



# Assessing national priorities for rehabilitation – A South African experience.

*CBD Workshop, Livingstone  
15 May 2014*



**Environmental Affairs  
Water Affairs  
Agriculture, Forestry and Fisheries**



**EXPANDED PUBLIC WORKS PROGRAMME**

**SANBI**  
Biodiversity for Life



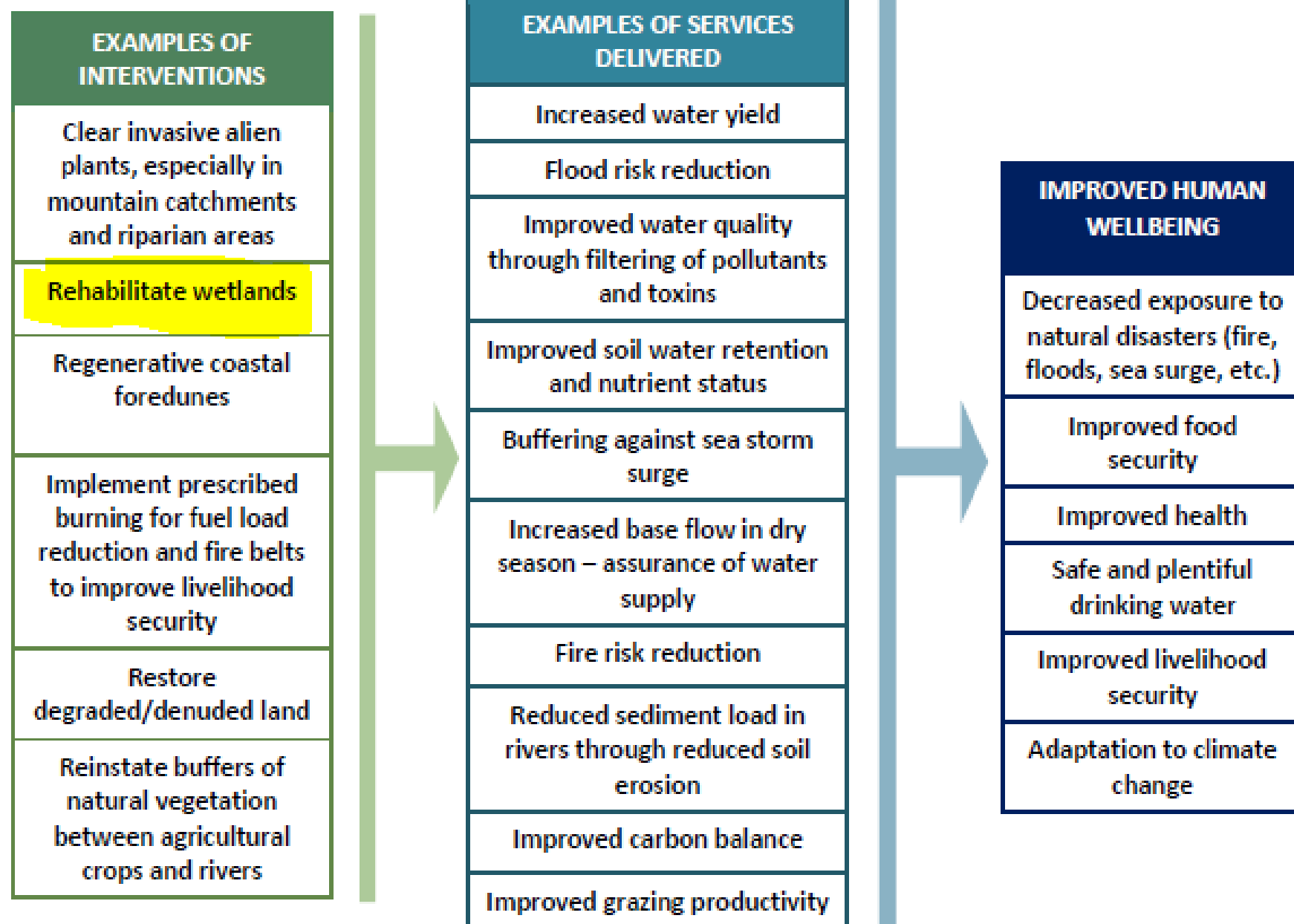
# Outline

- Context
- Background
- Wetlands and the SA law
- Focus on Wetlands
- Case: Working for Wetlands



# Context

- The wetlands work is one of many key delivery items on implementation of the Convention in SA, as discussed earlier.
- Cross cutting wetland related initiatives include:
  - *Stewardship Programmes,*
  - *New Ramsar sites declared,*
  - *Natural Resource Management (NRM) Pgrm,*
  - *uMgeni Ecological Infrastructure Partnership,*
  - *Wetland Inventory work,*
  - *Rehabilitation targets part of Outcome 10 Performance Agreement with the Minister of Water Affairs & President,*
  - *Continuous wetland research work:*
    - *Wetland Buffers*
    - *River Rehabilitation Procedures*
    - *Atlas of Freshwater Ecosystem Priority Areas in SA*





An aerial photograph of a rural landscape. The foreground is dominated by a large, vibrant green field. To the left and right, there are several large, circular or irregularly shaped paddocks with a light brown, dry appearance. A network of roads and tracks crisscrosses the landscape. In the background, rolling hills and mountains are visible under a hazy sky. The overall scene suggests a rural or agricultural setting.

# Background

# Importance of wetlands

- **Ramsar Convention** ratified by SA in 1975
  - Obligations are to:
    - designate sites to the List of Wetlands of International Importance (Ramsar List)
    - promote wise use of all wetlands
    - create wetland reserves
    - co-operate with other Parties in respect of trans-boundary wetlands
- **NEMA Principles:**
  - sensitive, vulnerable, highly dynamic and stressed ecosystems, such as...wetlands...require specific attention in management and planning procedures

# Legislation to protect wetlands

- **National Water Act**
  - Section 21: Water use licences for specified activities
  - Regulatory authority: DWA
- **National Environmental Management Act**
  - Environmental Impact Assessment Regulations
  - Environmental Authorisations for specified activities
  - Regulatory authority: DEA or provincial counterparts
- **Conservation of Agricultural Resources Act**
  - Utilisation and protection of wetlands in agricultural areas
  - Regulatory authority: DAFF

# Wetlands and the law

- **“wetland” means**
  - land which is transitional between terrestrial and aquatic systems:
    - where the water table is usually at or near the surface,
    - or the land is periodically covered with shallow water,
      - and which land in normal circumstances supports or would support vegetation typically adapted to life in saturated soil.
- **Wetland is a subset of ‘watercourse’.**



# Triggering EIAs in wetlands

- The **infilling** or depositing of any material of more than 5 cubic metres into, or the dredging, **excavation**, removal **or moving** of soil, sand, shells, shell grit, pebbles or rock of **more than 5 cubic metres** from a watercourse;
- **The construction or expansion** of:
  - (i) canals; (ii) channels; (iii) bridges; (iv) **dams**; (v) weirs; (vi) bulk storm water outlet structures; (vii) marinas; (viii) jetties exceeding 50 square metres in size; (ix) slipways exceeding 50 square metres in size; (x)
- **construction or expansion of infrastructure or structures covering 50 square metres or more** where such construction occurs **within a watercourse or within 32 metres of a watercourse**, measured from the edge of a watercourse, excluding where such construction will occur behind the development setback line.

# How wetlands are considered in the EIA process

- Delineate or outline the wetlands
- Assess the biodiversity value of the wetland and all features in/associated with it
- Assess impacts on the wetland and address through the mitigation hierarchy.
- Take cumulative catchment impacts into account
- Buffer the wetland appropriately from any type of development which may impact on the wetland ecosystem.

# Each ecosystem interpreted in the same, practical way

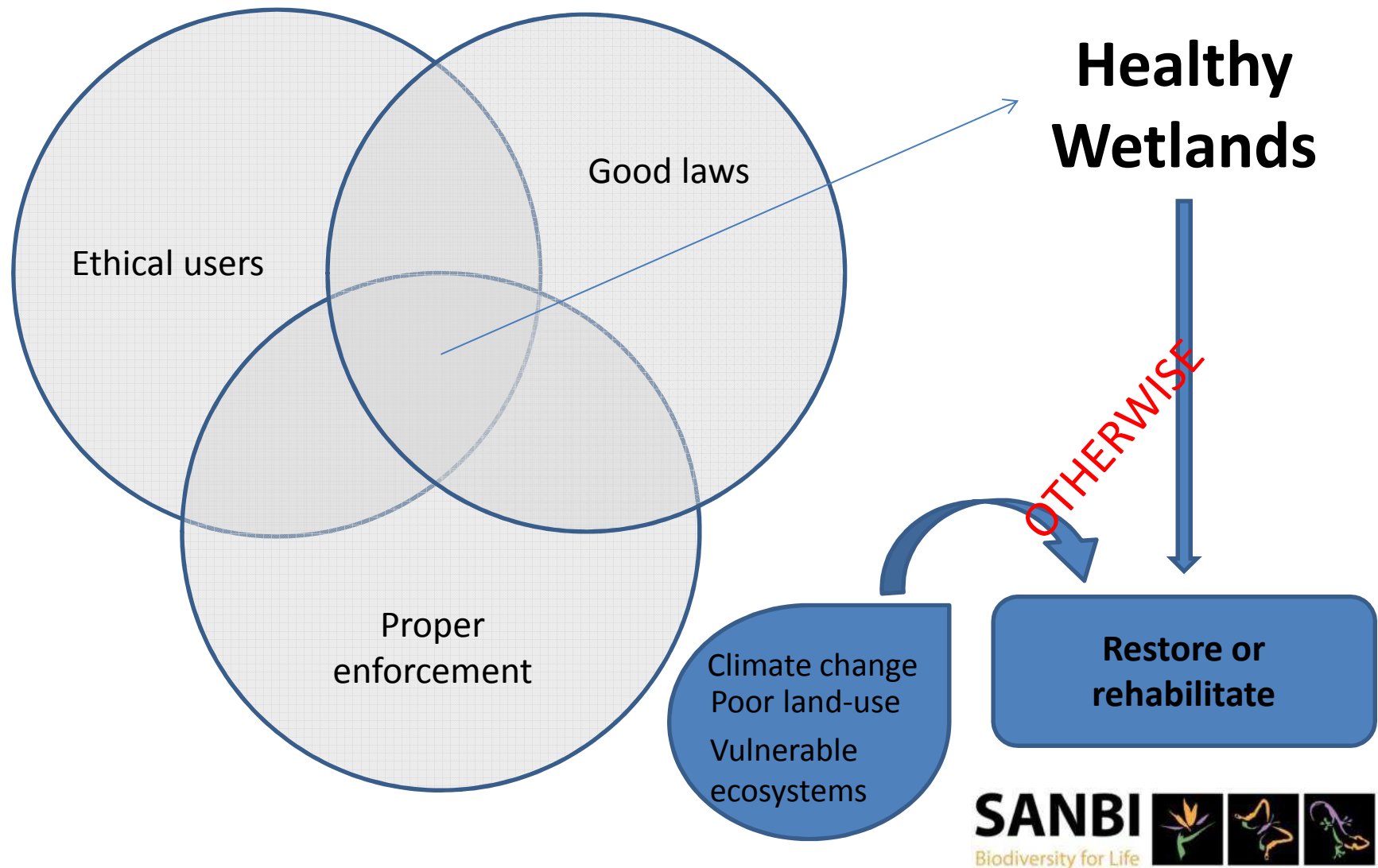
- What are the key ecological '**drivers**'?
- What are the key issues & **pressures**?
- What are the 'bottomlines' & '**non-negotiables**'?
- What is the best **spatial approach to development** & disturbance?
- What are the critical things to maintain for biodiversity **persistence**?
- What are the **monitoring indicators** for ecosystem health?
- What are acceptable trade-offs or **off-sets** for biodiversity loss?





## 2. FOCUS ON WETLANDS

# Wetland Impacts

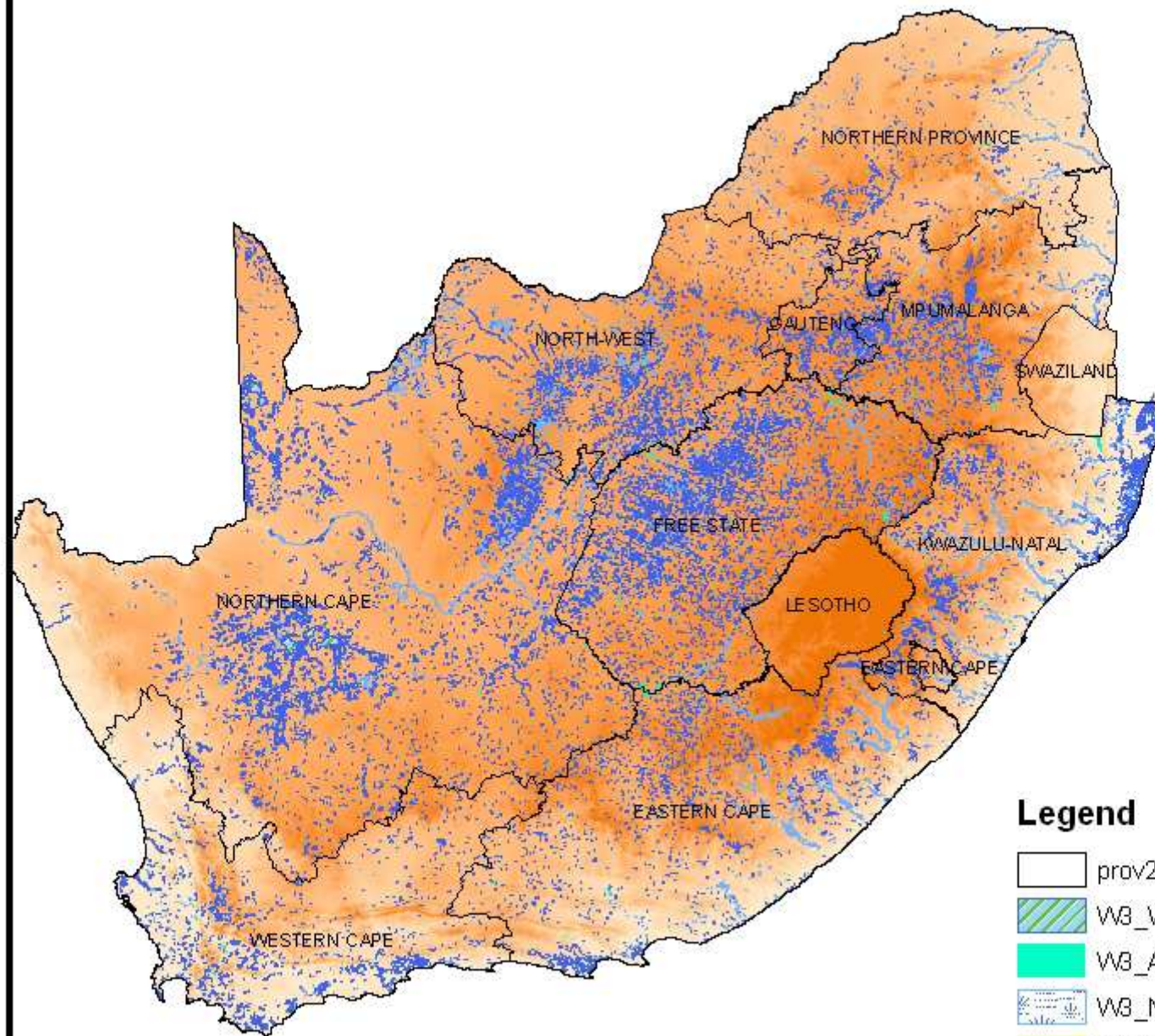




# And ...

What do we have to work with in the South African context?

# National Wetland Map III

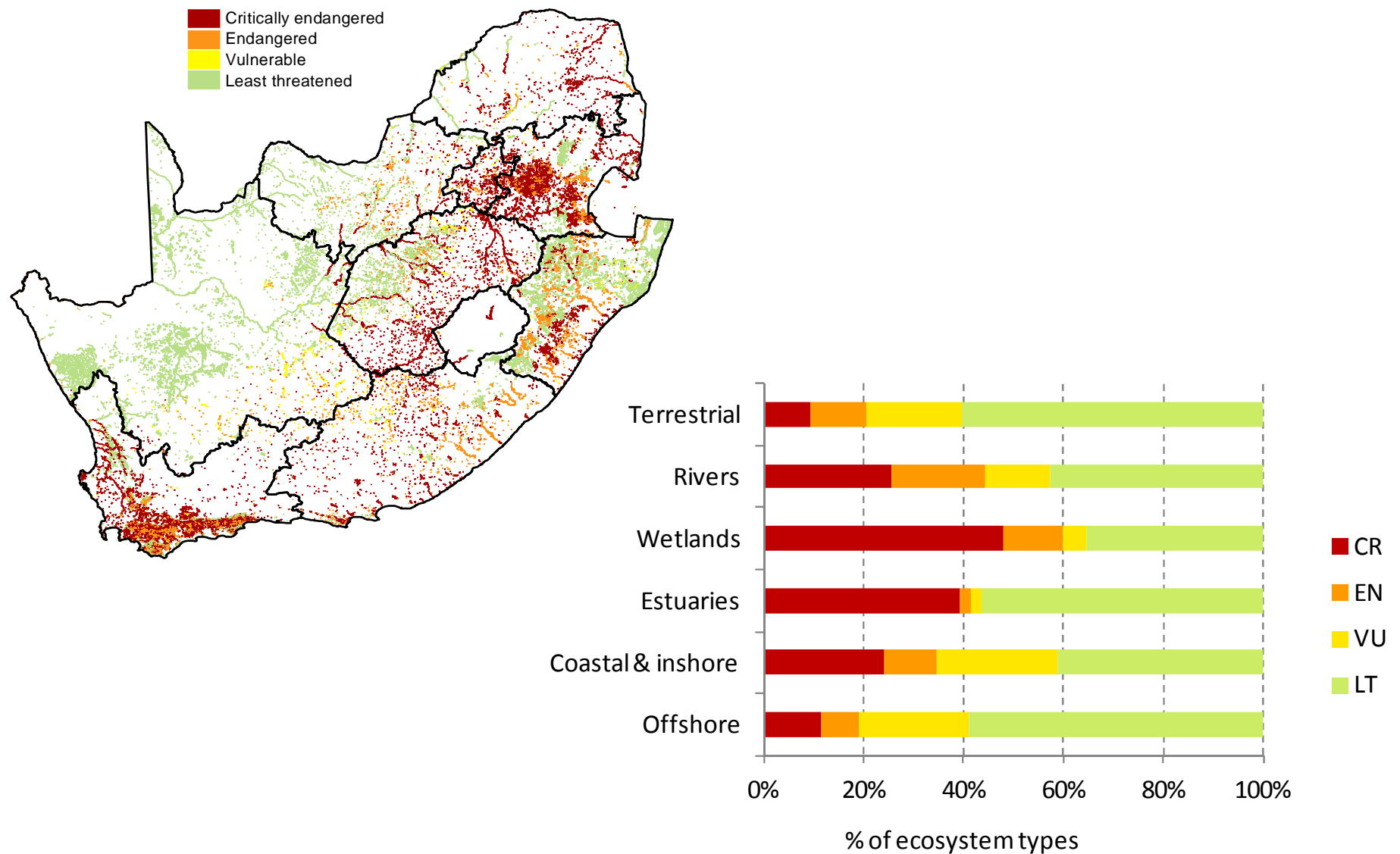


## Legend

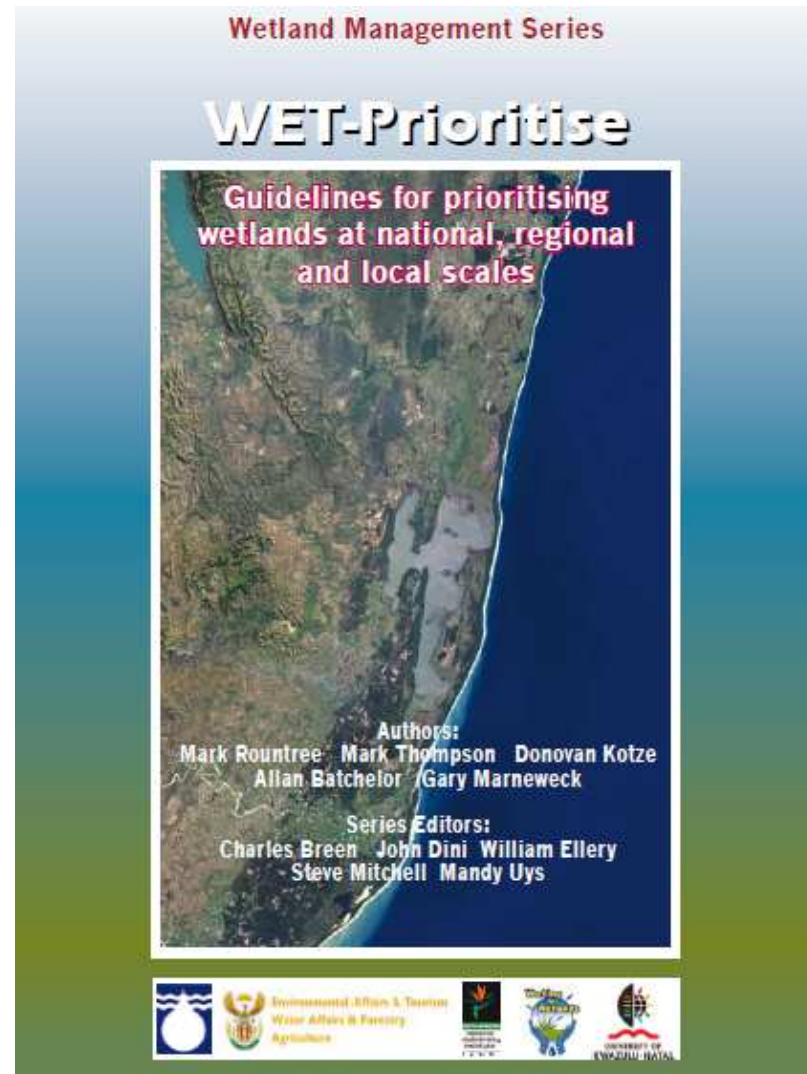
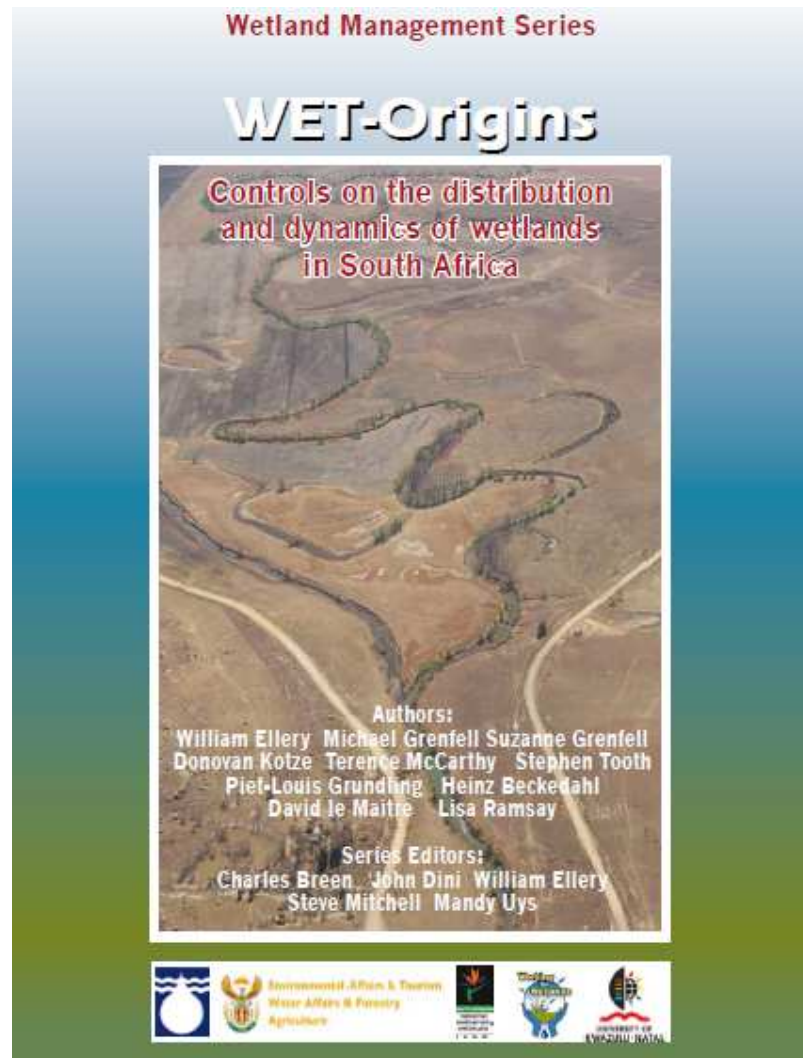
- prov2001\_alb
- W3\_Wetlands
- W3\_Artificial-Waterbodies
- W3\_Natural-Waterbodies
- W3\_Unclassified-Waterbodies

310 155 0 310 Kilometers

# The status of wetlands



# Tools available for use...

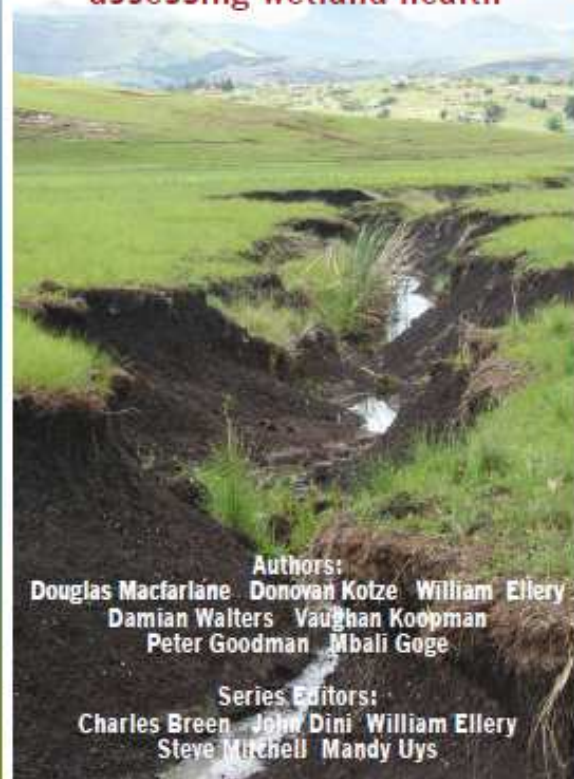




Wetland Management Series

## WET-Health

A technique for rapidly  
assessing wetland health



**Authors:**  
Douglas Macfarlane, Donovan Kotze, William Ellery,  
Damian Walters, Vaughan Koopman,  
Peter Goodman, Mbalí Goge

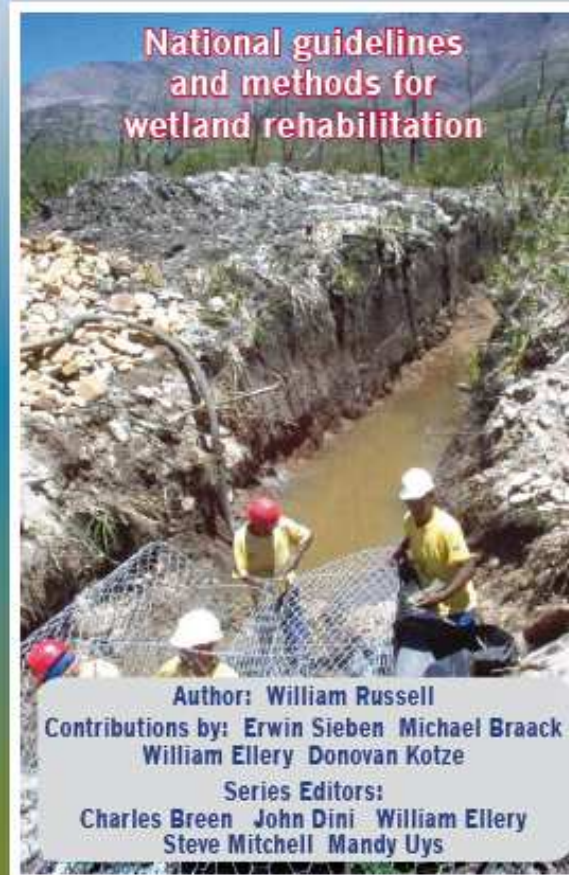
**Series Editors:**  
Charles Breen, John Dini, William Ellery,  
Steve Mitchell, Mandy Uys



Wetland Management Series

## WET-RehabMethods

National guidelines  
and methods for  
wetland rehabilitation



**Author:** William Russell  
**Contributions by:** Erwin Sieben, Michael Braack,  
William Ellery, Donovan Kotze

**Series Editors:**  
Charles Breen, John Dini, William Ellery,  
Steve Mitchell, Mandy Uys



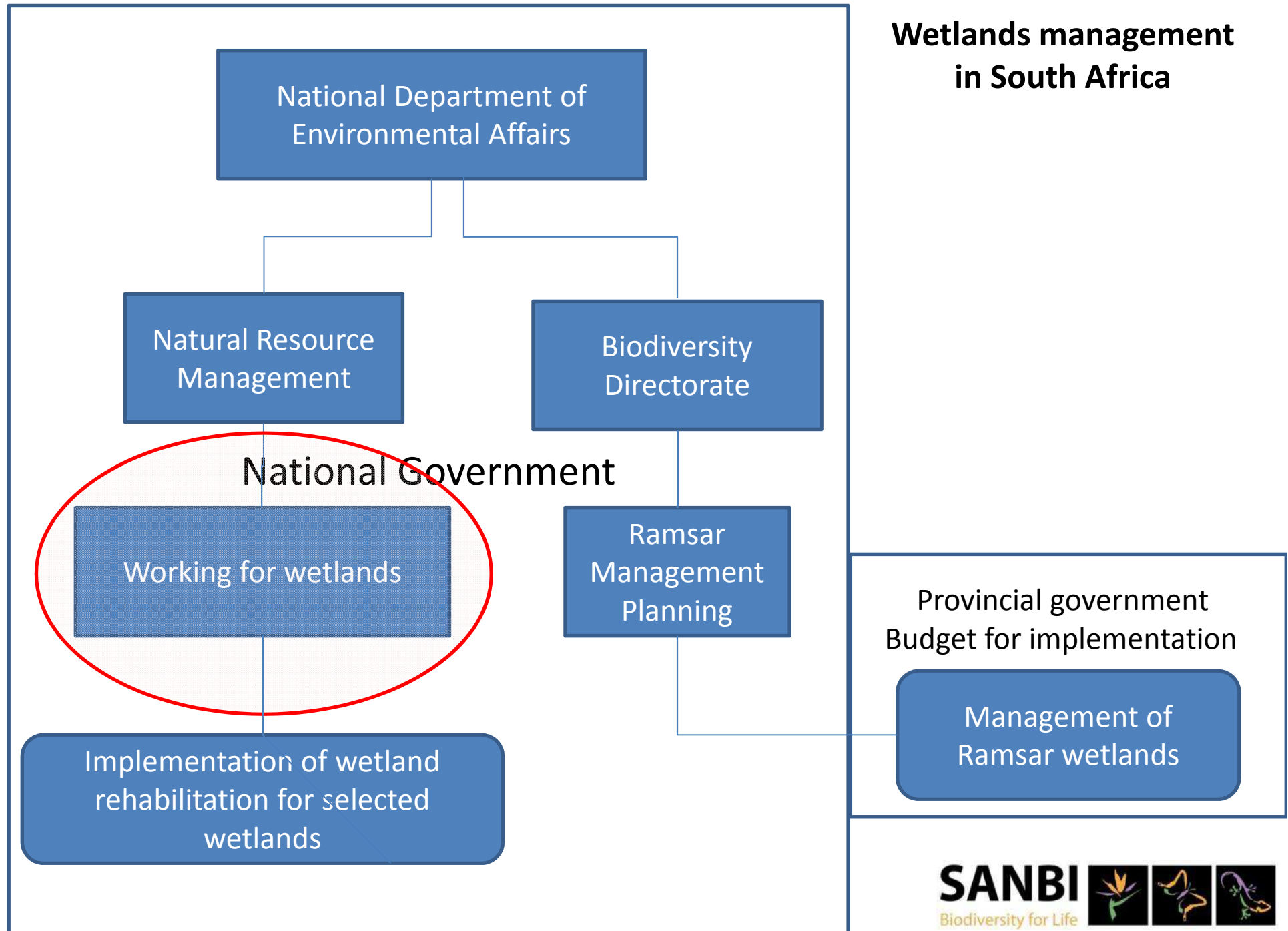
**SANBI**  
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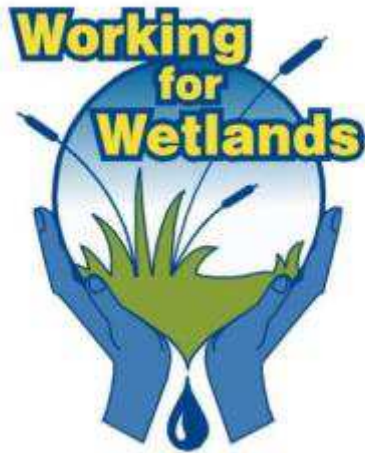






## Wetlands management in South Africa





# WORKING FOR WETLANDS

# Rehabilitation purpose

- Restore the natural functioning of wetlands
- Stabilize the further erosion of wetlands (head-cuts at top end of gully erosion)
- Re-hydrate the wetland by lifting the water table
- Ensuring better water security (hydrological buffering) and water quality (natural filter)
- Increase biodiversity – plants, birds, frogs
- Create labour opportunities and skills development
- Aesthetics – tourism potential

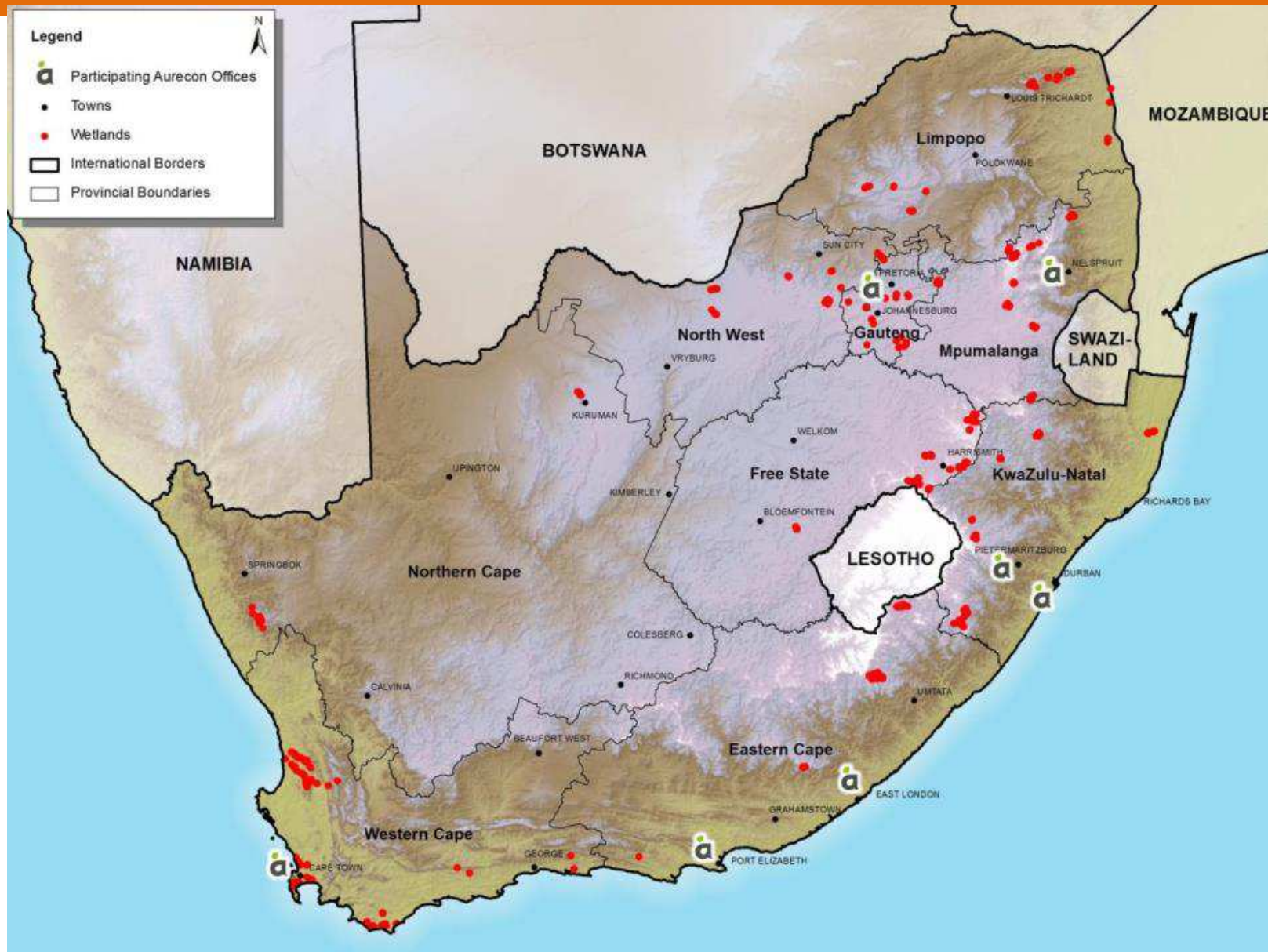


# Endangered crowned cranes require wetland habitat for breeding





# Planning for Wetland Rehabilitation



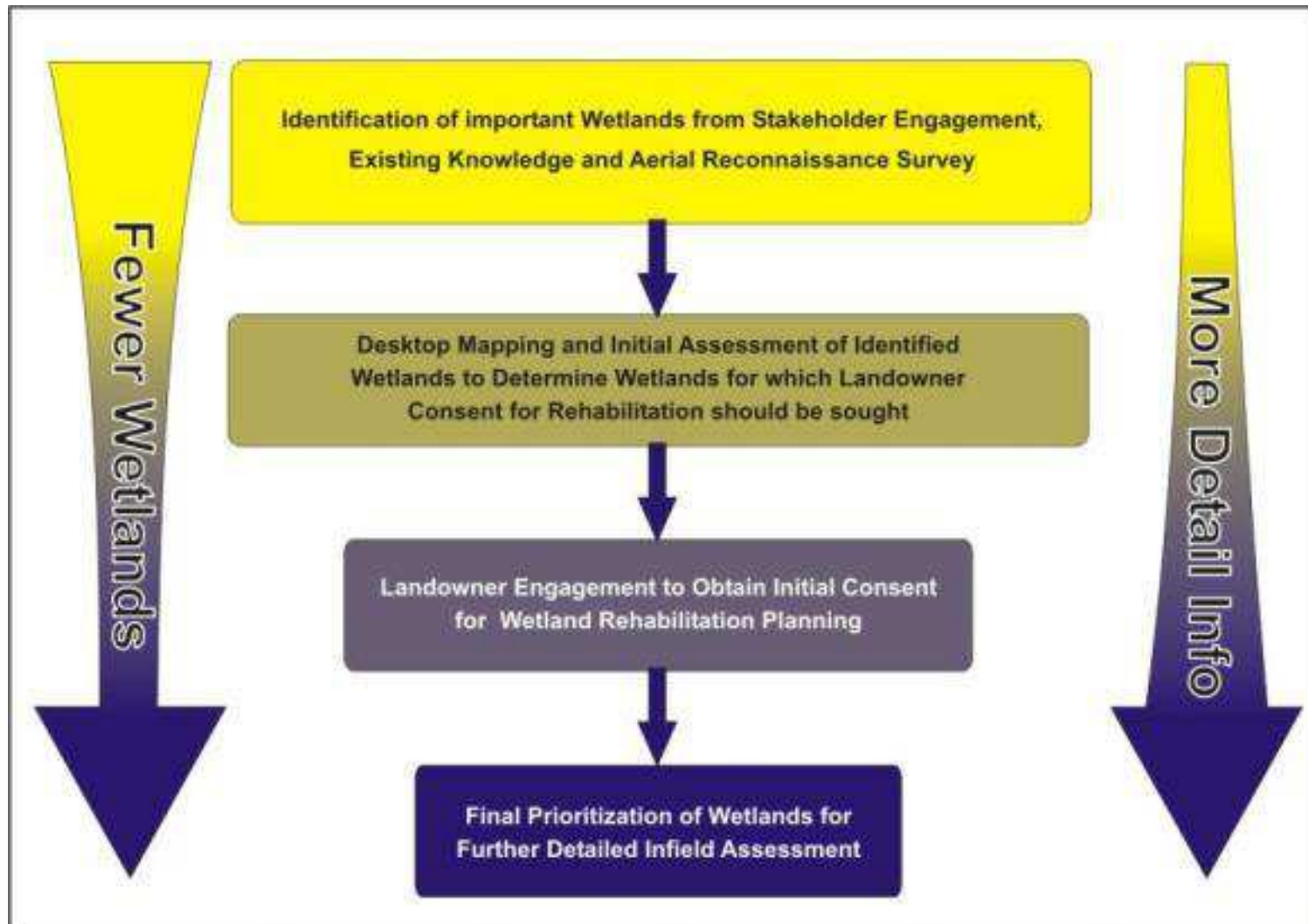
# Planning for Wetland Rehabilitation

Phase 1	Desktop planning by ecological specialist
Phase 2	Field visit & compilation of rehab plan: <ul style="list-style-type: none"><li>- Detailed ecological assessment</li><li>- Engineering design</li><li>- Environmental impact assessment</li></ul>
Phase 3	Implementation/Construction

# Phase 1: Desktop planning by ecological specialist

1. Focus on national priority areas.
2. Consult with regional forums to identify focus areas
3. Identify the priority wetland systems in your catchment – aerial survey
4. Delineate wetland and identify problems within the wetland by making use of aerial photographs.
5. Walk the wetland to establish the magnitude of the problem.
6. Obtain landowner consent.

# Wetland prioritisation



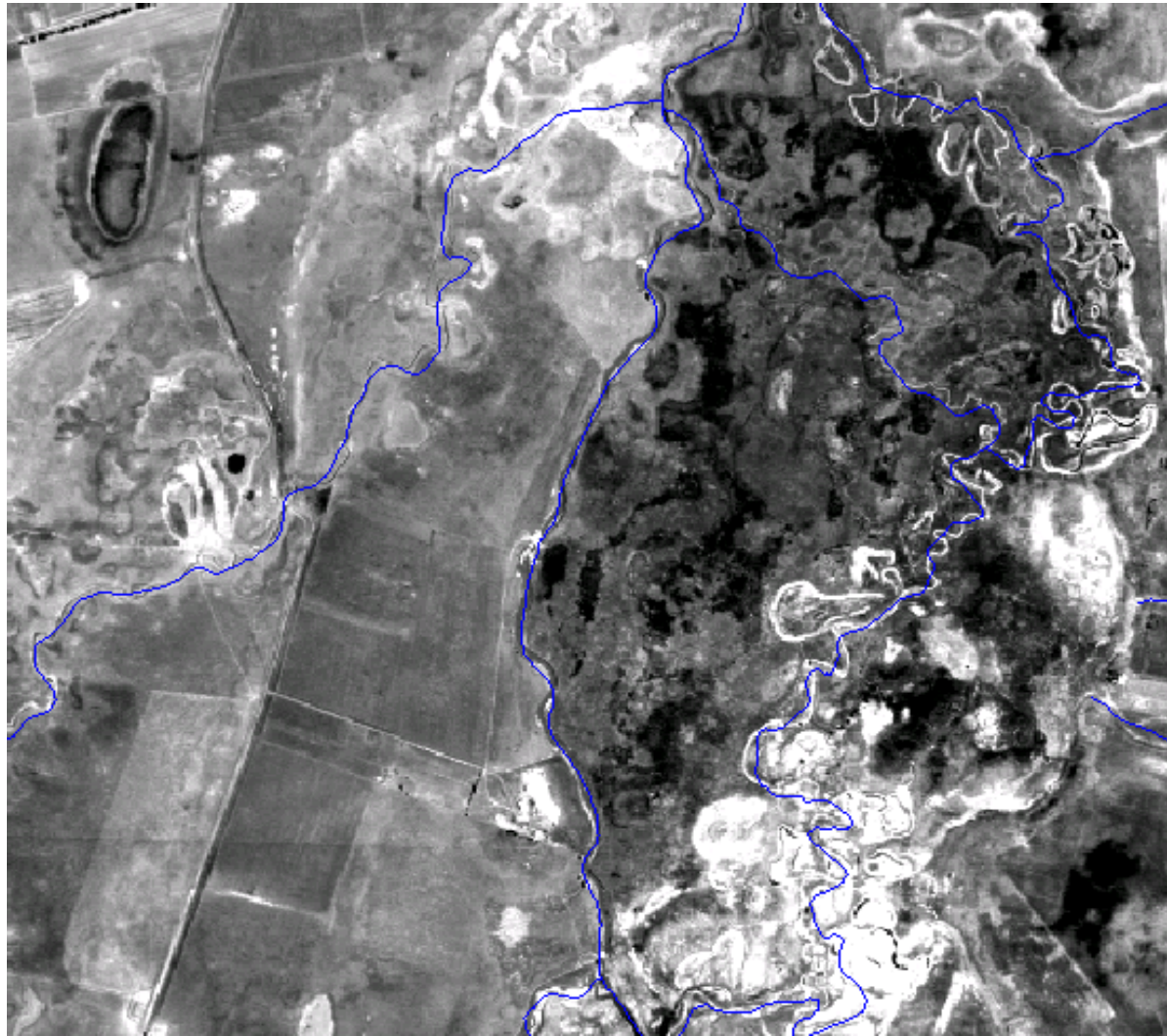


# Aerial Survey



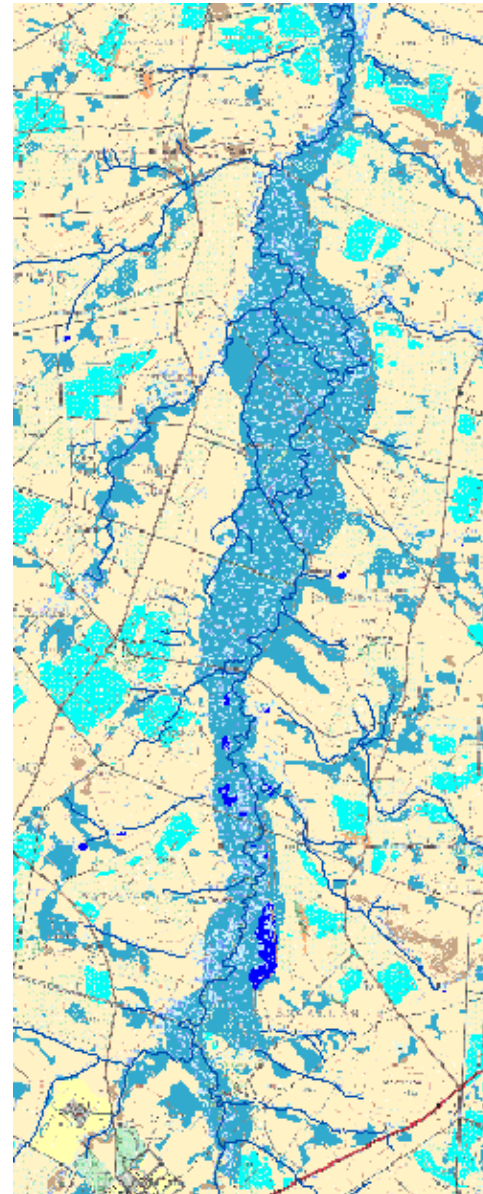
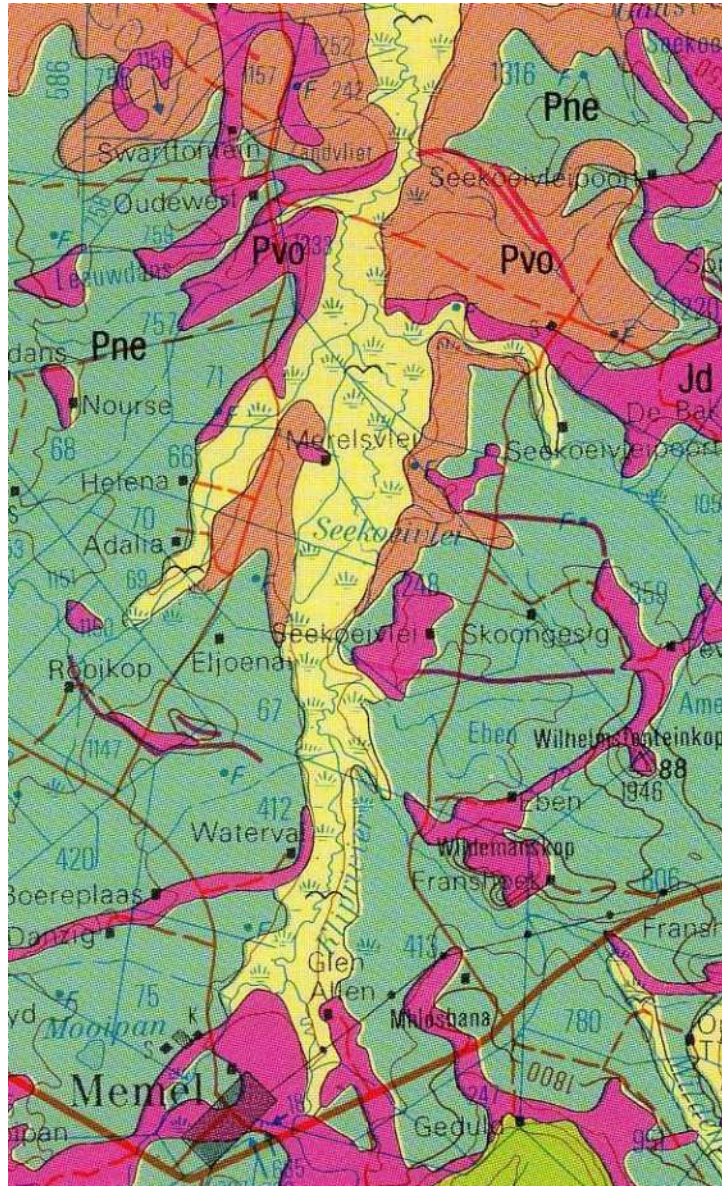


# Study historic imagery

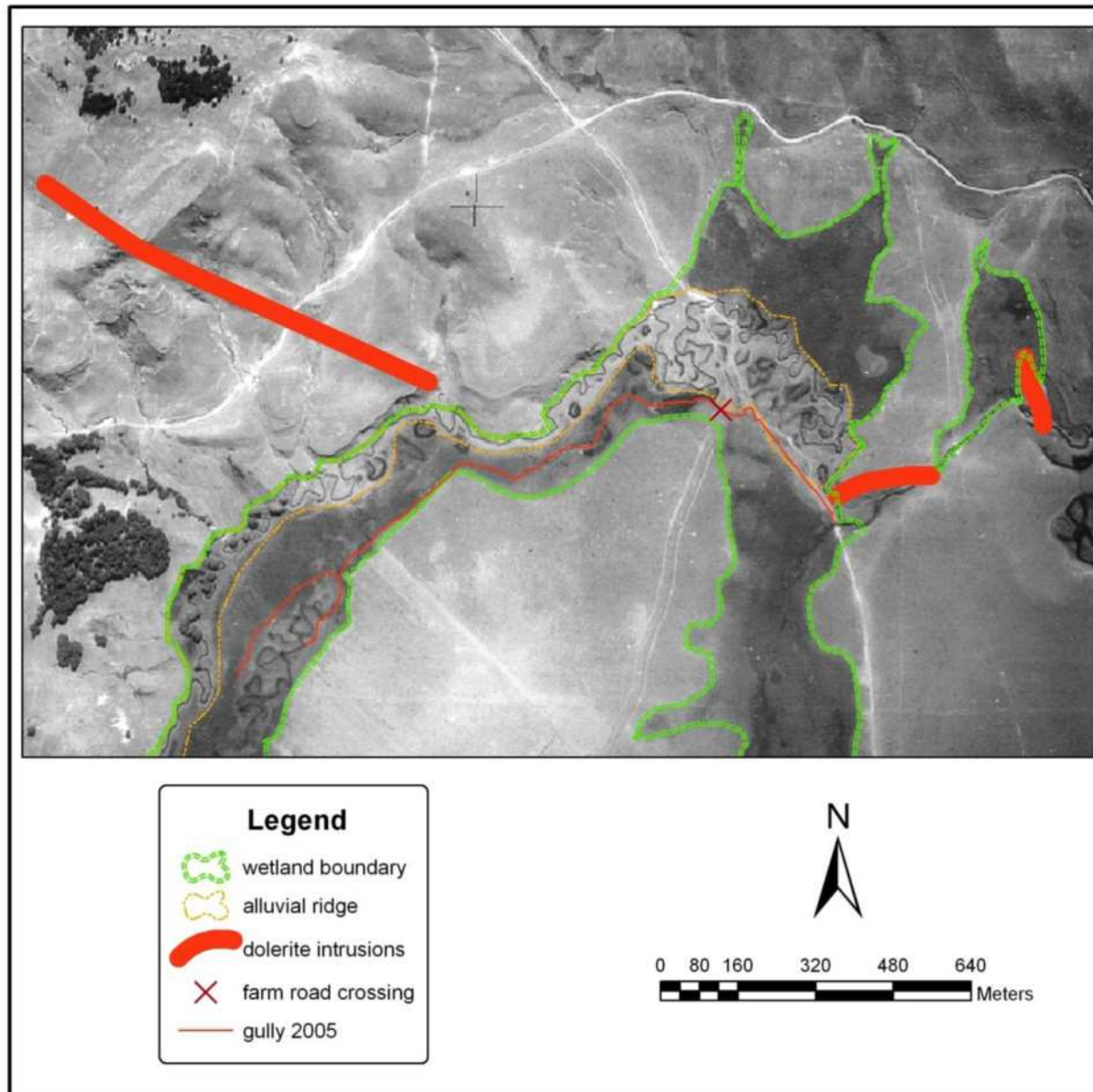




# Study geological maps

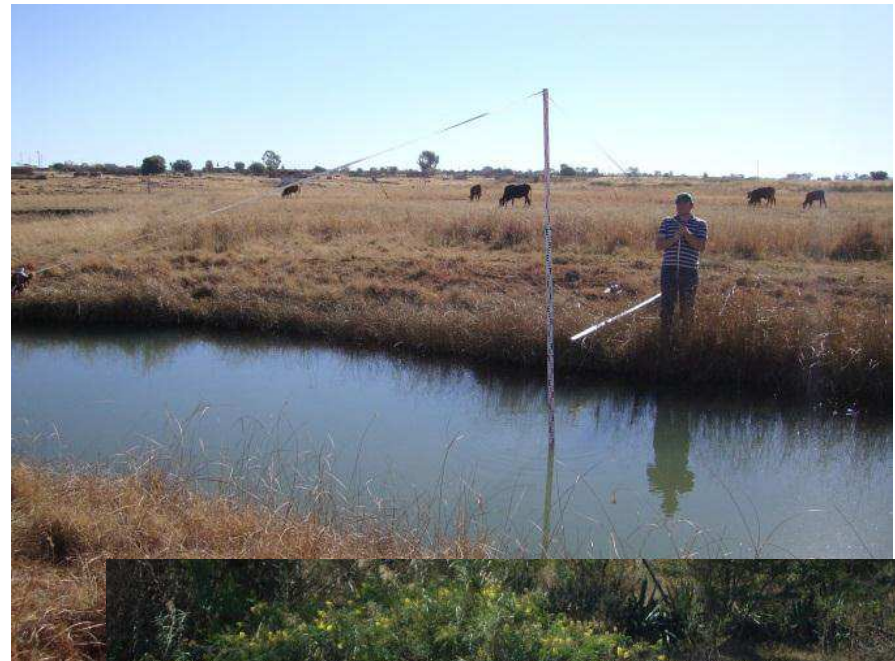


# Study geological maps





# Phase 2: Field visit & compilation of rehab plan





## Phase 2: Field visit & compilation of rehab plan

- Detailed assessment of wetland problems by multi-disciplinary team:
- Ecological functioning by Wetland Ecologist
- Engineering design by Engineer
- Environmental impact and authorisation requirements by Environmental Assessment Practitioner
- Construction aspects by Implementer

# Wetland assessment procedure:

- Step 1: Assess impacts and threats
- Step 2: Set rehabilitation objectives and agree appropriate measures
- Step 3: Assess rehab intervention contribution to wetland health

# Step 1: Assess impacts and threats

- Description of the hydro-geomorphic setting of the wetland
- Verification and description of the overall health of the wetland at a Level 1 assessment using WET-Health

HGM Unit	Area (ha)	Hydro Health	Hydro Threat	Geo Health	Geo Threat	Veg Health	Veg Threat
Floodplain	100	7	-1↓	1	0→	5	-1

- Based on the above findings, identification of specific impacts and/or threats to be addressed by structural rehabilitation and description of these at a Level 2.

## Step 2: Set rehabilitation objectives and agree appropriate measures

- Rehabilitation objectives informed by the above assessments.
- The engineer would assist the wetland specialist in choosing appropriate interventions to achieve the identified rehabilitation objectives.
- The PC and implementation agent would advise on constraints and implications.



## Step 3: Assess rehab intervention contribution to wetland health

- Identify the spatial area likely to be affected by the proposed intervention/s.
- Assess the benefits that are likely to result from achievement of the rehabilitation objective/s in terms of the integrity of the affected area of the wetland and the ecosystem services that the area delivers

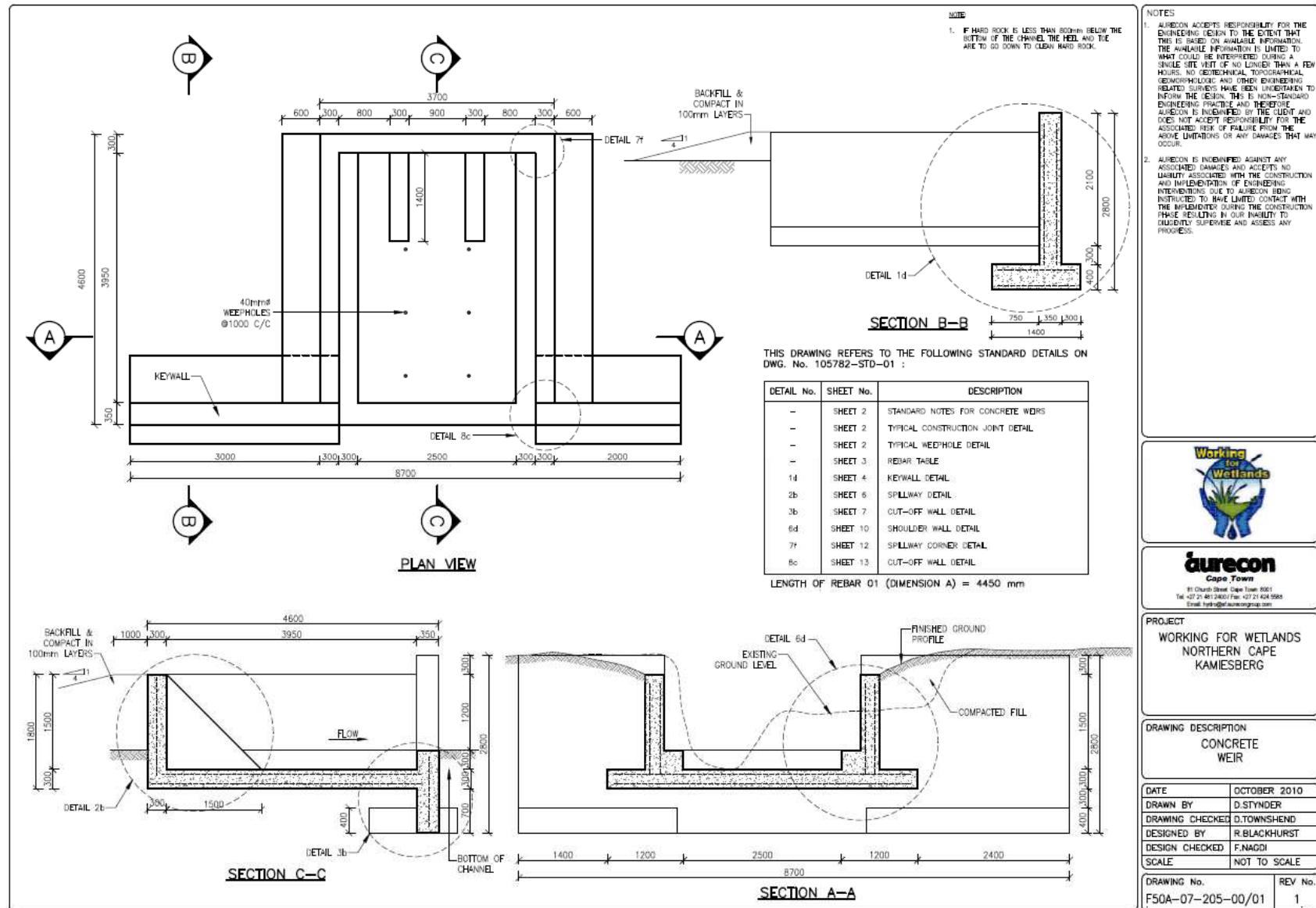
# Deciding on a intervention

- Need to consider the best long term intervention for the problems in wetlands
- Most cost effective in the long term? – chutes, concrete weirs, gabions, bio-engineering options, earth plugs
- Where is the problem in relationship to the entire catchment, energy levels, gradient, flood intensities, wetland dynamics, sedimentation processes, catchment condition, geology
- Return on your investment – how much wetland area will be rehabilitated
- Is the problem really an unnatural problem?

# Typical representation of solution

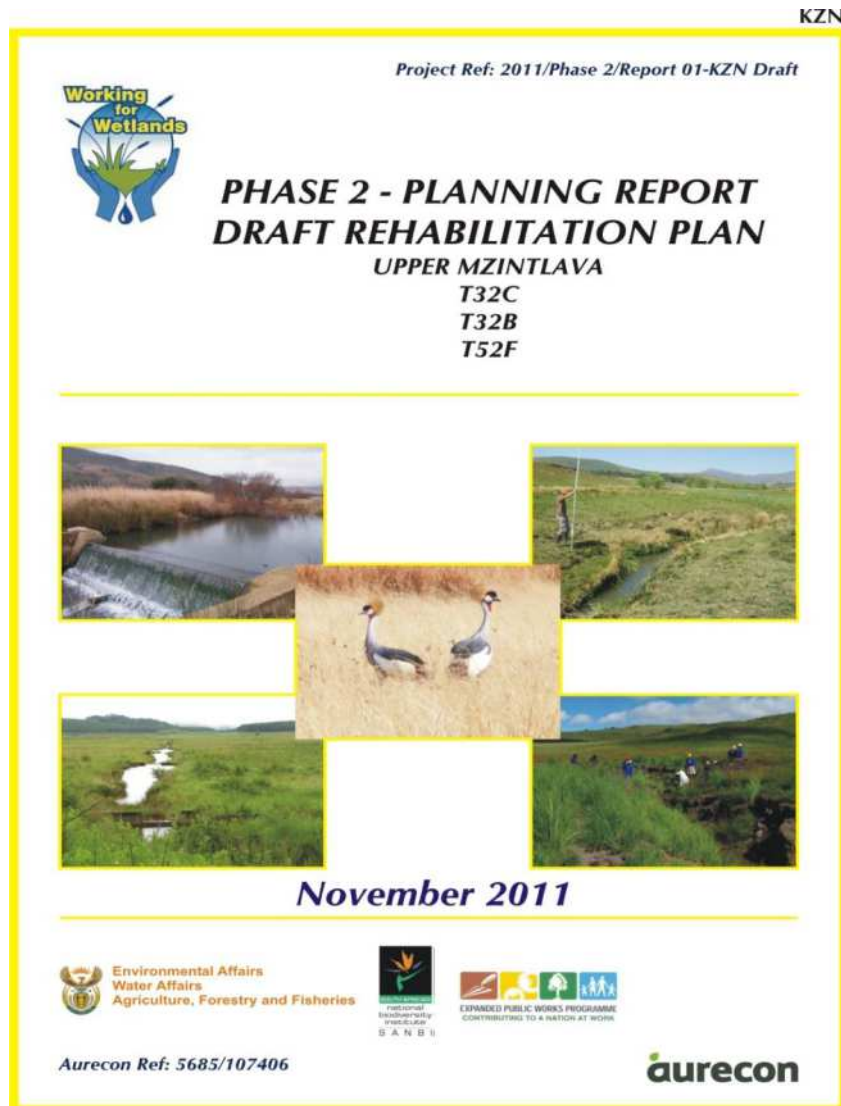


# Engineering drawing





# Phase 2 outcomes captured in rehabilitation plan



- Documents base info, assessments and decisions taken per wetland
- Includes detailed designs
- Used to engage with public and obtain Environmental Authorisation from DEA
- Used as base document for implementation

# Wetland Engineering is Challenging

- Sensitive and wet environments (minimise construction impacts)
- Generally poor foundation conditions
- Require permanent solutions
- Limitations on spillway widths and freeboard (water re-entry often an issue)
- Where possible, promote the use of labour intensive solutions

# Implementation

- Interventions are designed to be:
- Robust and simple solutions
- Cost effective
- Labour intensive
- Safe to construct
- Implementers tender for work and paid on completed milestones
- Projects overseen by Provincial Co-ordinator
- Engineer provides site support
- Site safety and environmental impact non-negotiable
- Labour day deliverables are measured









# Penny Park



# WORKING FOR WETLANDS FOOTPRINT

*For seven years (2004-2013), total figures for the Programme are as follows:*

- **At a glance:**
  - Budget : R 637,549,446 (avg. R70,838,827)
  - Spent: R586,543,766 (93% avg. per year)
  - Number of wetlands worked on: 639
  - Average cost of rehabilitation : R720 000
- **Social Targets:**
  - Target Jobs: 13,382
  - Actual achieved: 16,440 (123%)
  - Target Person days of work: 2,151,881
  - Act Person days of work: 2,048,306 – (95%)
  - Training days achieved: 180,356 – 82% of target



# Upper Wilge – Free State, SA



# Nyamvubu – drop-box inlet





# Gladstone - Concrete Baffle Chutes (Energy dissipating structures)



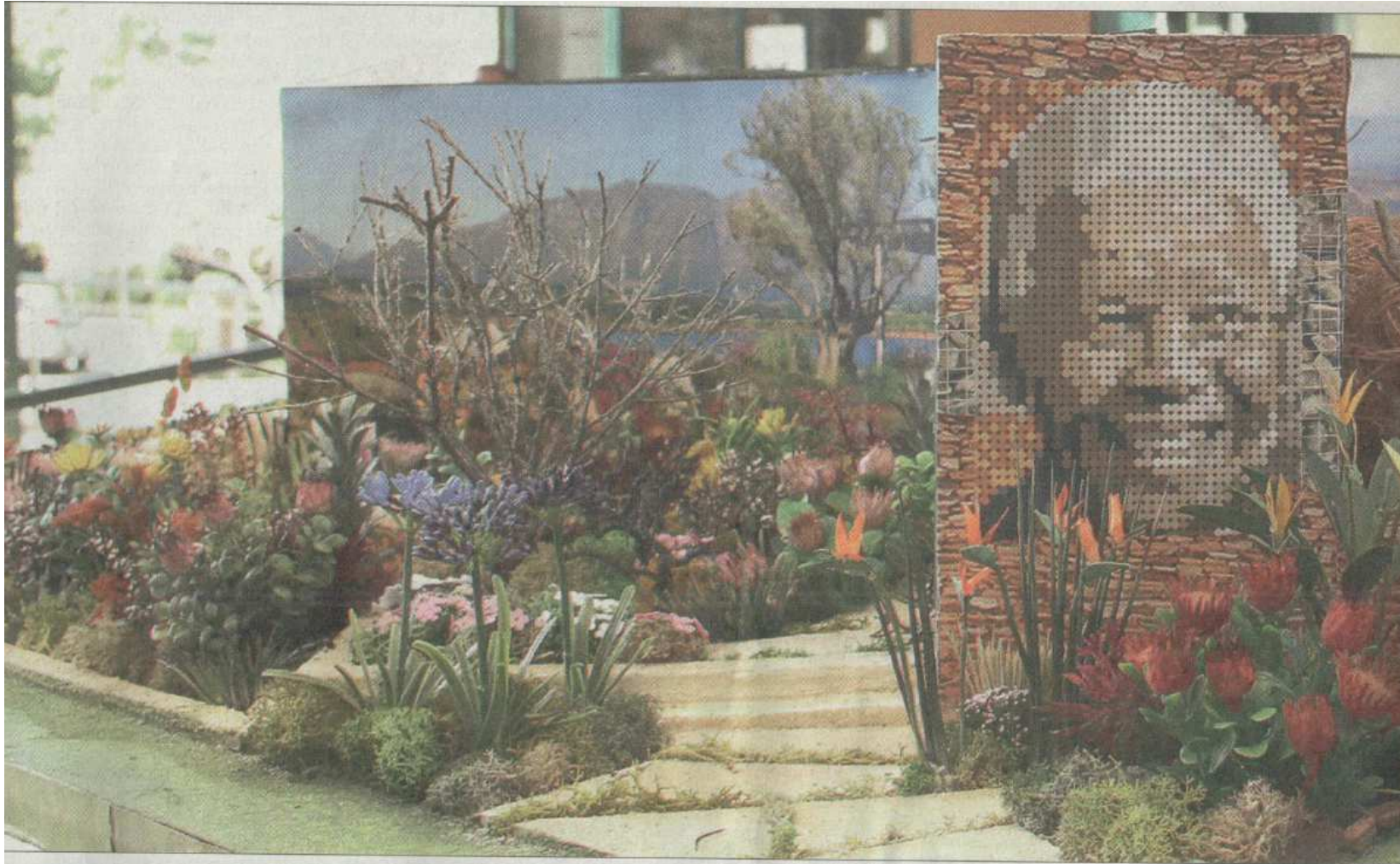


**Thank You . . . Umesh Bahadur - [u.bahadur@sanbi.org.za](mailto:u.bahadur@sanbi.org.za)**





# SANBI Stand - Chelsea 2014



# Weather Station

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If the Rock is Wet...	It's Raining
If the Rock is Swaying...	It's Windy
If the Rock is Hot...	It's Sunny
If the Rock is Cool...	It's Overcast
If the Rock is White..	It's Snowing
If the Rock is Blue..	It's Cold
If the Rock is Gone...	TORNADO

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Up to the minute  
weather report

