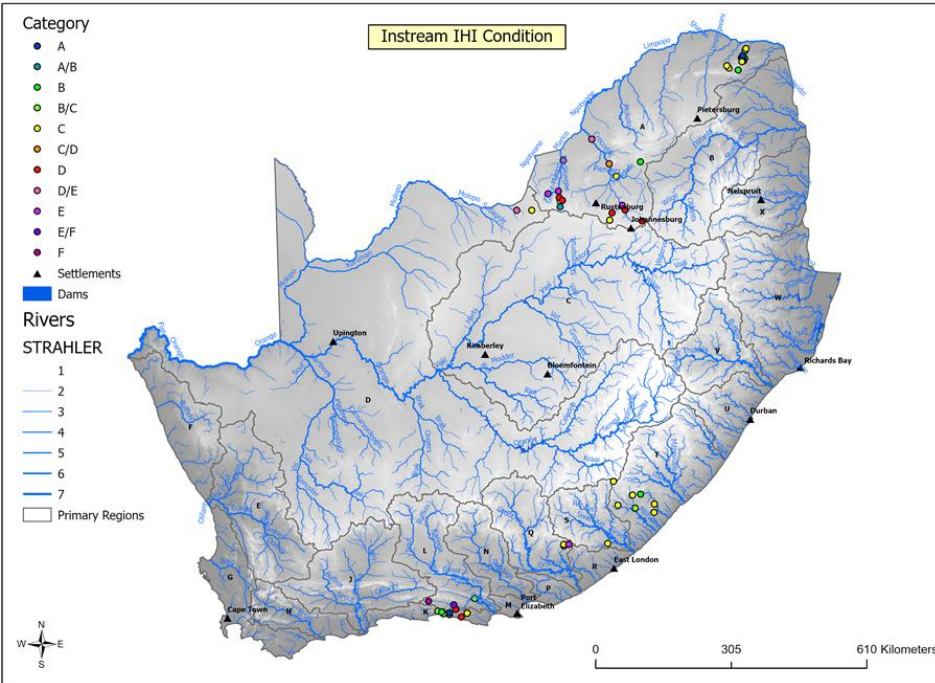
INDICATORS MONITORED: INDEX OF HABITAT INTEGRITY

Instream: 51 Sites

- Relatively good (A – B/C):33%
- Fair (C):33 %
- Relatively poor (C/D – D/E):22%
- Unsustainable (E-F):12%

Riparian: 51 Sites

- Relatively good (AB – B/C):31%
- Fair (C):27%
- Relatively poor (C/D-D/E):22%
- Unsustainable (E-F):20%



WATER IS LIFE - SANITATION IS DIGNITY



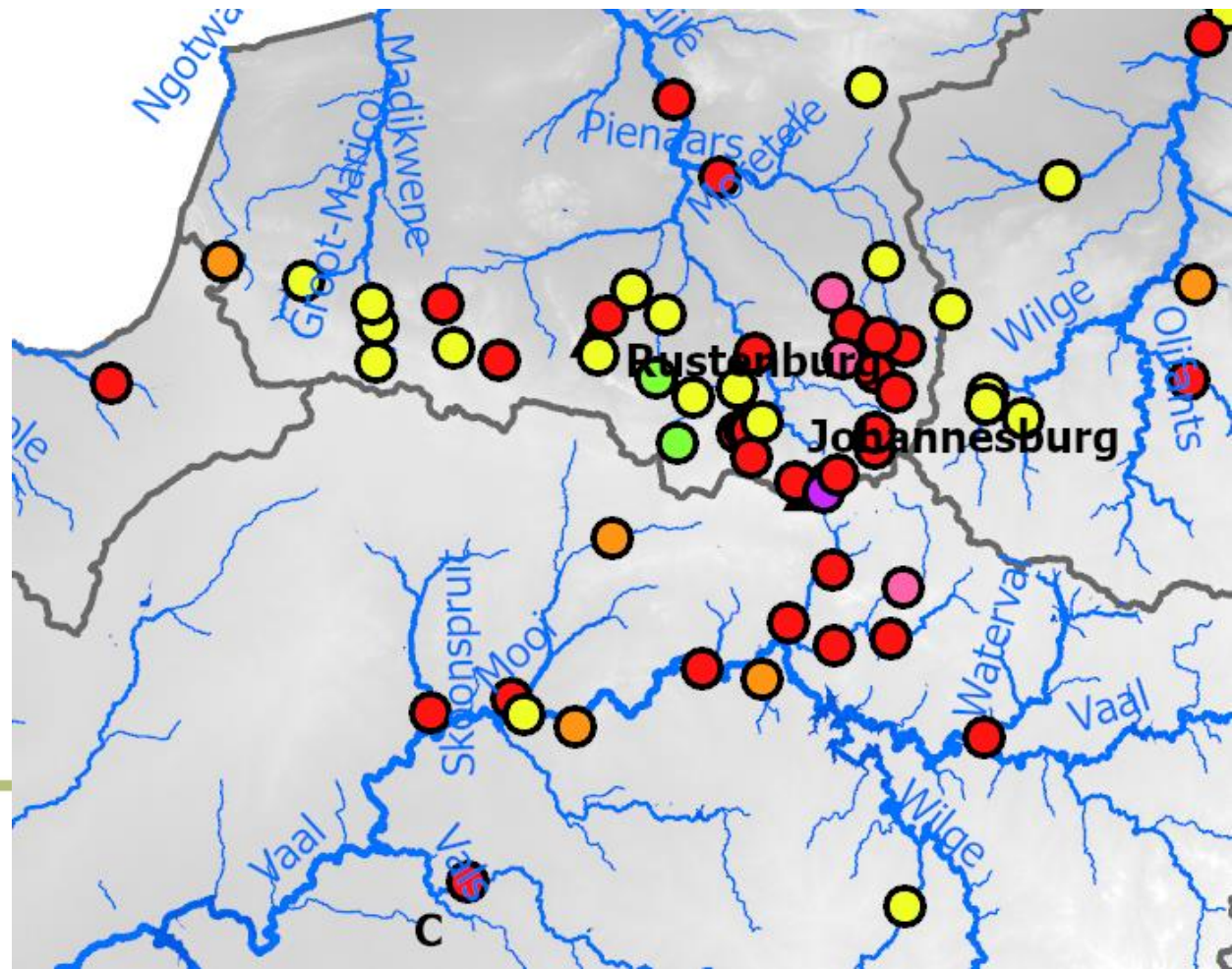
water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA



AREAS OF CONCERN

- Upper Crocodile West, Vaal and Olifants catchments in generally poor condition
- Largely due to failing waste water treatment works, intensified by informal settlements on river banks, solid waste dumping and industries



WATER IS LIFE - SANITATION IS DIGNITY

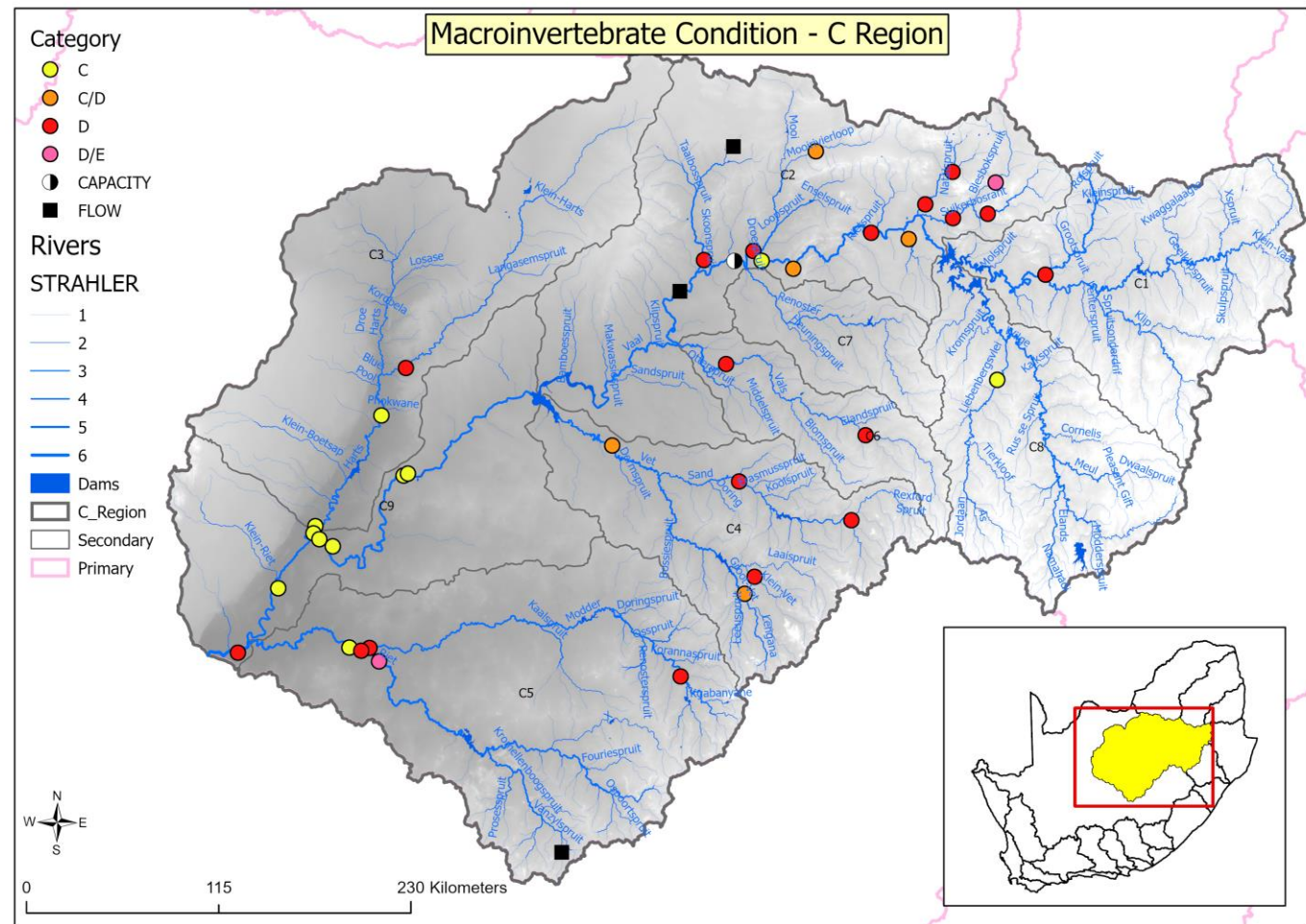


water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

AREAS OF CONCERN

- The Vaal River system has no sites in a good to natural condition
- 18 sites are nearing unsustainable conditions (D category)
- 2 sites are unsustainable (D/E to E)
- The main impacts are related to mining, industry and poor or non-functioning WWTW



WATER IS LIFE - SANITATION IS DIGNITY



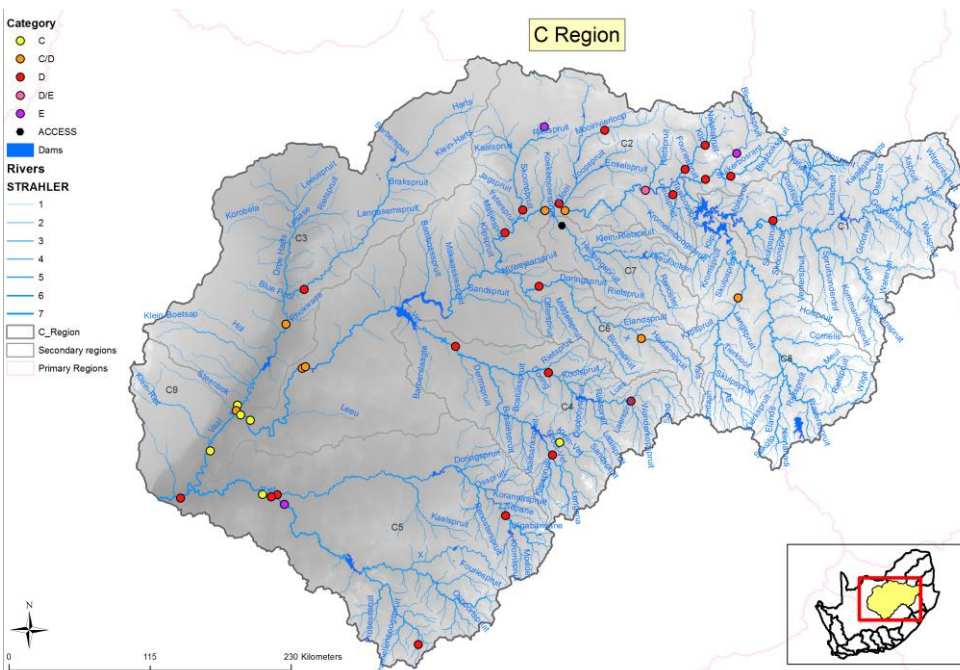
water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

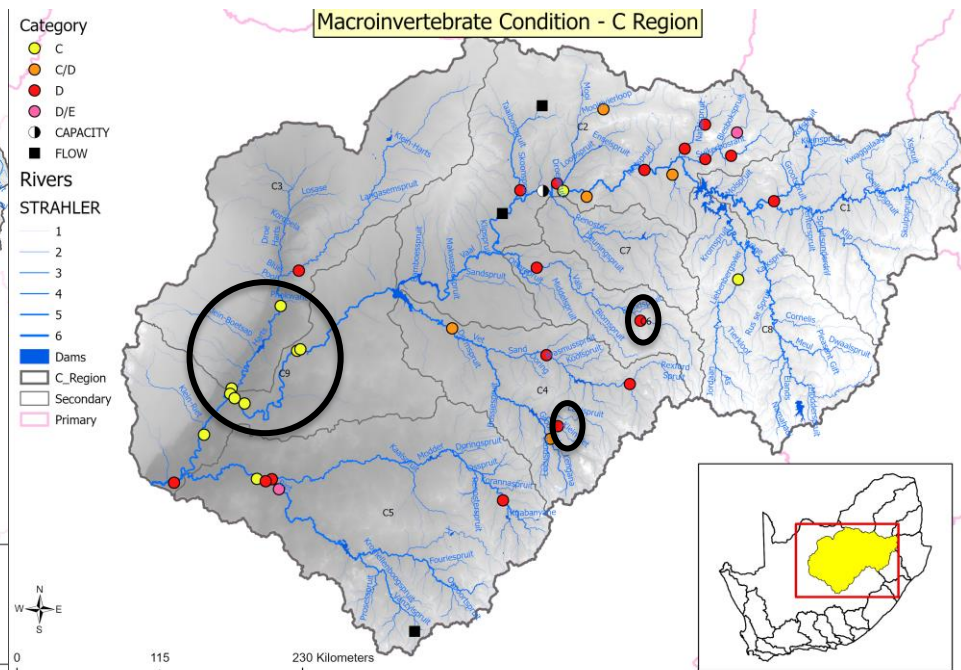
HIGHLIGHTS

- The Vaal River drainage region showed the most improvement
- 13 sites are in a better condition than 2018/19
- 2 sites are in a worse condition than 2018/19 (Klein Vet, Vals)
- 20 sites remained in the same condition

2018/19



2019/20



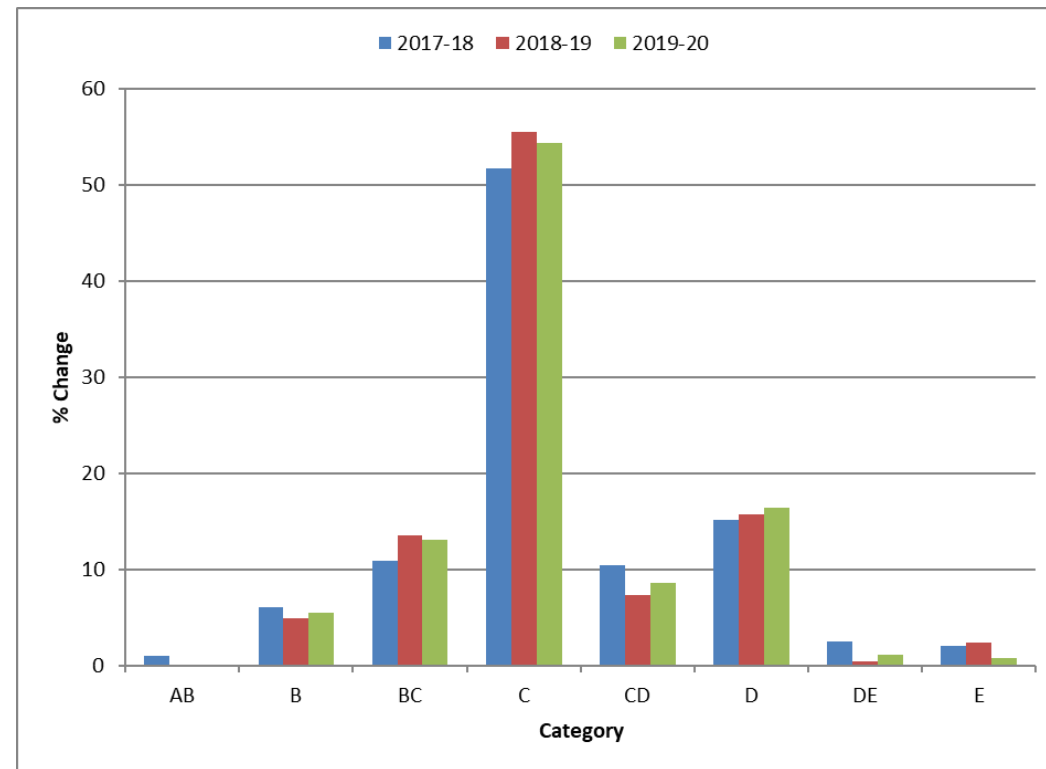
WATER IS LIFE - SANITATION IS DIGNITY

Compliance to RQOs

- Based only on Macroinvertebrate results
- RQOs measured at 111 sites in 11 primary drainage regions
- 58% comply
- 42% do not comply
- Lowest compliance (33%) in drainage region K
- 100% compliance in drainage region J (1 site)
- >70% compliance drainage regions H & X

SUMMARY OF RESULTS

- Most sites remain in C category
- No sites in A (natural) category
- 2019/20: no sites in A/B (natural to good) category
- Worst sites in E
- 2017/18:
 - Best sites: upper Crocodile East
 - Worst sites: Jukskei
- 2018/19:
 - Best sites: Usuthu catchment
 - Worst sites: Jukskei
- 2019/20:
 - Best sites: Upper Komati
 - Worst sites: Jukskei



WATER IS LIFE - SANITATION IS DIGNITY



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA



SUMMARY OF RESULTS

- Impacts of natural phenomena have intensified due to climate change, over abstraction
- Other major impacts include:
 - Pollution
 - Modified flows
 - Formal and informal settlements
 - Mining, farming, industries
 - Rural settlements (livestock, laundry, sand mining)
- deterioration of riparian and in-stream habitats
- Resulting in decreased ecological condition

CONCLUSIONS

- Drought
 - Low flows exacerbating effect of pollutants
 - Poorer condition
 - Invertebrates: rapid life cycle
 - Recover quickly once flows return to normal
 - Recolonise via hatching of drought resistant eggs
 - Many have aerial adult phase that can fly in to lay eggs again
 - Fish: slower life cycle
 - Takes longer to recover once flows return to normal
 - Has to recolonise from other areas
- Upper reaches generally in better condition
 - Exception: Crocodile West, Upper Olifants & Upper Vaal Catchments
 - Sources in mining & industrial areas

THANK YOU

RESOURCE QUALITY INFORMATION SYSTEM
ROODEPLAAT
OFF MOLOTO ROAD
PRETORIA

<http://www.dwa.gov.za/iwqs/>



water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA