

Berg River Estuary – thresholds of potential concern

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The National Estuarine Monitoring Programme, NESMP, was established in the then Department of Water Affairs during 2008.

Legal standing:

- National Water Act (Act No. 36 of 1998) – monitoring of water resources.
- Integrated Coastal Management Act (Act No. 24 of 2008) – cooperative governance of coastal water resources.

Tiers

1. this poster – **Tier 1** – collection of basic **abiotic data**
2. collection of more detailed abiotic data in line with reserve determination
3. event-driven monitoring to support management response to fish kills, pollution incidents, development pressure...

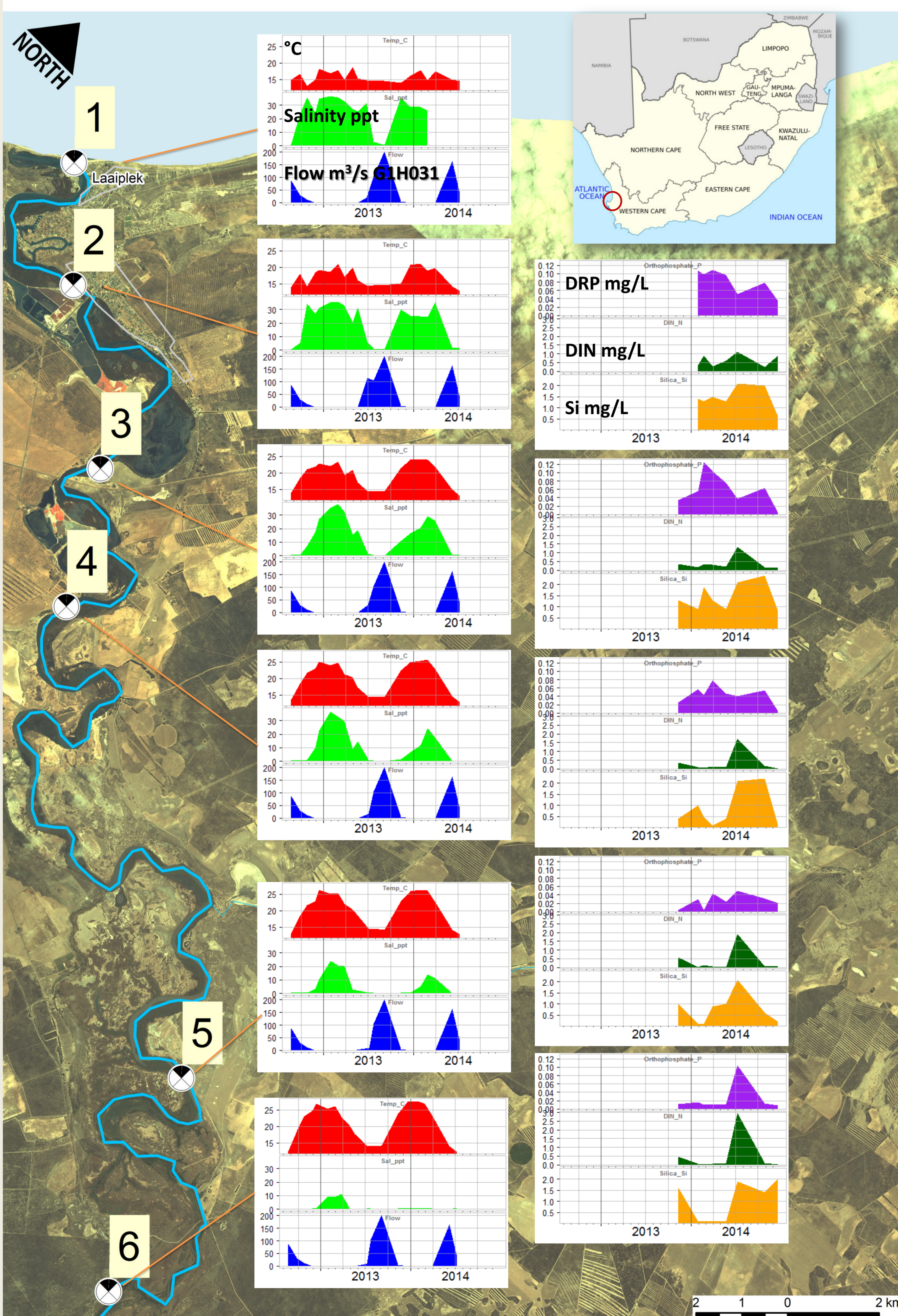
TPC

NESMP collects long-term driver and response data, evaluating the results against **thresholds of potential concern** or TPCs. When TPC values for estuarine components exceed the set limits, ecosystem degradation is likely and the authorities need to intervene.

Berg River:

A classification study determined the TPC values required to keep the estuary in category C, moderately modified (DWA 2012).

Objective: use NESMP data to determine the exceedance of the Berg River Estuary TPCs between 2012 and 2014.



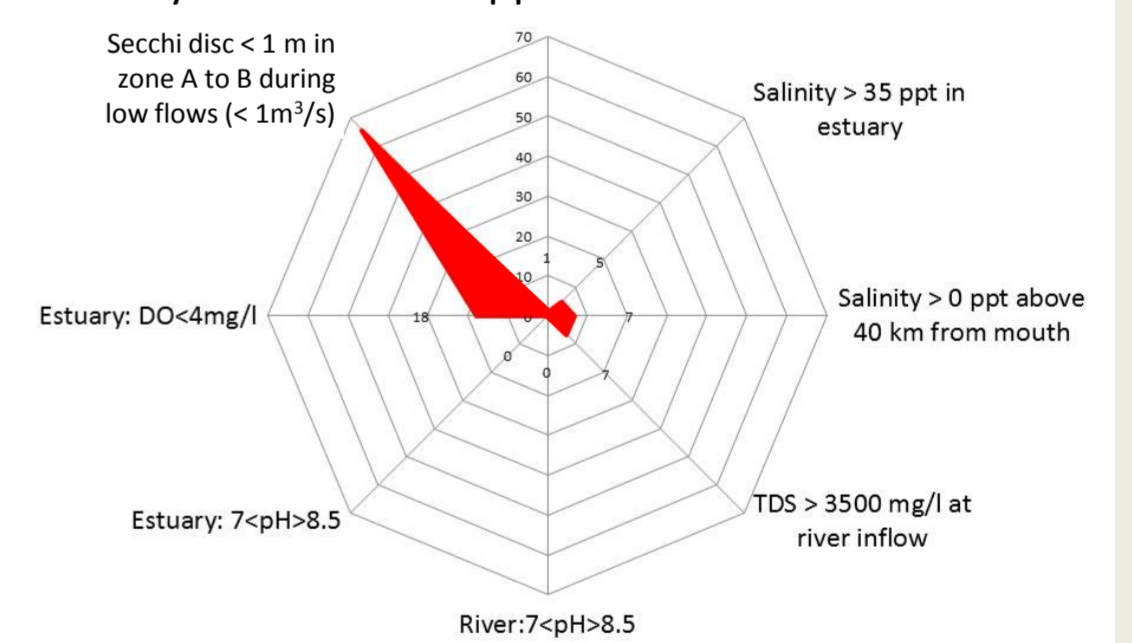
System variables follow the typical patterns of a tidal estuary. Saline intrusion into the upper system occurs during summer and seasonal rainfall flushes the system in winter, as represented here by flow data from DWS site G1H031 at Misverstand, 65km upstream of site 6. Saline stratification occurs at some sites.

Temperatures throughout the system are seasonal: high in summer and low in winter, while cold upwelling water from the Benguela current enters and cools the permanently open mouth. pH remained in the range 7.0 – 8.5 during the study.

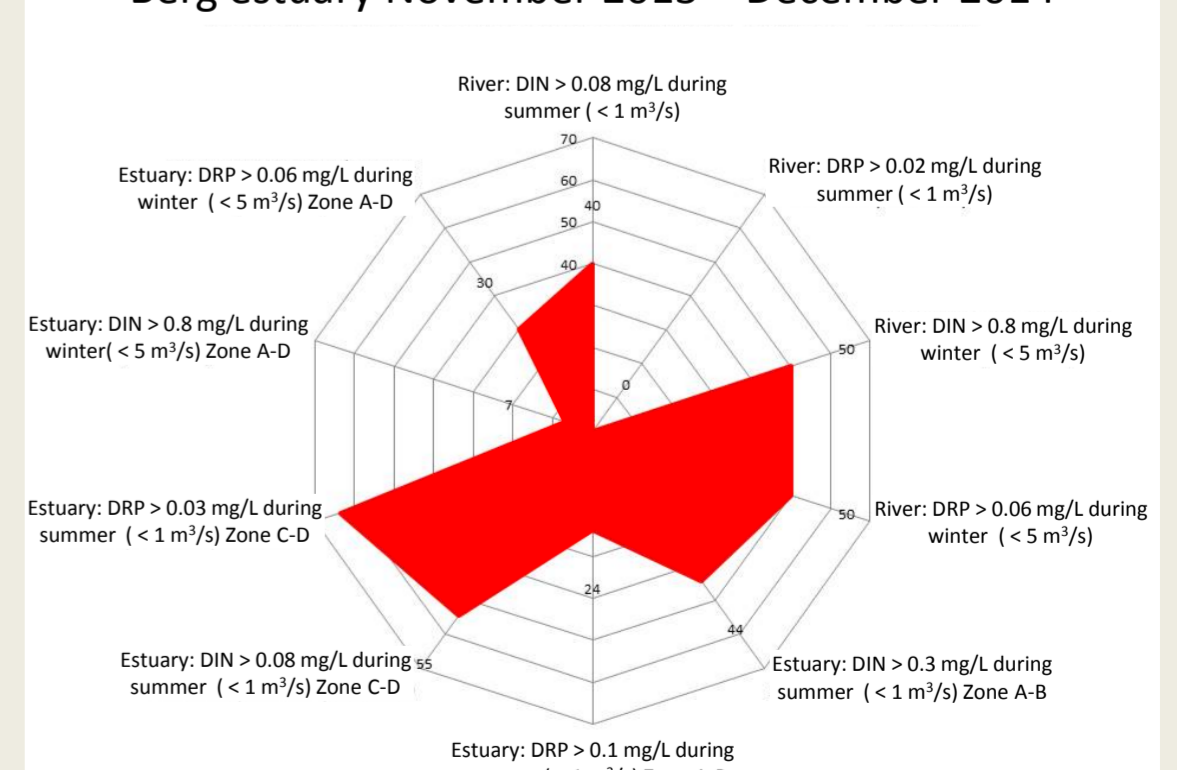
Secchi disk transparency of less than 1m (not plotted here) suggests sediment loading into the estuary. High inorganic phosphorus and nitrogen concentrations are probably from agriculture, wastewater and industry. Management intervention in these areas will be most effective for improving the estuary.

% TPC exceedance for system variables Berg estuary 2012-2014

Salinity continuous 25 ppt at 11km from the mouth



% TPC exceedance for nutrients Berg estuary November 2013 – December 2014



Department of Water Affairs and Forestry (DWAf) South Africa (2008). Water resource protection and assessment policy implementation process. Volume 5: Resource directed measures for protection of water resources: estuarine ecosystem component. Report No. N/31/99. Pretoria.

Department of Water Affairs (DWA) South Africa (2012). Report No.1: Ecological Water Requirement Assessments, Volume 3 – Berg Estuary Environmental Water Requirements. Prepared by Western Cape Water Consultants Joint Venture, as part of the pre-feasibility and feasibility studies for augmentation of the Western Cape water supply system by means of further surface water developments.