



Shingwedzi River

**why is it the most polluted
river in the KNP?**

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1) University of Venda, 2) BioAssets

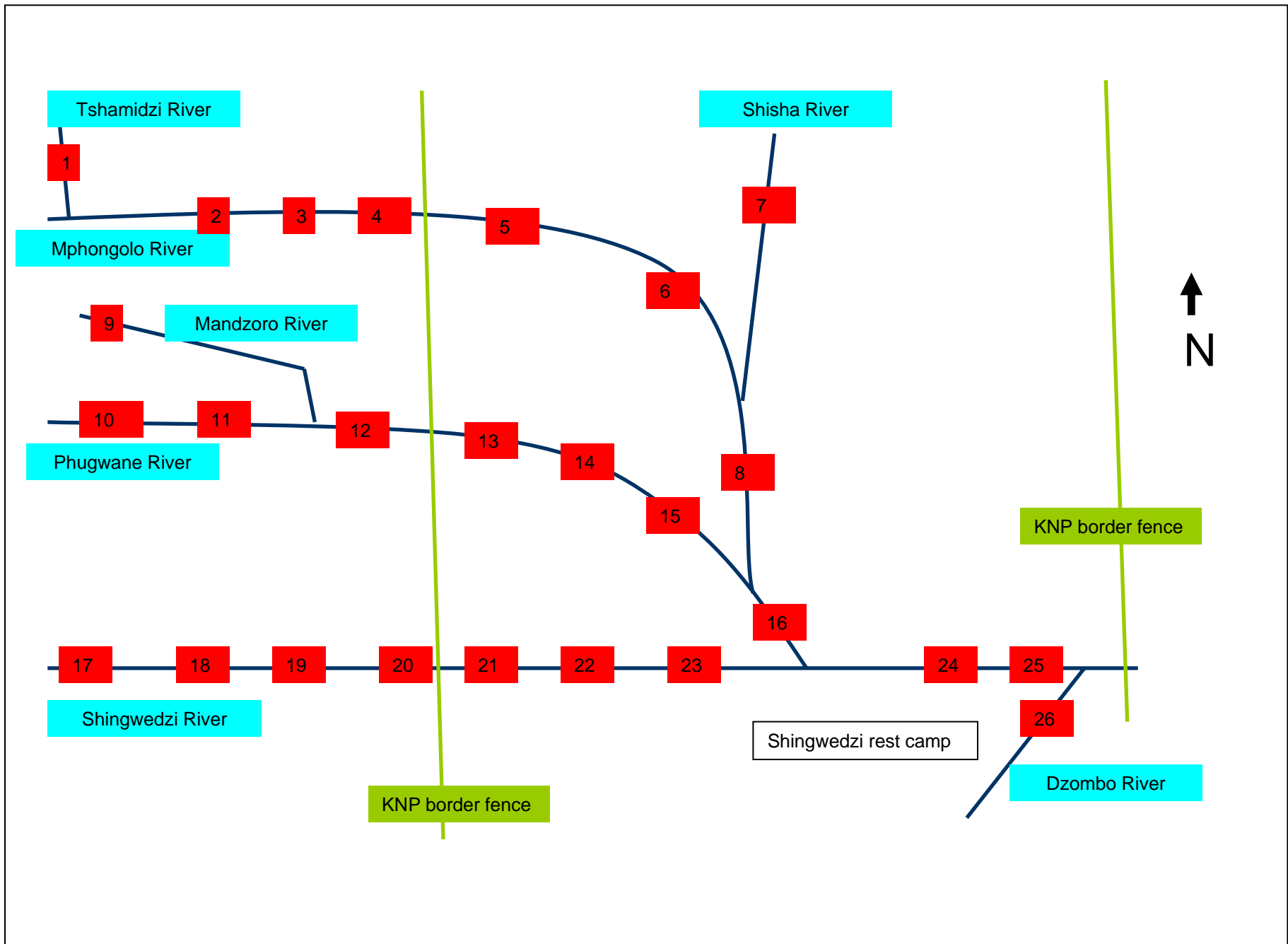
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Introduction

- A three-year project
- Focussed on the Shingwedzi River system
- Included the following rivers:
- Shingwedzi River
 - Mphongolo River
 - Phugwane River
 - Shisha River
 - Dzombo River

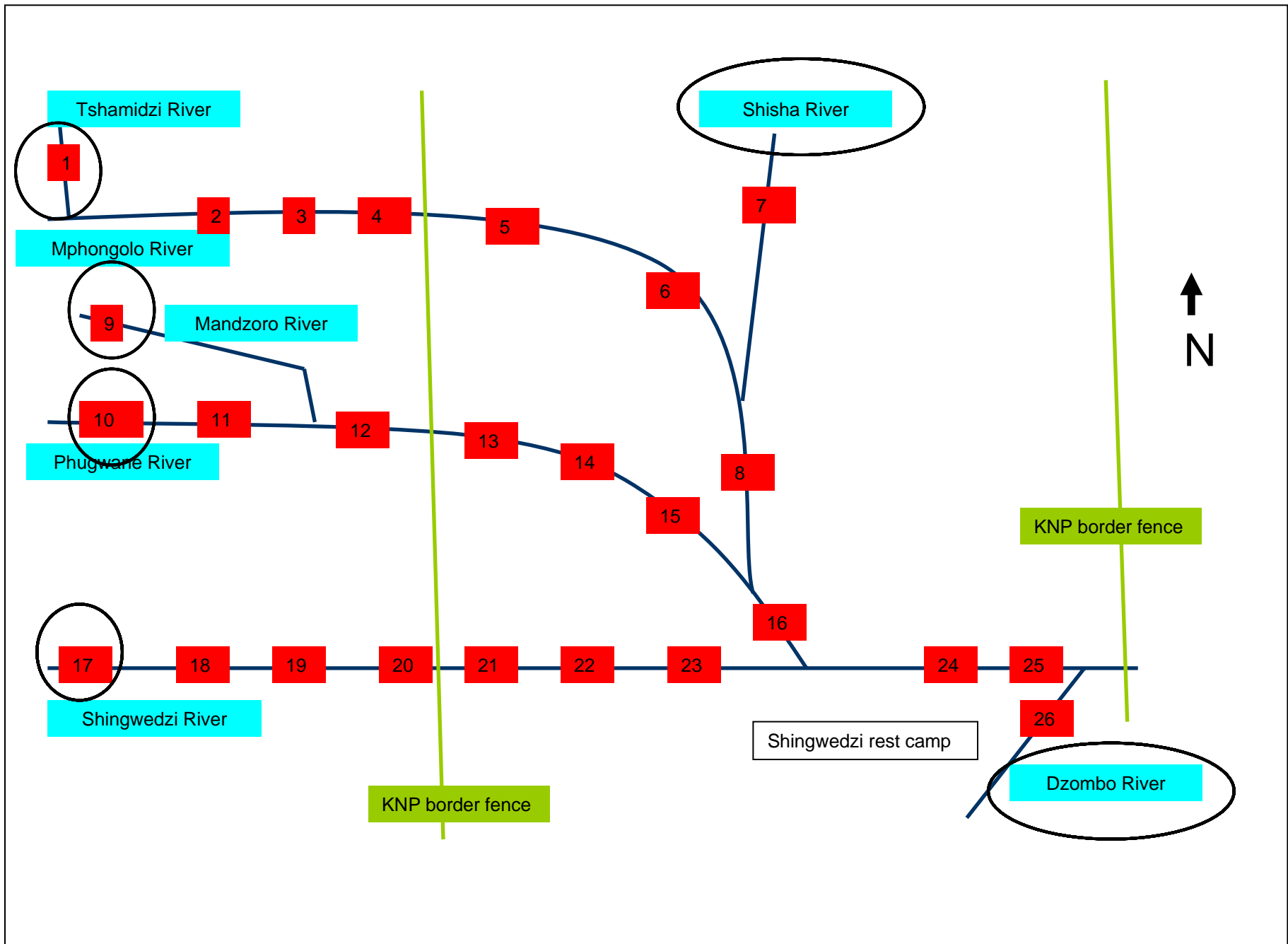




Sites

- 26 in total as indicated
 - 12 outside and 14 inside the KNP
 - Sites 1, 9, 10 and 17 as base values for the system.
- Shisha and Dzombo rivers as “least impacted” – originate almost exclusively within the KNP





Results

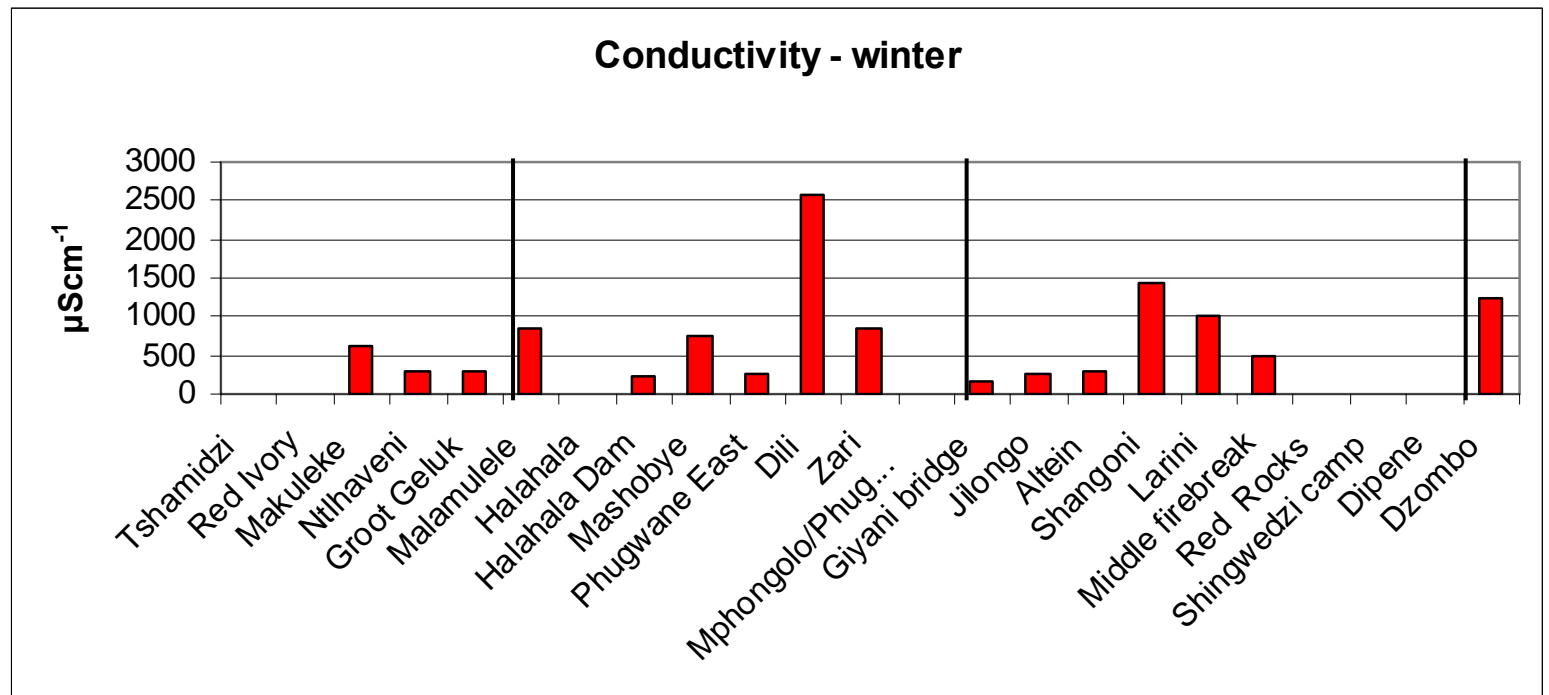
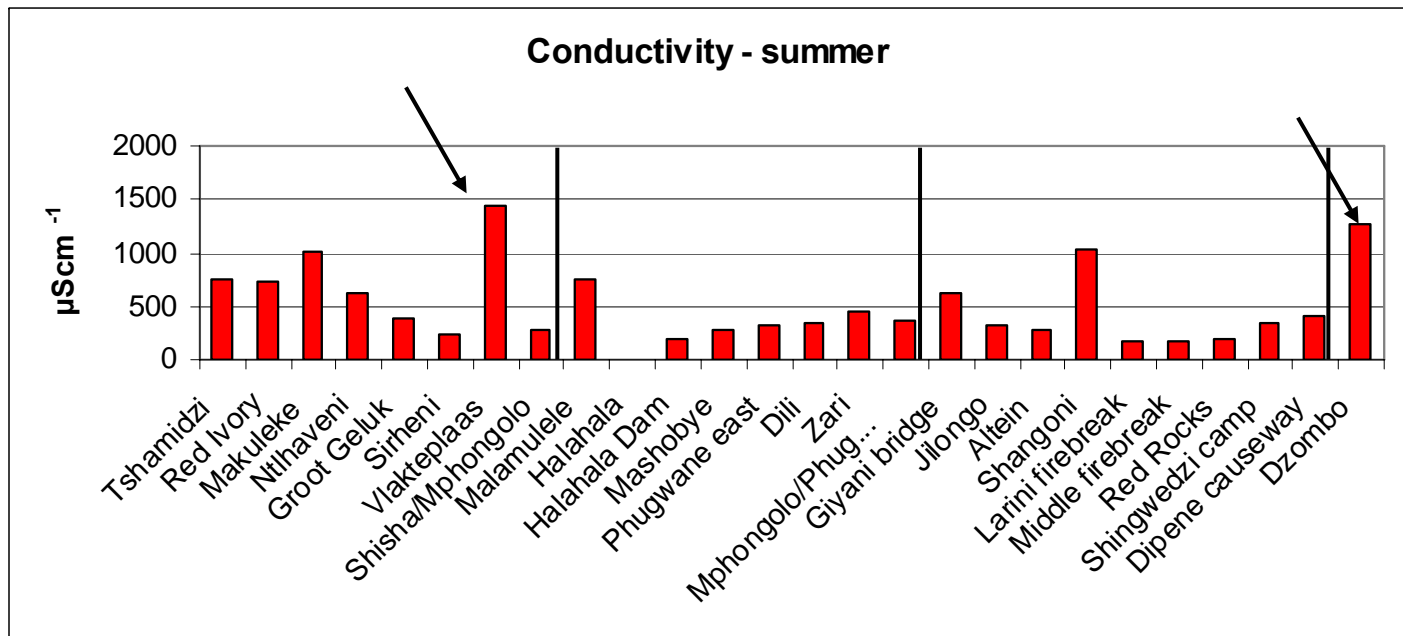
- Only selected sites will be discussed to highlight some problems.
- We will look at the following components:
 - Selected WQ parameters
 - Macro-invertebrates



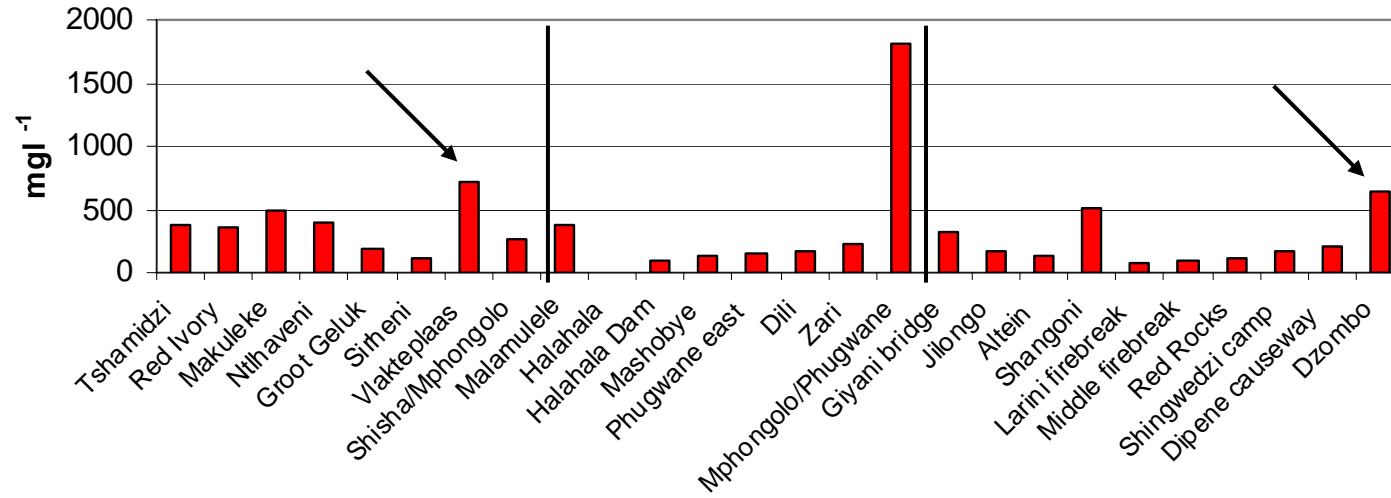
Water quality

- Conductivity, TDS, DO and pH.
- Will highlight some interesting sites.
- Relate WQ to the presence or absence of the macro-invertebrates.

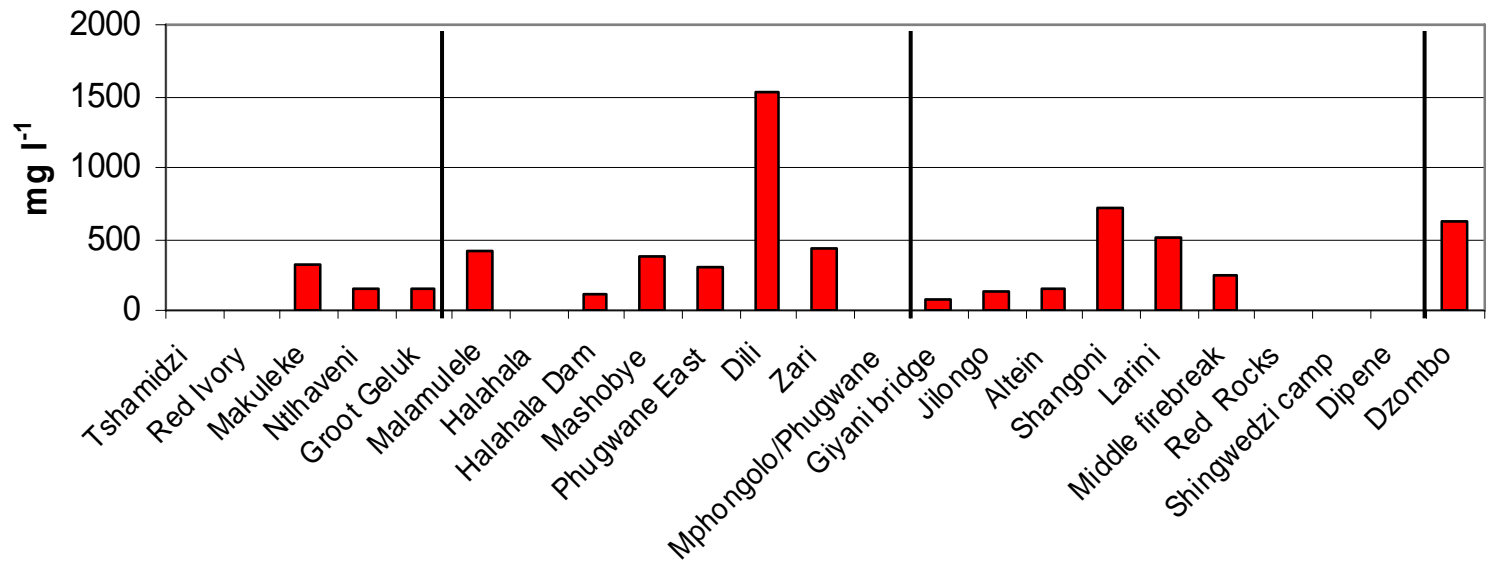




Total dissolved solids - summer



Total dissolved solids - winter



pH and DO

- TPC for pH for the Shingwedzi set at 6.5-8.5.
 - During the winter outside TPC below Giyani – 9.09
→ 8.88.
 - During the summer, only 1 site in the Phugwane outside TPC – 9.13 at Zari inside the KNP.
- DO – no TPC set (80-120%)
 - Of the 26 sites (summer), 14 below 80% (32.6% and 78.6%).
 - During winter, ranged between 25 and 178%.

Sources?

- The Mphongolo River
 - Irrigation – commercial farm with 20 centre pivots
 - Sewerage
 - Solid waste
 - Large impoundment
 - Land use/cattle



Sources?

- The Phugwane River
 - Old mine
 - Sewerage
 - Solid waste
 - Land use



Sources?

- The Shingwedzi River
 - Sewerage
 - Solid waste
 - Abstraction
 - Land use and cattle



Sources?

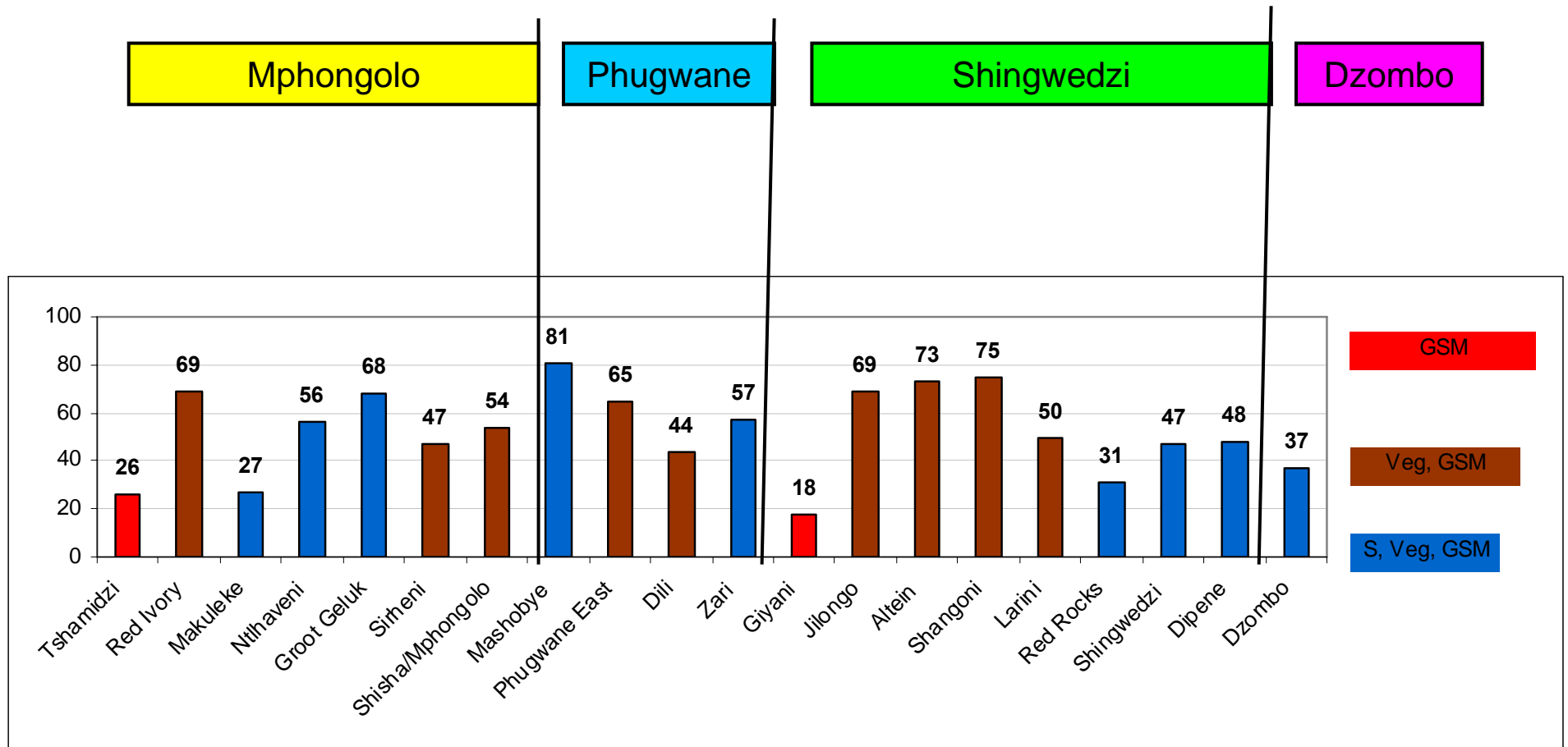
- The Shisha River
- The Dzombo River
 - From outside the KNP
 - Limited from inside – roads and runoff
 - Geological and erosion



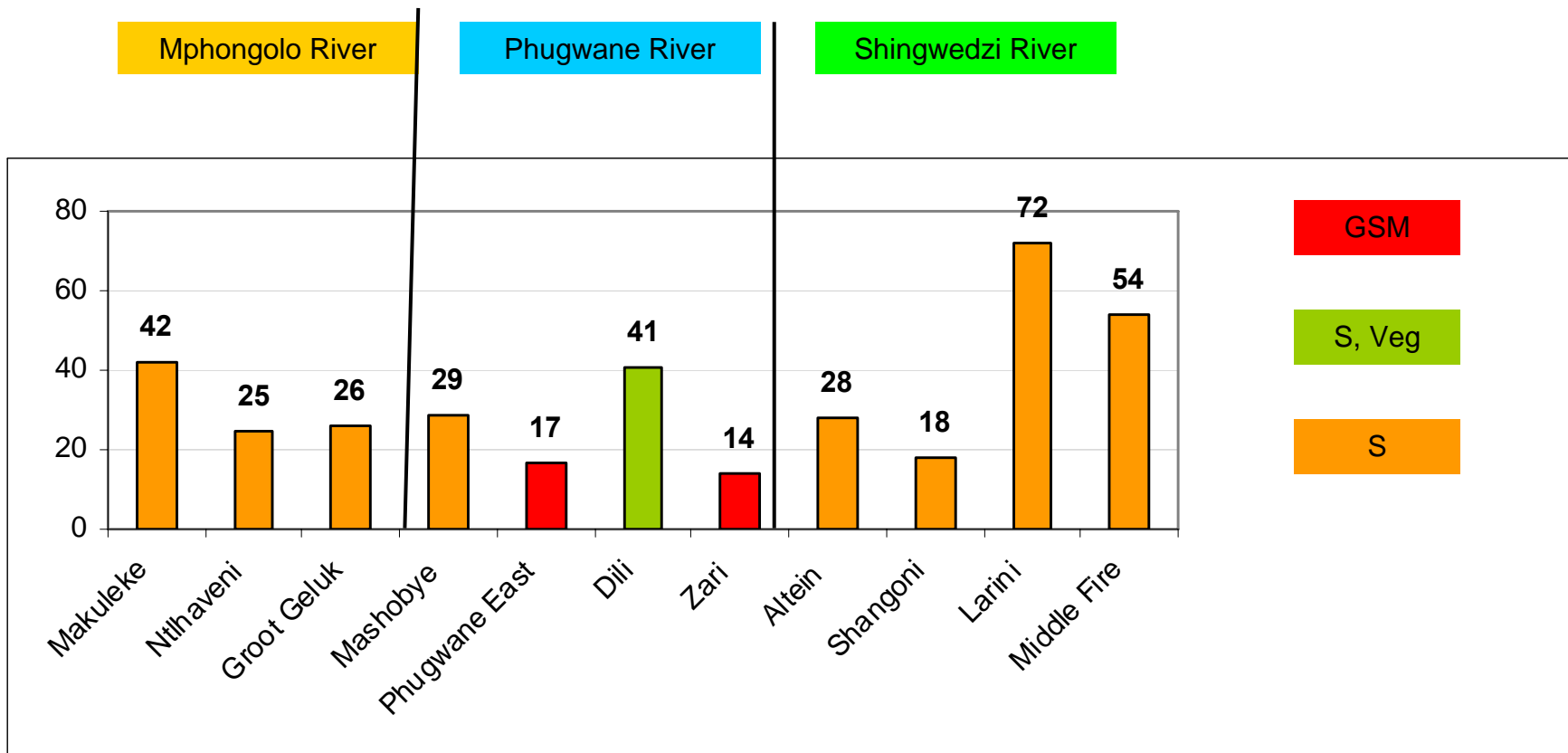
Macro-invertebrates

- Will include summary of summer and winter surveys
- Sites
 - 7 Vlakteplaas (Shisha),
 - 9 Malamulele,
 - 10 Halahala,
 - 11 Halahala and
 - 16 Mphongolo/Phugwane confluence are excluded.

SASS scores (summer) and available biotopes



SASS scores (winter) and available biotopes



Discussion

- River classified as “intermittent seasonal”
(Rossouw et al. 2005)
- Mostly anthropogenic impacts
 - Land use, mines, sewerage, solid waste, riparian zone removal, cattle, abstraction, commercial farm
- Increased erosion
- Some improvement downstream
- Lower flow contributing



Acknowledgements

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- The helicopter pilots of the KNP

