water & sanitation
Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

2030 NDP

Determination of Ecological Water Requirements for Surface Water (Rivers, Estuaries and Wetlands) and Groundwater in the Lower Orange WMA: WP10974

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ECOLOGICAL SPECIFICATIONS AND MONITORING

Delana Louw: Rivers for Africa

WATER IS LIFE, SANITATION IS DIGNITY

PROJECT PLAN: SUMMARY STEPS

1. Initiate the BHN and EWR assessment
How will be study be executed?

2. Delineate RU, select study sites
Where will detailed work be undertaken?

3. Determine reference condition, PES and EIS
What are the ecological status, importance and future ecological objectives?

4. Determine BHN and EWR
How much water do you need for basic human needs and to maintain a certain ecological status?

5. Determine operational scenarios and evaluate consequences
How will the current state and ecological objectives be influenced by future changes in operation?

6. Ecological specification, monitoring and implementation information
How do we know that we will achieve our objectives

ECOSPECS, TPCs, MONITORING

- EcoSpecs: Biological specifications that are numerical values or narrative statements that define a desired biological condition (Ecological Category).
- EcoSpecs indicates the level of habitat integrity that is required to attain a specific biological condition for the river.
- EcoSpecs therefore provides the ecological detail that characterises the Ecological Category.
- For a Preliminary Reserve, it would be the biological conditions relating to the Preliminary Ecological Reserve Category (PERC).
- EcoSpecs must be quantifiable, measurable, verifiable and enforceable and ensure protection of all components .

ECOSPECS, TPCs, MONITORING
(slide 2)

- TPCs indicate the numerical values around the EcoSpecs that, if approached, would initiate more detailed investigations or even management actions.
- TPCs are therefore early warning indicators of potential change from a particular EC to another EC (warning bell).
- TPC: Upper and lower levels along a continuum of change in selected environmental indicators (Rogers and Bestbier, 1997)

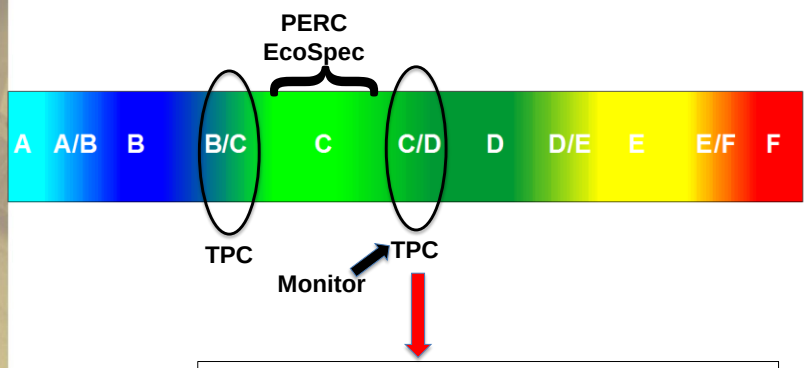
ECOSPECS, TPCs, MONITORING
(slide 3)

- Ecological monitoring is the collection and analysis of repeated observations or measurements to evaluate change in the condition of the resource and the progress towards meeting the management objective (Elzinga *et al* 1998).
- As used with DWS, it is the measurement of EcoSpecs to determine if the PERC is attained (Kleynhans *et al* 2009)
- The PES acts as the baseline against which change is monitored.

ECOSPECS, TPCs, MONITORING
(slide 4)

- Management objectives are set for the drivers (hydrology eg) to achieve the PERC.
- Monitoring of drivers are part of compliance monitoring – standard activities of DWS.
- Monitoring the ecological responses focus on determining whether the PERC is reached and if not, what the problems are.
- Ecological monitoring will therefore identify problems and within a monitoring programme, indicate the next actions required.
- Compliance monitoring is used to determine the management actions that may be required to rectify the problems

CONCEPT OF ECOSPECS, TPCs & RESPONSE MONITORING



Initiate studies to confirm to identify management actions required.
All within context of adaptive management and a monitoring programme

ECOSPECS AND THE PERC

ECOSPECS & RESOURCE QUALITY OBJECTIVES

- RQOs are determined and gazetted after Classification has been gazetted.
- RQOs include EcoSpecs as well as other non-ecological aspects.
- For a Preliminary Reserve Study, the focus is only on the ecological endpoint in terms of EcoSpecs.

- EcoSpecs therefore capture the PERC into measurable management goals that give direction to resource managers.
- EcoSpecs are set at EWR sites and for the estury for the individual component PERCs for all responses (instream and riparian biota) and key habitat drivers (flow and water quality

PERC RECOMMENDATIONS

EWR Site	PERC	ASSOCIATED FLOW
O3	**B/C**	EWRs associated with Sc A
O4	**B/C**	EWRs associated with Sc A
O5	**B**	EWRs associated with Sc A

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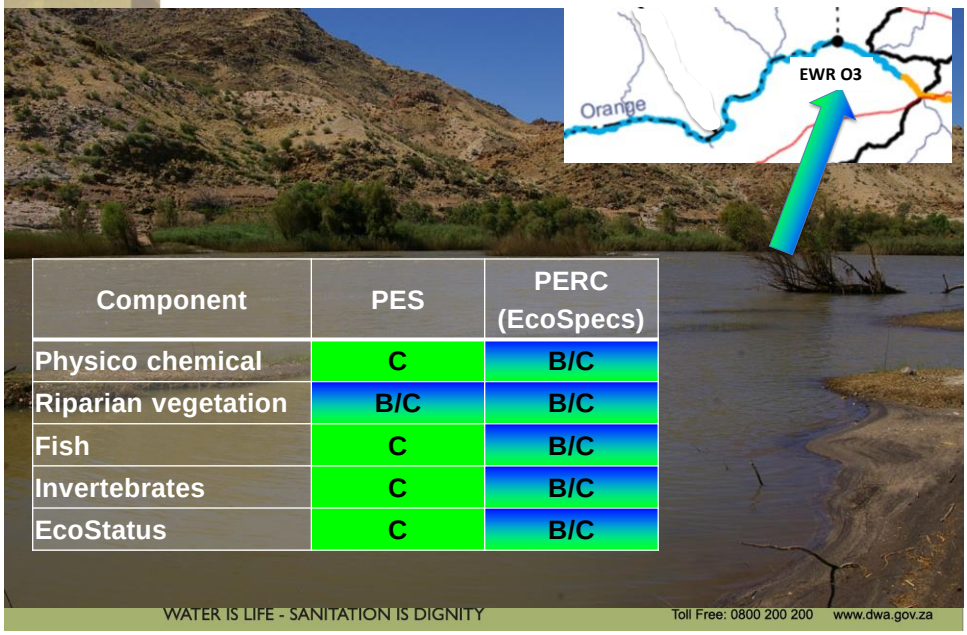
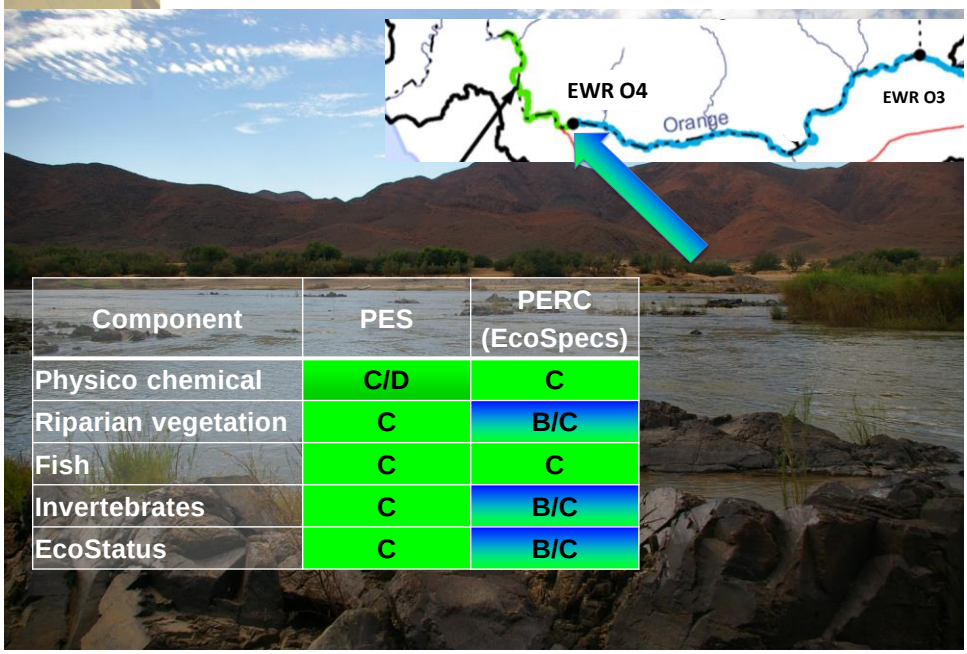
EWR O3: AUGRABIES (BLOUPUTS)



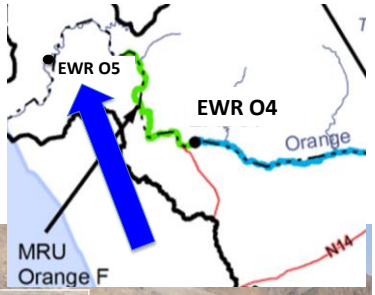
Component	PES	PERC (EcoSpecs)
Physico chemical	C	B/C
Riparian vegetation	B/C	B/C
Fish	C	B/C
Invertebrates	C	B/C
EcoStatus	C	B/C

EWR O4: VIOOLSDRIFT



Component	PES	PERC (EcoSpecs)
Physico chemical	C/D	C
Riparian vegetation	C	B/C
Fish	C	C
Invertebrates	C	B/C
EcoStatus	C	B/C

EWR O5: SENDELINGSDRIFT



Component	PES	PERC (EcoSpecs)
Physico chemical	C	B/C
Riparian vegetation	B/C	B
Fish	B/C	B
Invertebrates	B/C	B/C
EcoStatus	B/C	B

MONITORING PROGRAMME

- Forms part of the DWS monitoring administered by RQIS.
- REMP – RIVER ECOSTATUS MONITORING PROGRAMME

Specialist studies identified during 2013 which is required for the application of the REMP to inform the baseline are:

- Nutrient assessment programme
- Metals verification programme in the rivers

General monitoring recommendations

- Use of mini-SASS monitoring tool for more frequent assessment. Water quality loggers to be installed at Sendelingsdrift gauging weir
- Monitoring programme initiated ASAP to avoid redoing the baseline

QUESTIONS FOR CLARIFICATION