The water quality in the Knysna Estuary: Status quo

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SAEON is a comprehensive, sustained, coordinated and responsive South African environmental observation network that delivers long-term reliable data for scientific research and informs decision-making; for a knowledge society and improved quality of life.

- Does long term monitoring of the coastal environment sea and estuaries around the eastern cape coast.
- Knysna has recently been included in SAEON's long term monitoring program.
The Knysna Estuary is an estuarine bay.
It has been ranked 1 conservation importance.
2004 assessment, Knysna scored 100 out of 100
  biodiversity importance based on fish, birds, plant and invertebrate.
Botanical importance, ranked 1 out of 30 warm temperate systems and 3rd overall in South Africa.

Colloty et al. 2001; Turpie et al., 2004; Turpie and Clark, 2007
THE MAIN CHANNEL
NUTRIENTS

Graphs showing the concentration of nutrients (NH₄, SRP, TOxN) at different distances from the mouth, with data for Spring, Summer, and Autumn seasons.
Recently a bloom of *Ulva lactuca* covered the lower reaches.

Filamentous green algae *Ulva*, *Enteromorpha* and *Cladophora*

- *Eutrophication*
Switzer 2003 – 15 years ago
80 % non-compliance
Switzer (2003) redox @ ca. -50 mV

Additionally his sites had an oxygenated zone which ranged from 10 to 105 mm.
BENTHIC DEPLOYMENTS

Switzer (2003)
CONCLUSION

• Lowered DO release $\text{NH}_4^+$ SRP
• Allanson preliminary study showed the Ashmead is shallowing
  • Shallow mud-filled channels have weak tidal flushing
• “If either of these two features (DO and tidal flushing) should change, the water column nutrients ($\text{NH}_4^+$ and SRP) would be expected to increase due to an increase in the flux of these nutrients from the sediments. Therefore, increases in signs of eutrophication (e.g., increased algal growth) would ensue.”

(Allanson et al. 2000; Switzer 2003)
MANAGEMENT

• 24rd March 2017 Workshop

• Representatives from SANParks, Knysna Municipality, Eden District Municipality, independent specialists (scientists & engineers) and a NGO were present

• Decided that they need to look at the catchment

• Focus on the WWTW

• **Good Start**

• To further improve Ashmead:
• Get rid of the anoxic sediment
• Engineering approach to help flushing