water & sanitation

Department:
Water and Sanitation
REPUBLIC OF SOUTH AFRICA

Determining Water Resources Classes and Resource Quality Objectives in the Breede-Gouritz WMA

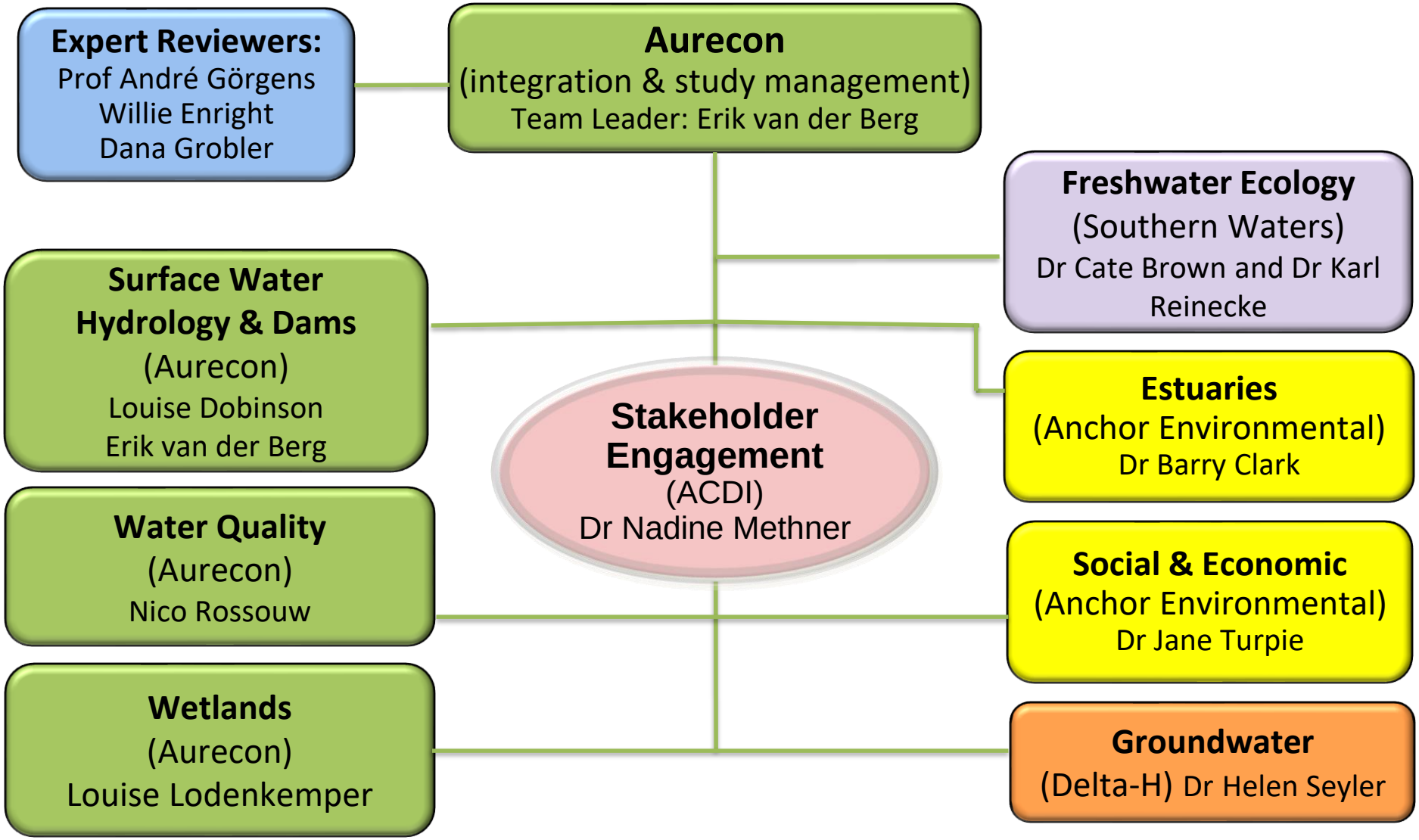
Project Steering Committee Meeting 1

14 February 2017

Venue: Queens Hotel, Oudtshoorn

Overview of study objectives & tasks

The Study Team



Study Objectives

Co-ordinate implementation of the Water Resources Classification System (WRCS)

- **Determine Water Resource Classes (WRCs)**
- **Determine Resource Quality Objectives (RQOs)**
- **Support Gazetting of Recommended Water Resources Classes and RQOs**

Classification and RQOs Steps

7-step process to determine WRCs

1. Delineate IUA's and describe status quo
2. Link value & condition of water resource
3. Quantify EWRs and changes in non-water quality EGSAs
4. Determine scenarios
5. Evaluate scenarios within IWRM process
6. Evaluate scenarios with stakeholders
7. Gazette & Class configuration

Aligned

7-step process to determine RQOs

1. Delineate Resource Units (RUs)
2. Establish Vision for Catchment
3. Prioritise & select prelim RU for RQO
4. Prioritise sub-components for RQO & select indicators
5. Draft RQOs & Numerical limits
6. Agree to RU, RQOs and numerical limits with stakeholders
7. Finalise & Gazette RQOs

Gazette WRC & RQO

Main study tasks (stakeholder engagement throughout)

- **Task 1: Inception** → Completed
  - Inception Report
  - Stakeholder Identification and Mapping Report
- **Task 2: Information gathering** → Completed
  - Water Resources Information and Gap Analysis
- **Task 3: Determine Water Resource Classes**
  - Resource Units & IUA Delineation Report → Completed
  - Status Quo Report
  - Linking the Value & Condition of Water Resources
  - Quantification of the EWR and changes in EGSAs
  - Ecological Base Configuration Scenarios Report → in progress
  - Report on Evaluation of Classification Scenarios

  (Status Quo Report, Linking the Value & Condition of Water Resources, Quantification of the EWR and changes in EGSAs: Draft)
- **Task 4: Determine Resource Quality Objectives**
  - Resource Unit Prioritization Report
  - Evaluation of Resource Units
  - Outline of Resource Quality Objectives
  - Monitoring Program to Support RQOs Implementation
  - Confidence Assessment of Resource Quality Objectives
- **Task 5: Support Gazetting done by DWS to legalise**
  - Final Report and Gazette template

Study Progress

Study Status: Classification Steps 1-7 (Stakeholder engagement throughout)

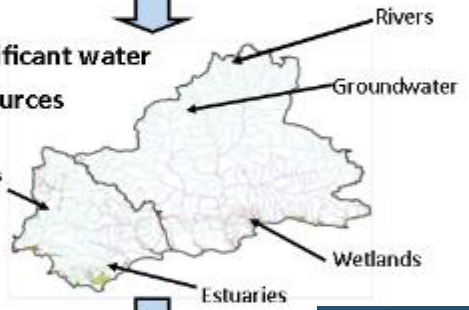
STEP 1: DELINEATE CATCHMENT & DESCRIBE STATUS QUO

Outcome: Integrated Units of Analysis with nested sub-units (nodes) and overview of status quo of Water Management Area (WMA) concerning all aspects of water resources.

Socio-economic Zones

Complete

Significant water resources



Complete

Integrated Units of Analysis

Complete

STATUS QUO: Draft

STEP 2: LINK VALUE & CONDITION OF WATER RESOURCE

Outcome: Set of qualitative relationships determining how economic value and social wellbeing are influenced by ecosystem characteristics and the sectoral use of water.

Draft

SOCIAL WELL BEING

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ECONOMIC PROSPERITY

STEP 3: QUANTIFY THE ECOLOGICAL WATER REQUIREMENTS & CHANGES IN EGSAs

Draft

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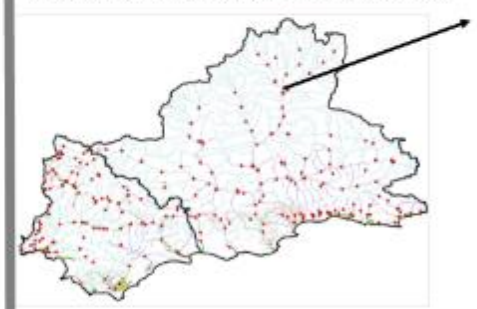

STEP 4: SET AN ECOLOGICALLY SUSTAINABLE BASE SCENARIO & ESTABLISH STARTER SCENARIOS

In progress

Outcome: Provide a ESBC and establish starter catchment configuration scenarios. This scenario will give lowest feasible level of protection required for sustainable use of entire catchment.

Water Resource Classification Procedure

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STEP 5: EVALUATE SCENARIOS WITHIN INTEGRATED WATER RESOURCE MANAGEMENT PROCESS

Outcome: Evaluate scenarios within IWRM process so that subset of catchment configuration scenarios can be put forward for stakeholder evaluation

STEP 6: EVALUATE SCENARIOS WITH STAKEHOLDERS

Outcome: Evaluate scenarios with stakeholders and decide upon an agreed upon configuration short-list for the Minister's consideration. This is an iterative process between steps 5 and 6.

STEP 7: GAZETTE WATER RESOURCE CLASS CONFIGURATIONS

Outcome: A Water Resource Class configuration (and associated RQOs) for the entire catchment is published by the Minister in the Government Gazette as required in the National Water Act of 1998.

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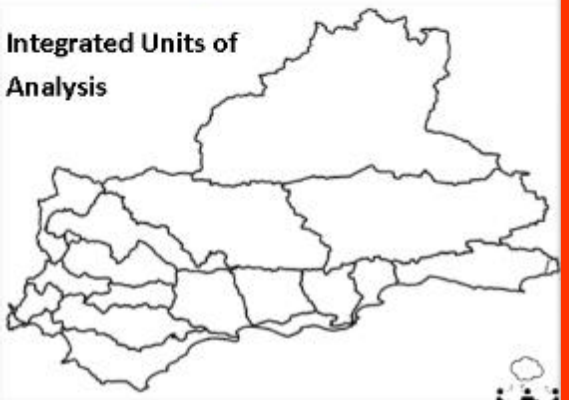

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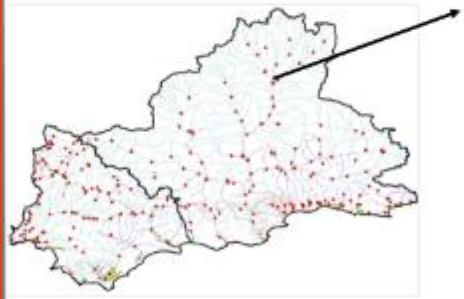

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Step 1: Delineate catchment & describe status quo

- What are **significant resources**?
  - Based on significant Physical, Biological & Socio-economic factors
  - Surface water (rivers, wetlands, estuaries, dams)
  - Groundwater

Each of the 18 IUAs represents an area with similar features, requiring a Water Resource Class

- Why do we need these?
  - These are broad-scale units to assess socio-economic implications of scenarios *(possible future situations)*
  - Report on ecological conditions at a sub-catchment scale
  - Set Water Resource Classes for different parts of the WMA or a catchment

STEP 1: DELINEATE CATCHMENT & DESCRIBE STATUS QUO

Step 1: Delineate catchment & describe status quo

Outcome: Integrated Units of Analysis with nested sub-units (nodes) and overview of status quo of Water Management Area (WMA) concerning all aspects of water resources.

1. Socio-economic zones

Objective: To predict & report implications of scenarios on social wellbeing, economic prosperity & ecosystem health

Breede-Gouritz: 8 Socio-economic zones

2. Resource Units

Objective:

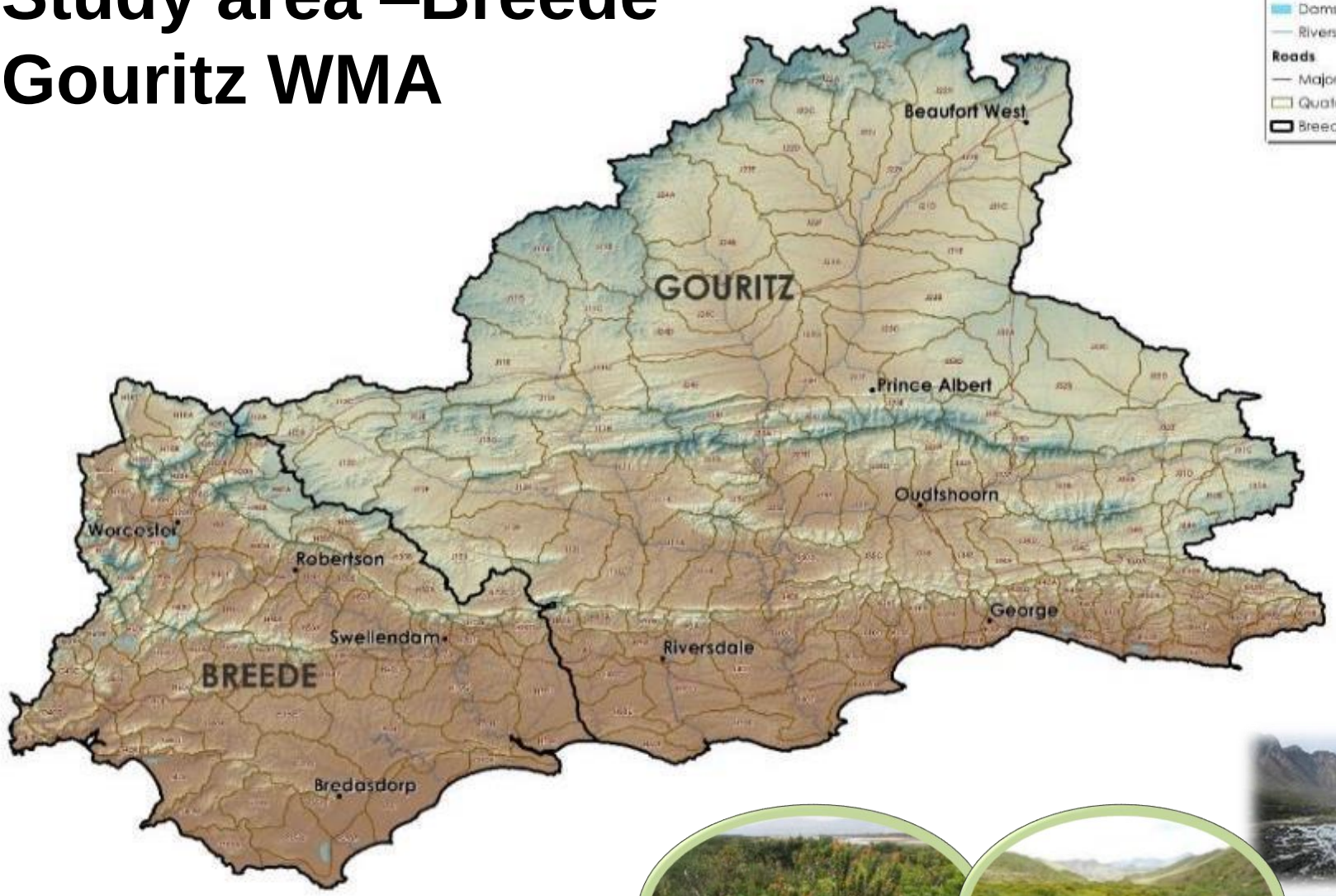
- an identified network of significant resources (rivers, estuaries, wetlands, dams, aquifers)
- describe water resource infrastructure & water user allocations

3. Integrated Units of Analysis

Objective: Provides broader-scale units for assessing socio-economic implications of scenarios & to report on ecological conditions at a sub-catchment scale

Breede-Gouritz: 18 Integrated Units of Analysis (IUAs)

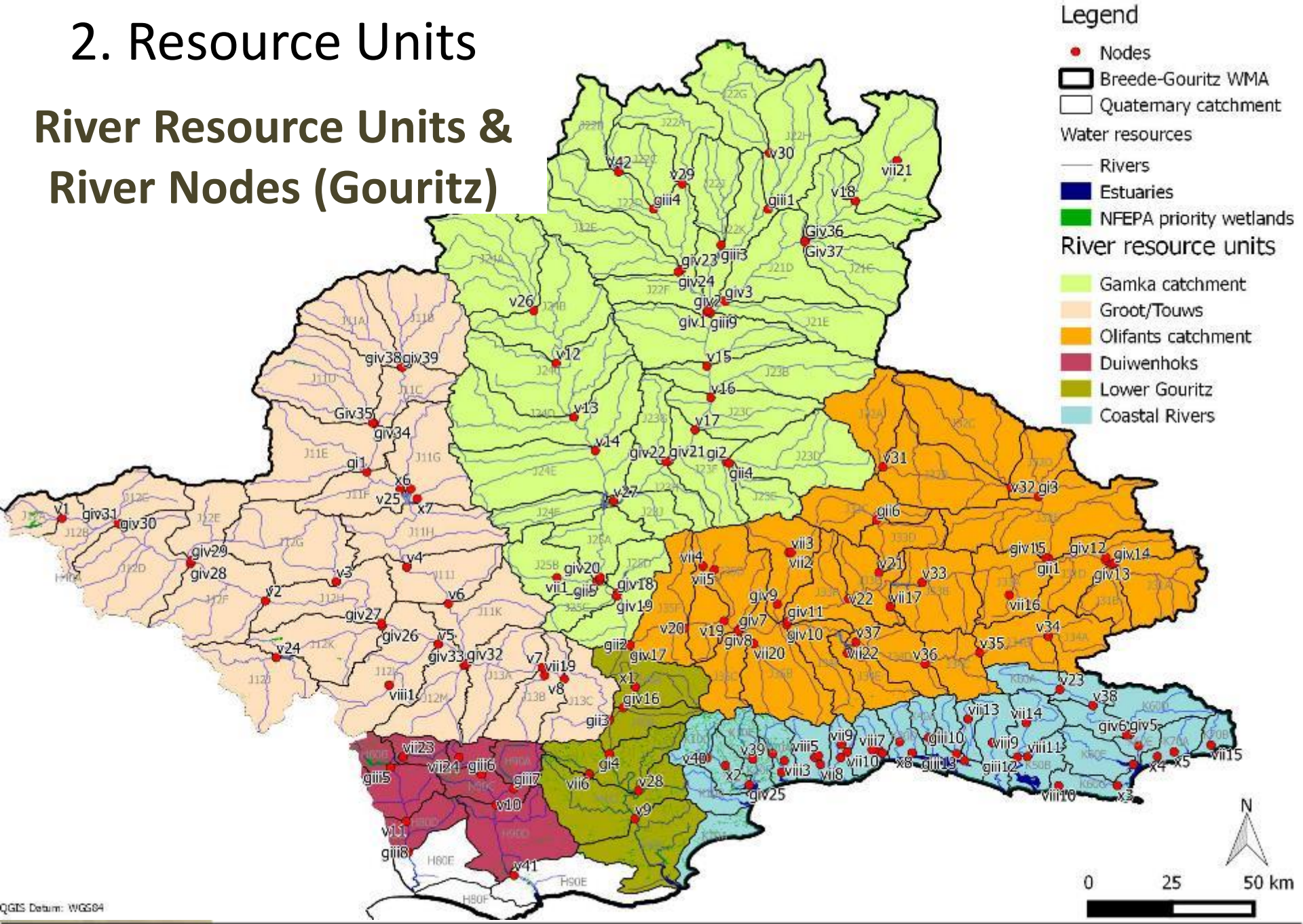
Study area –Breede Gouritz WMA



1. Socio-economic zones

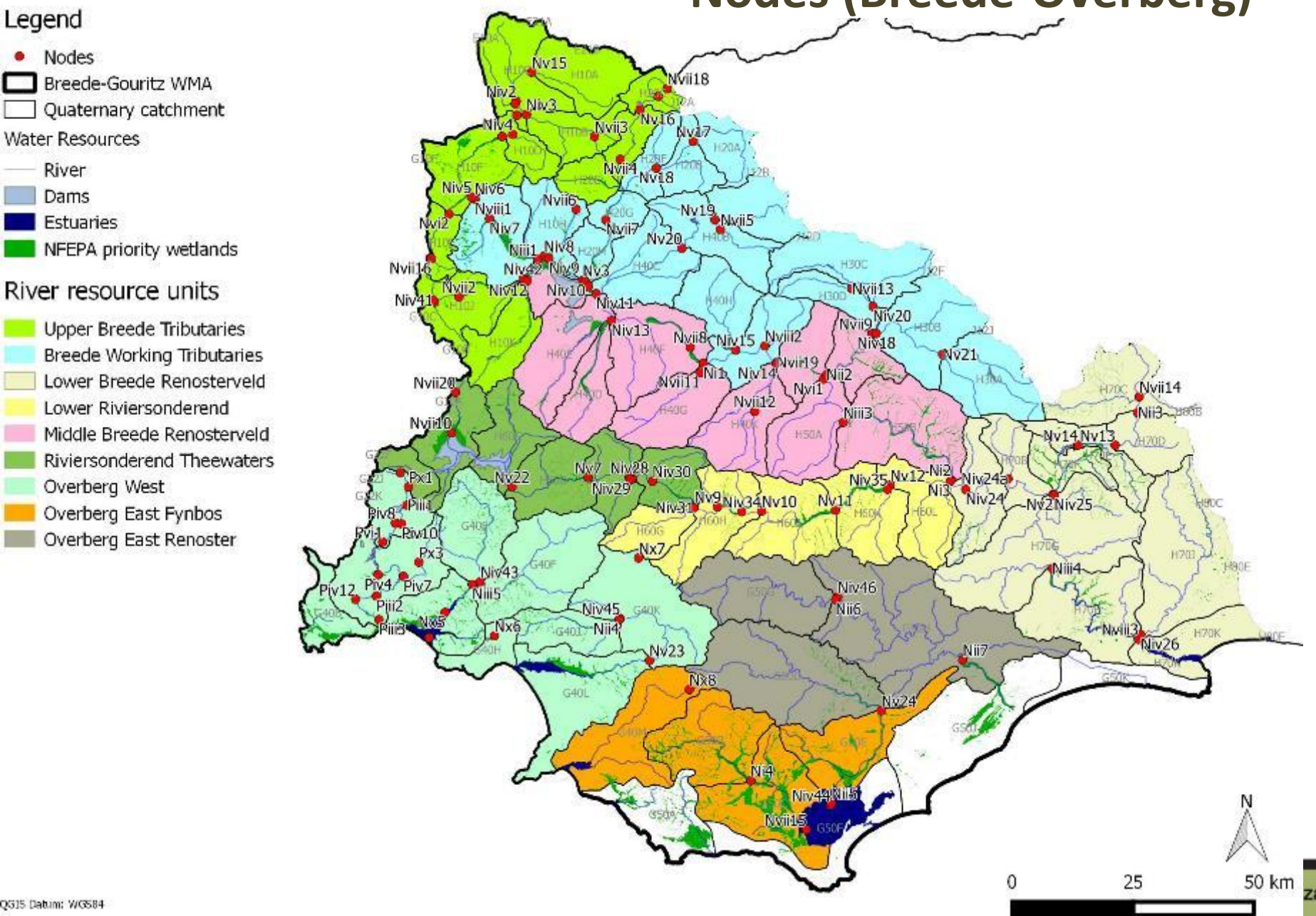
2. Resource Units

River Resource Units & River Nodes (Gouritz)



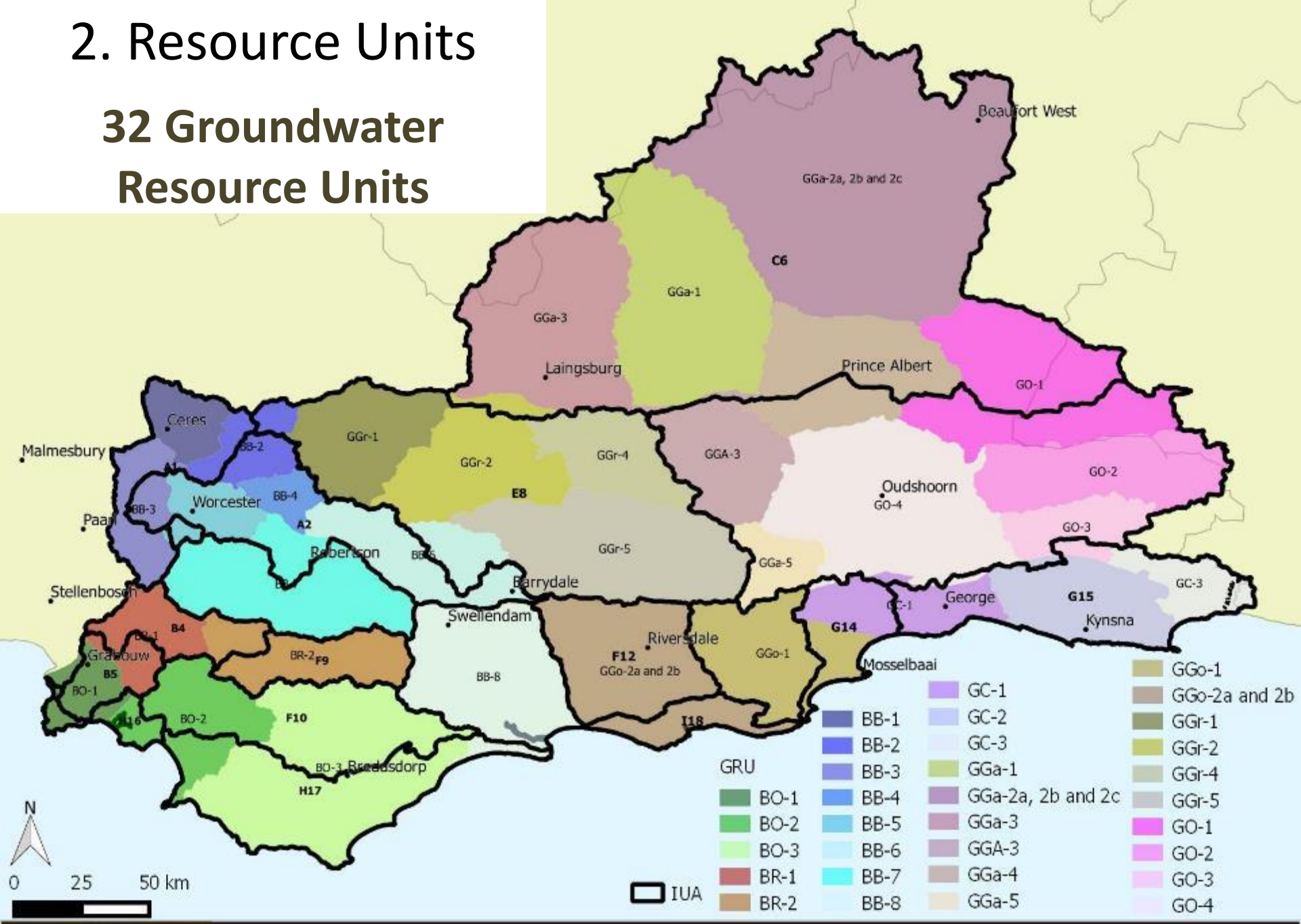
2. Resource Units

River Resource Units & River Nodes (Breede-Overberg)



2. Resource Units

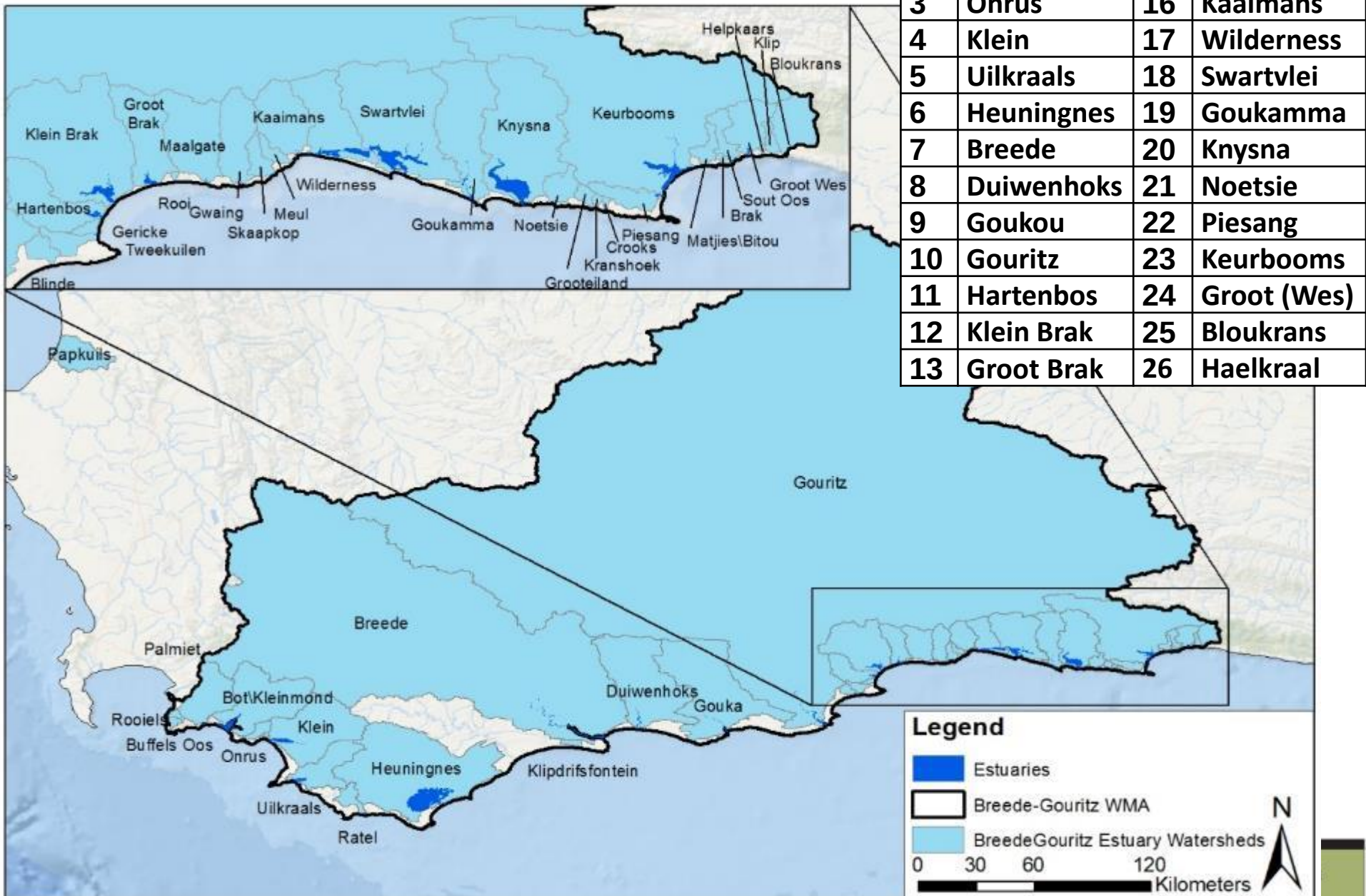
32 Groundwater Resource Units



2. Resource Units

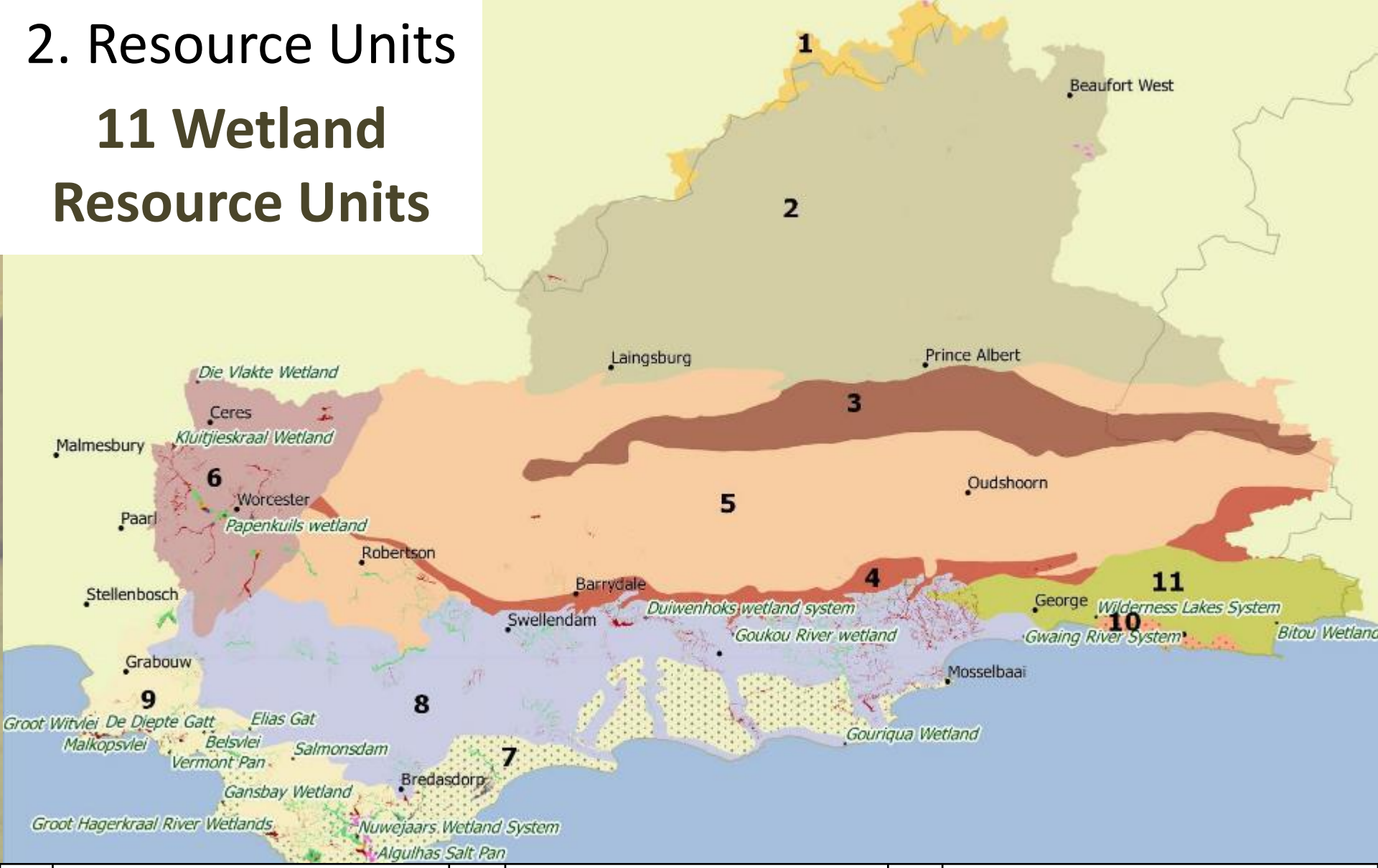
26 Significant Estuaries

1	Palmiet	14	Maalgate
2	Bot/ Kleinmond	15	Gwaing
3	Onrus	16	Kaaimans
4	Klein	17	Wilderness
5	Uilkraals	18	Swartvlei
6	Heuningnes	19	Goukamma
7	Breede	20	Knysna
8	Duiwenhoks	21	Noetsie
9	Goukou	22	Piesang
10	Gouritz	23	Keurbooms
11	Hartenbos	24	Groot (Wes)
12	Klein Brak	25	Bloukrans
13	Groot Brak	26	Haelkraal



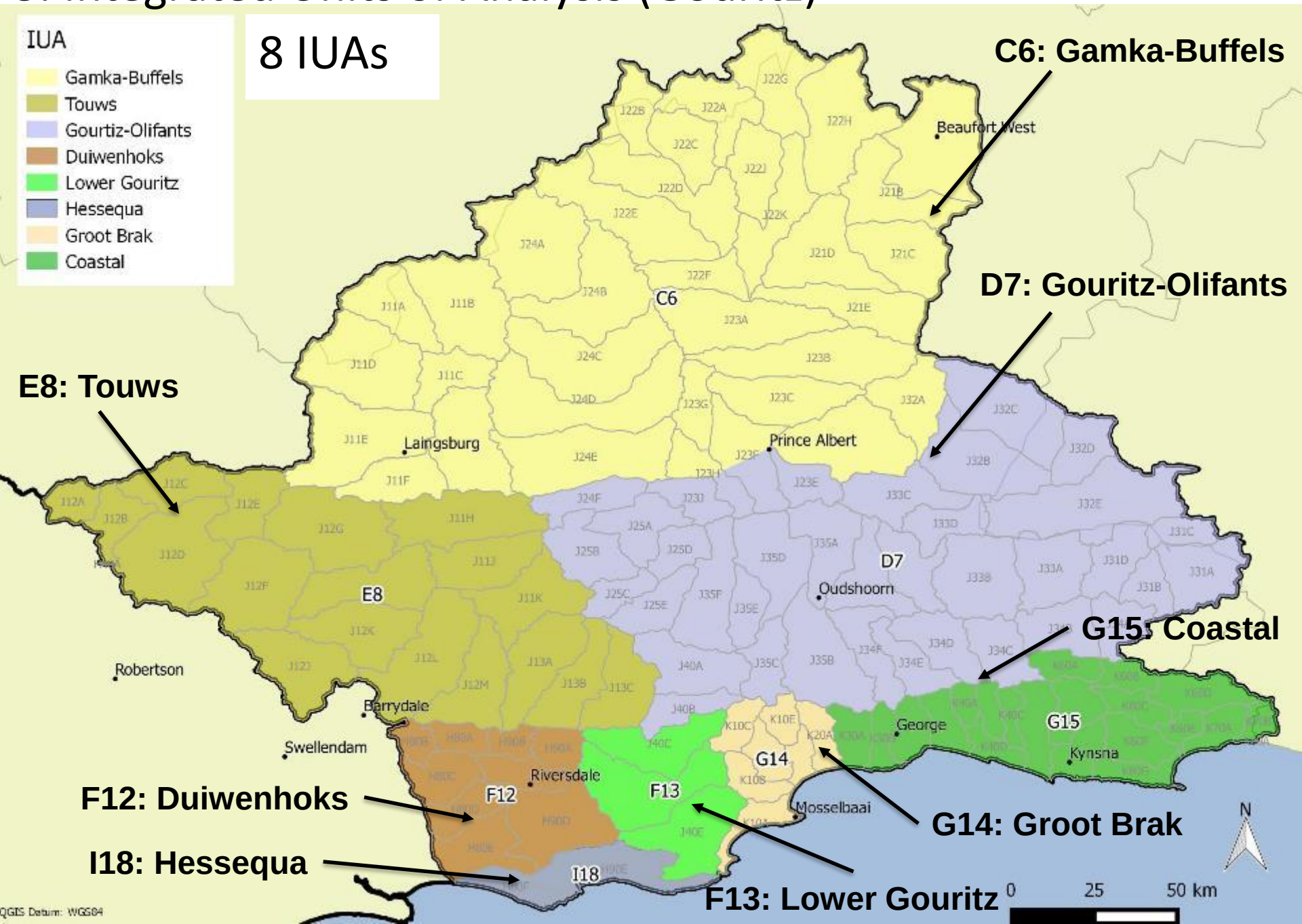
2. Resource Units

11 Wetland Resource Units



1	Nama-Karoo	5	Southern Fold Mountains	9	Coastal Southern Folded Mountains
2	Great Karoo	6	Western Folded Mountains	10	Sedimentary Coastal Lakes
3	Cape Fold (Swartberg)	7	Coastal Sedimentary Deposits	11	South Eastern Coastal Belt
4	South Cape Fold Mountains	8	Southern Coastal Belt		

3. Integrated Units of Analysis (Gouritz)



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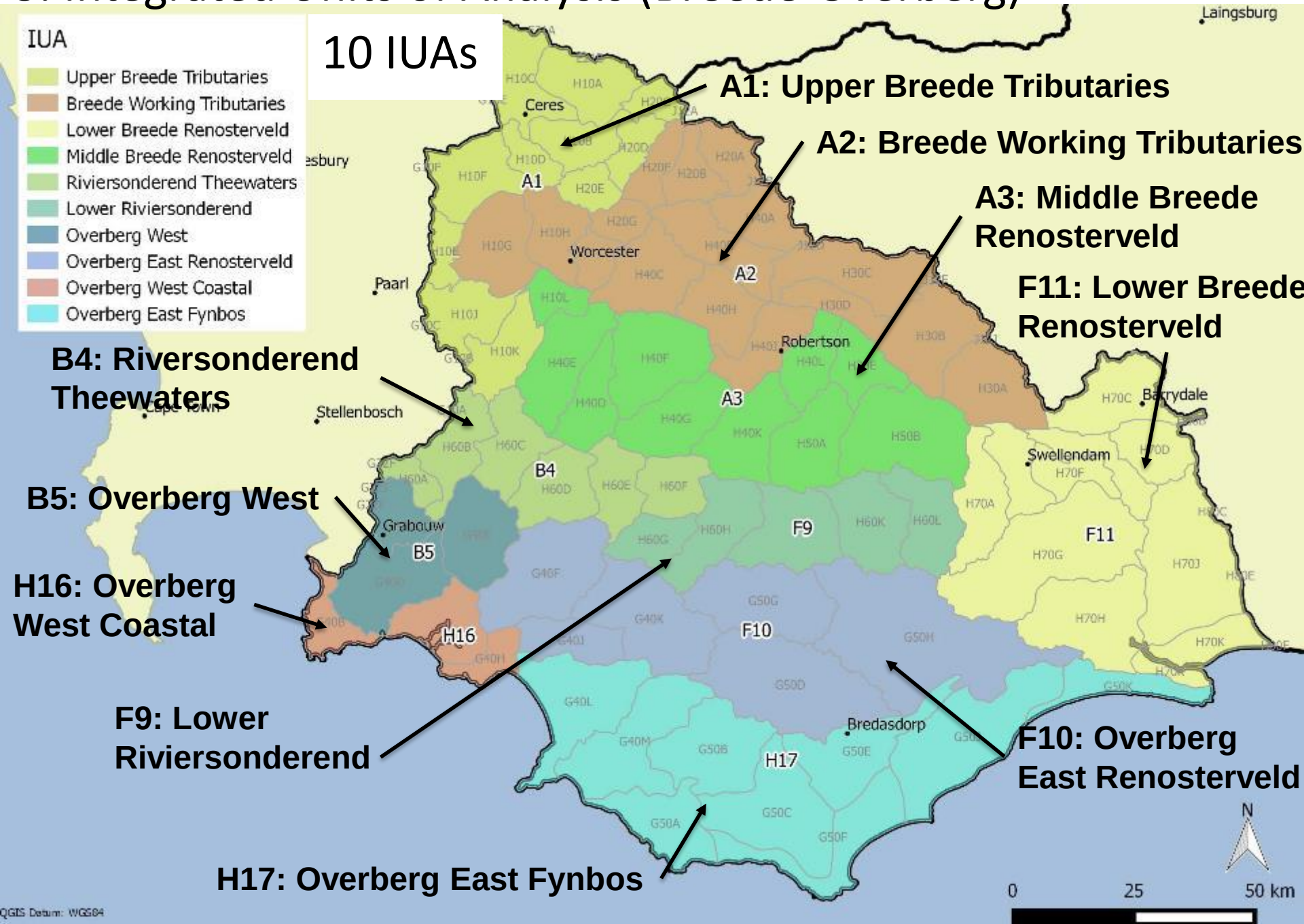

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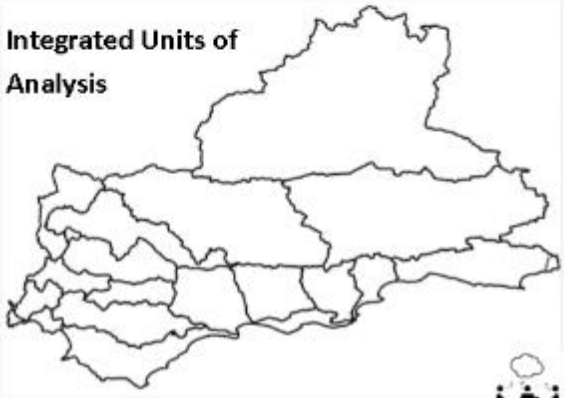

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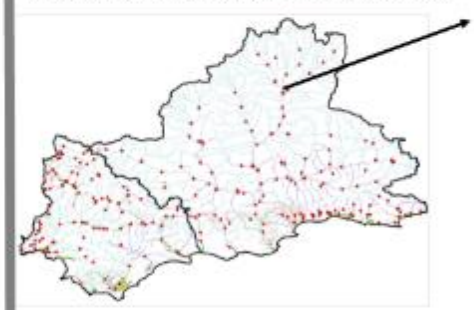

Node: refer to different Ecological Base Conditions

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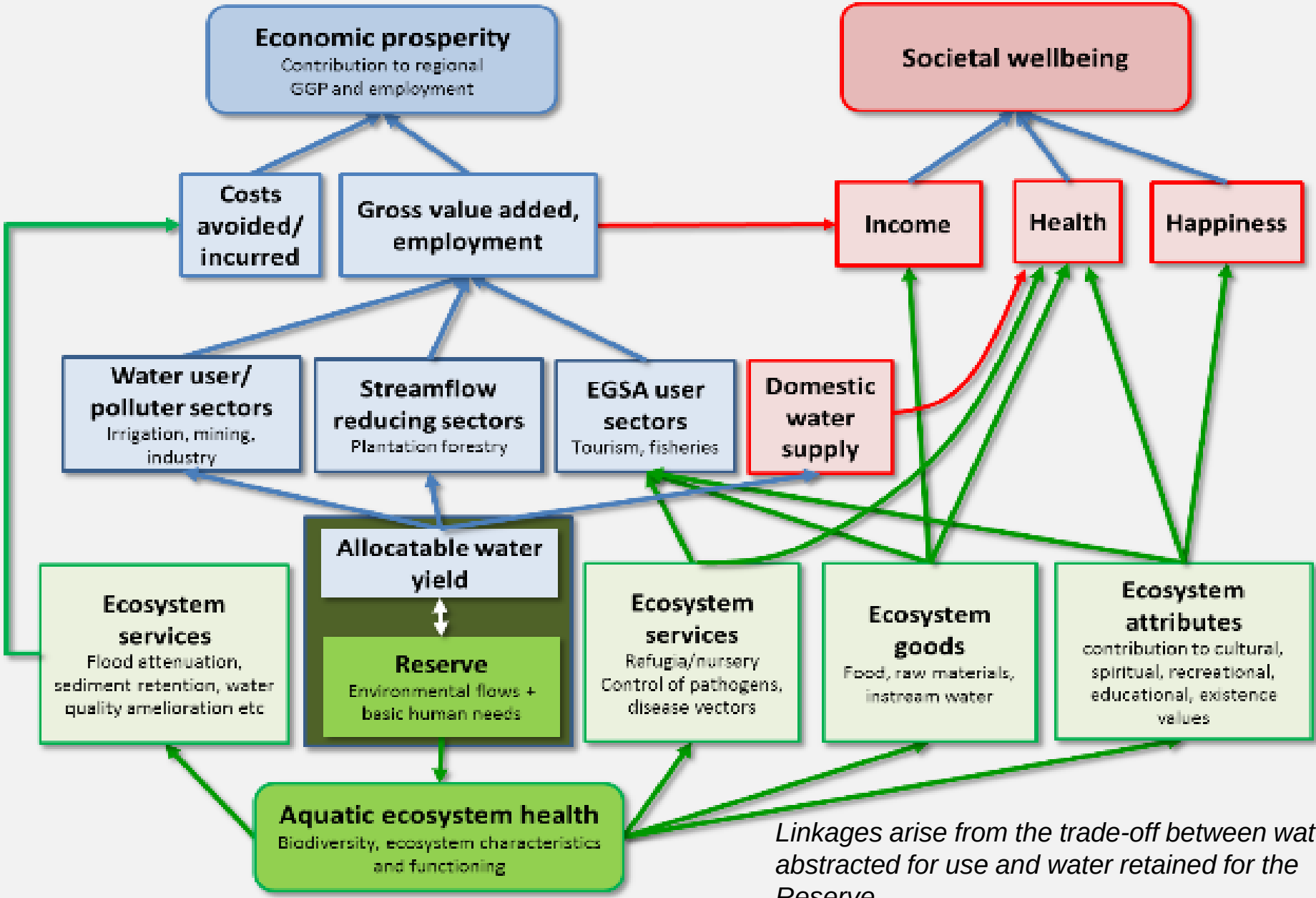
Step 2: Link Value & Condition of Water Resource

- **How to link Value & Condition of the Water Resource?**
  - **Value:**
    - Social
    - Economic
  - **Condition:**
    - State of the water resource
    - Water quantity & quality
    - Aquatic ecosystem

Need to estimate the relationships between water use and economic outputs as a result of production in water user sectors, stream flow reducing sectors & sectors relying on ecosystem services

- **What are EGSAs?**
  - Ecosystem Goods, Services and Attributes
  - Ecosystems offer a range of goods, services and attributes that contribute to the economy and human wellbeing

Step 2: Link Value & Condition of Water Resource



Linkages arise from the trade-off between water abstracted for use and water retained for the Reserve

Step 2: Link Value & Condition of Water Resource

The Objectives of Step 2 are:

- Identification of Classification Scenarios
- Defining qualitative relationships & consequences of:
  - Water quality
  - River (ecological) at key biophysical nodes:
    - *evaluating and determining the impact on the Ecological Category (EC) and capacity to supply ecosystem services*
  - Economic:
    - *determining sectoral impacts of scenarios on yield and ecosystem services*
  - Socio-economic:
    - *determining impacts of any water allocation changes*
- Describe how to integrate and evaluate the consequences to provide preliminary Water Resources Classes for stakeholder evaluation

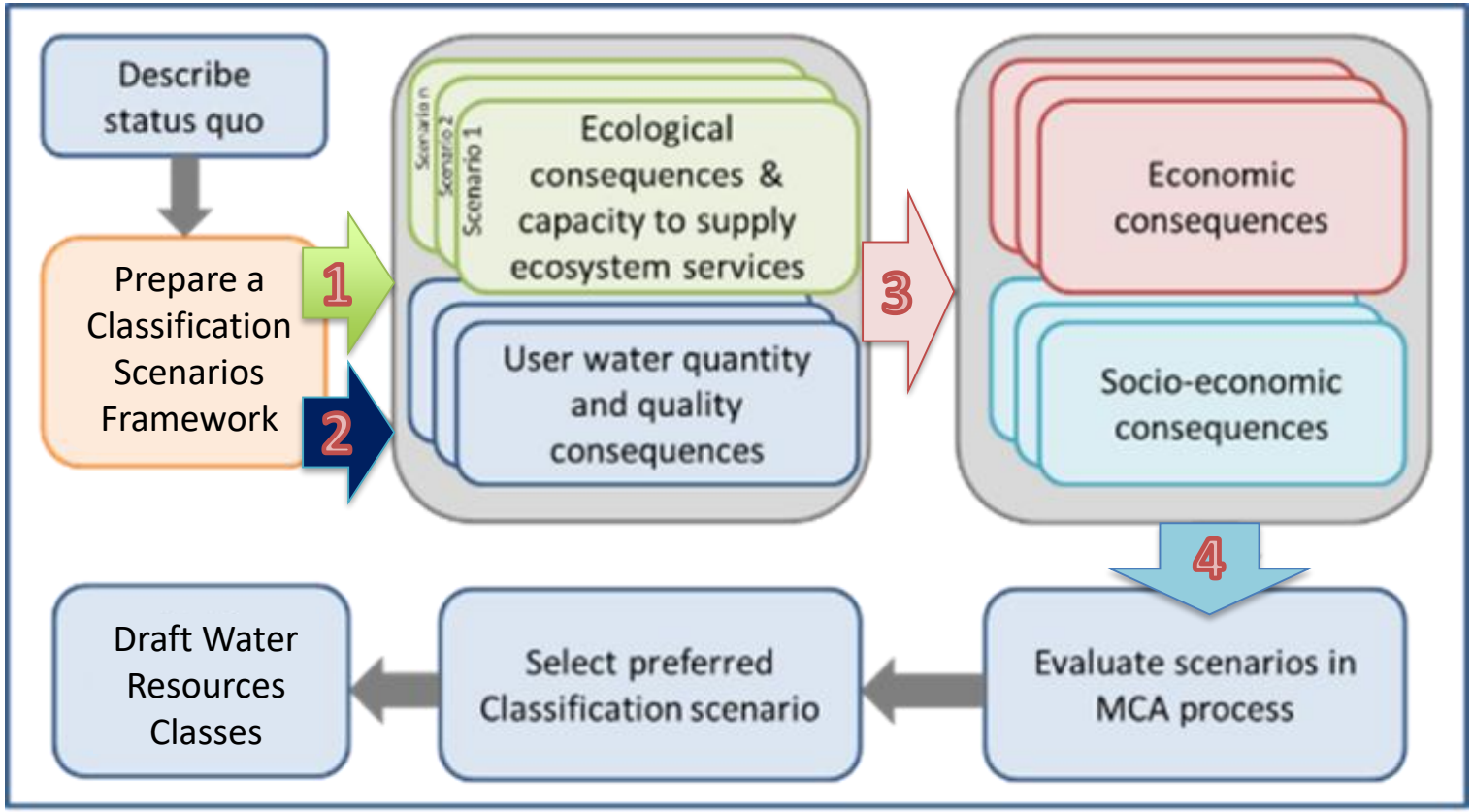
Step 2: Link Value & Condition of Water Resource

Variables considered in linking the value and condition of the Water Resource:

Variable	Components
Ecological	• Overall state of aquatic ecosystem health • % of freshwater conservation targets met • % of estuary conservation targets met
Water Quality for Users	• Empirical impacts on salinity and nutrient enrichment • Qualitative impacts on constituents of concern in a particular IUA
Economic	• Losses / gains in Total Value Added + Costs saved/incurred • Losses/gains in Total Employment
Society	• Impact on livelihoods, • Income to poor households • Intangible benefits to society

Step 2: Link Value & Condition of Water Resource

Broad Conceptual Process



1 Relationships and thresholds between flows and ecosystem condition and EGSA (EWR analysis)

2 Operational assumptions, yield modelling and allocation rules

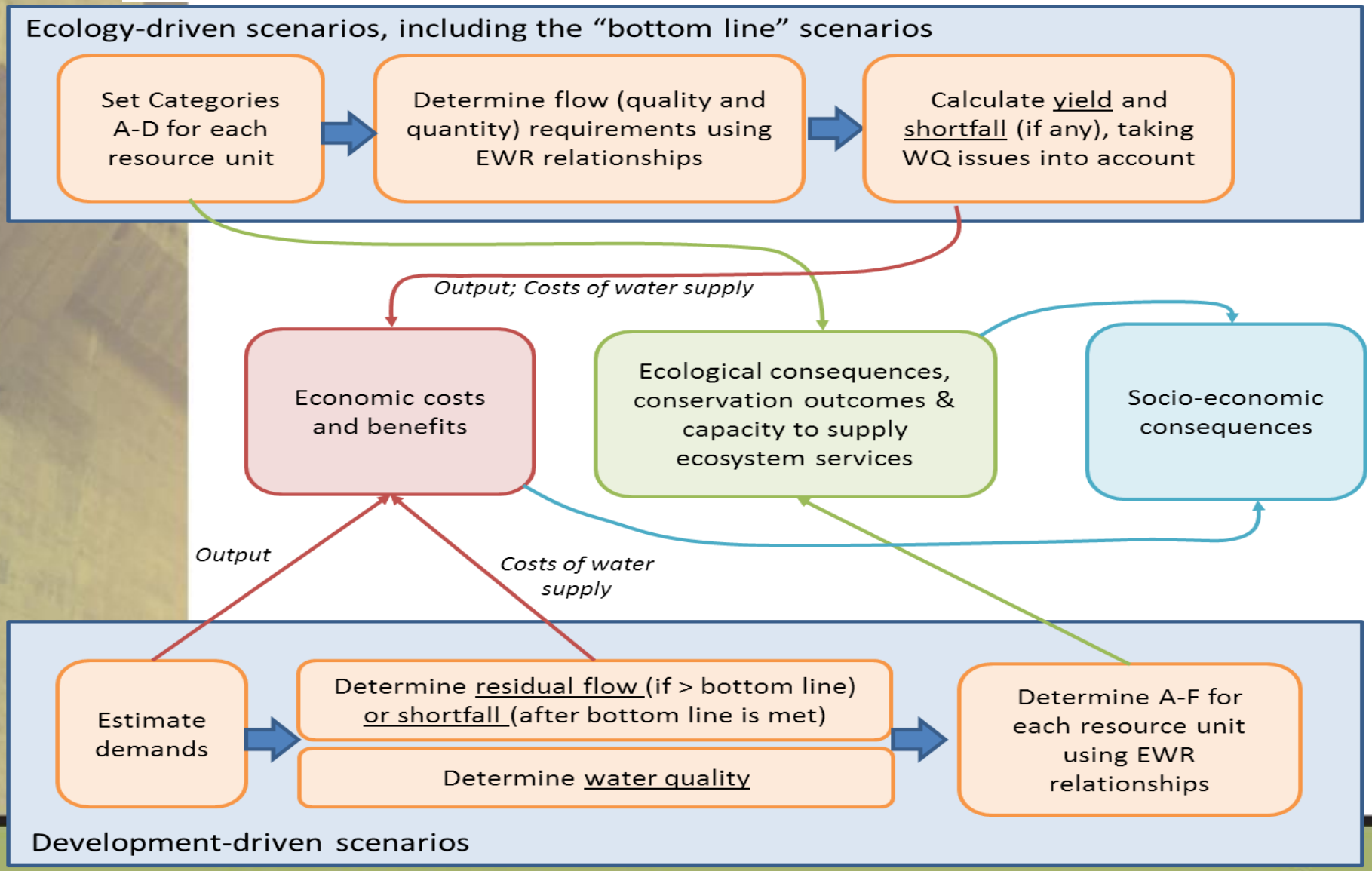
3 Linking ecosystem condition (Class), economic outputs and human wellbeing (models, assumptions and measures)

4 Multi-criteria analysis framework and methods

EGSA: Ecosystem Goods, Services and Attributes **MCA:** Multi-criteria analysis
EWR: Ecological Water Requirements

Step 2: Link Value & Condition of Water Resource

The technical processes for assessment of the classification scenario framework involve both ecology-driven and development-driven scenarios



Step 2: Link Value & Condition of Water Resource

Draft CMS Vision for the WMA

How should WMA water resource be used?	How should WMA water resources be looked after?	Who should be responsible for WMA water resource management?
• Sustainability • Education/awareness • Monitoring/maintenance • Planning • Laws/regulation • Technology	• Continuous awareness • Monitoring • Bottom up approach • Penalties for non-compliance • Transparency in IWRM • Effective usage of water • Providing incentives	• Everyone is responsible • CMA should facilitate • Sharing of resources between departments/agencies • Cooperative governance • Ubuntu principle

Step 2: Link Value & Condition of Water Resource

Draft WMA Vision from CMS

Forms part of Step 2 – Linking economic & Social Value, to help guide the formulation of the scenarios

"Working together for responsible, equitable and efficient water use through Ubuntu and innovation"

OR

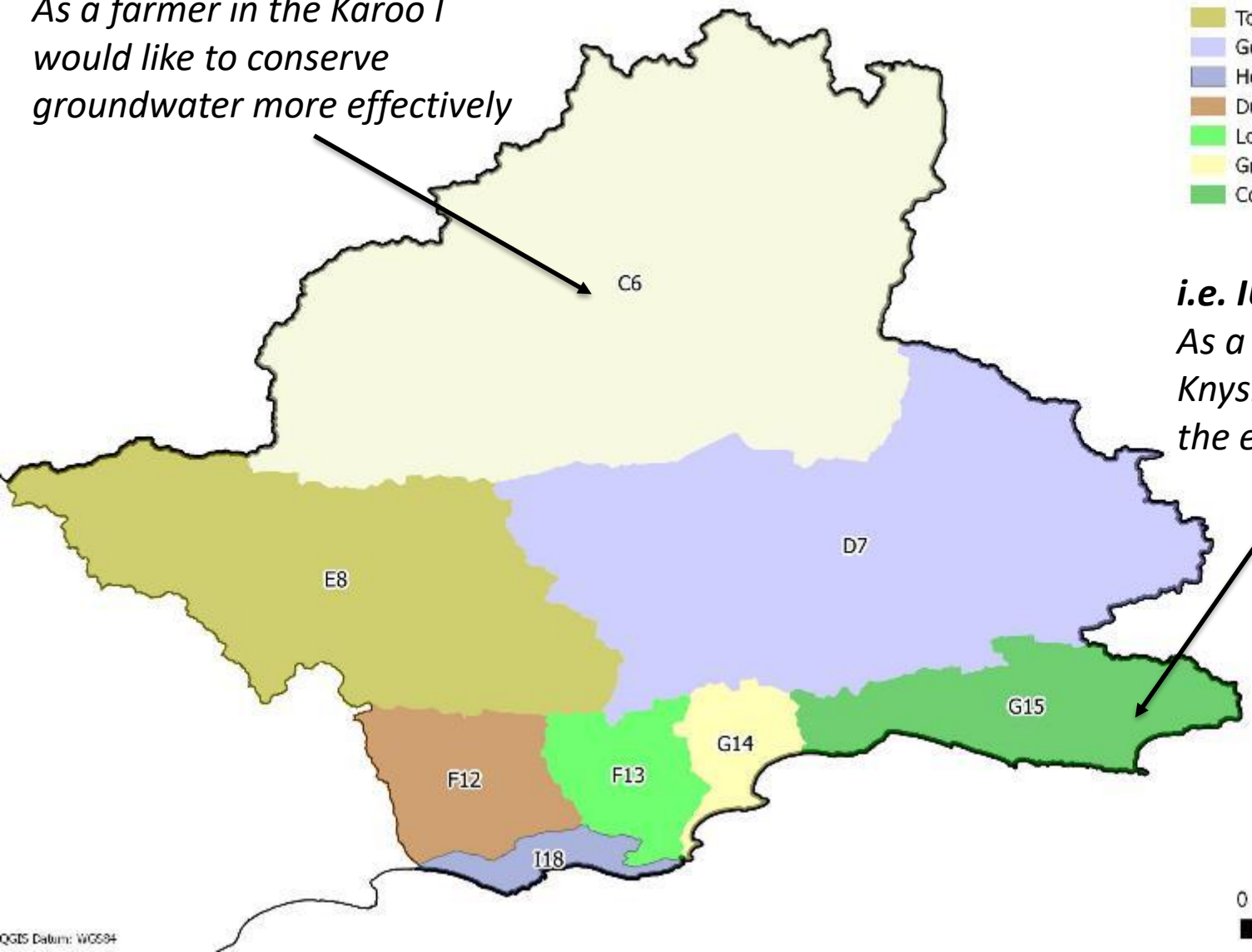
"Through ubuntu, efficiency and innovation we manage our water together, for all, forever"

Scenarios: PSC vision for each IUA

Step 2: Link Value & Condition of Water Resource

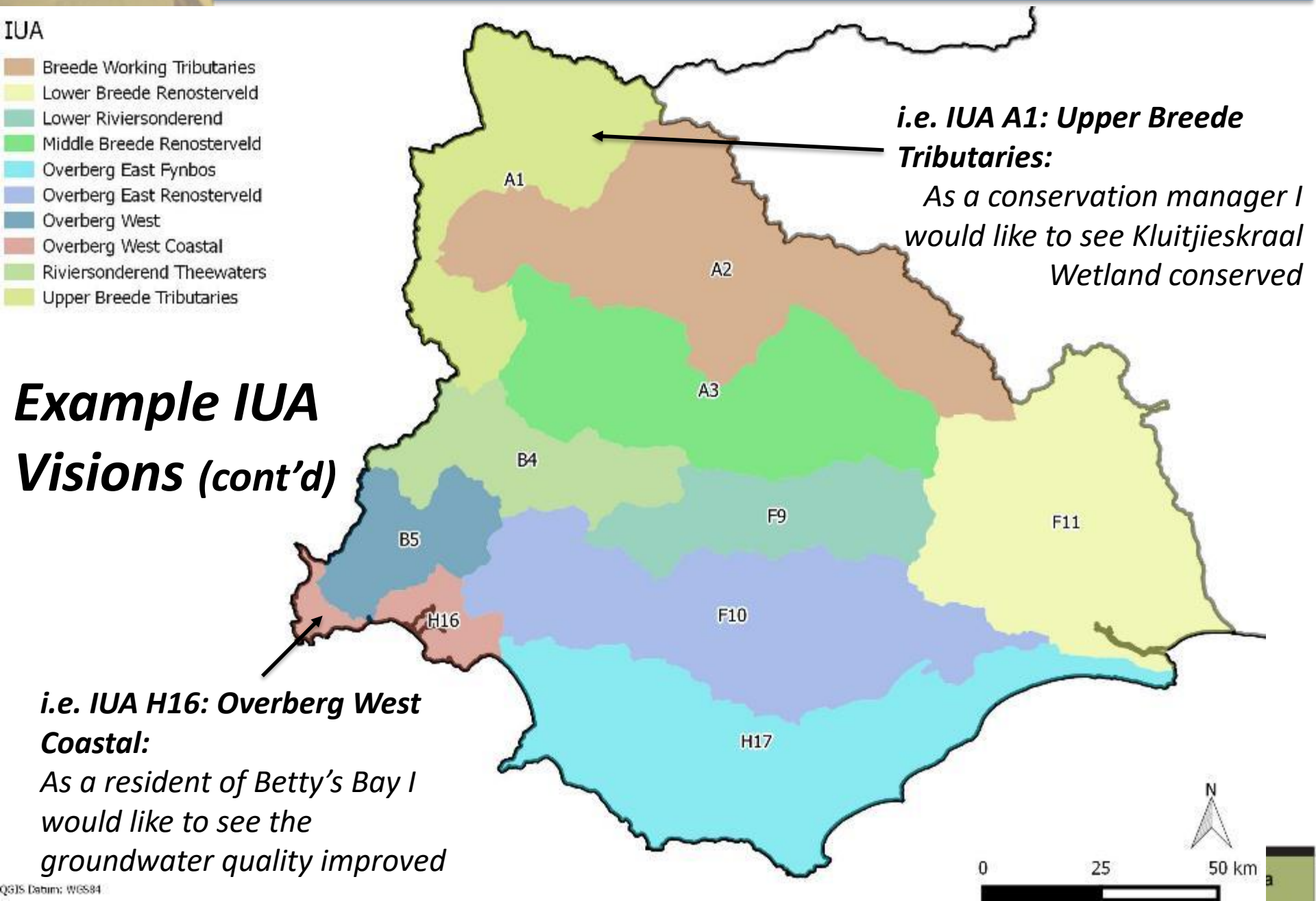
Example IUA Visions

i.e. IUA C6: Gamka-Buffels:
As a farmer in the Karoo I would like to conserve groundwater more effectively



i.e. IUA G15: Coastal:
As a guest house of Knysna I would like to see the estuary conserved

Step 2: Link Value & Condition of Water Resource



Example IUA Visions (cont'd)

i.e. IUA A1: Upper Breede Tributaries:

As a conservation manager I would like to see Kluitjieskraal Wetland conserved

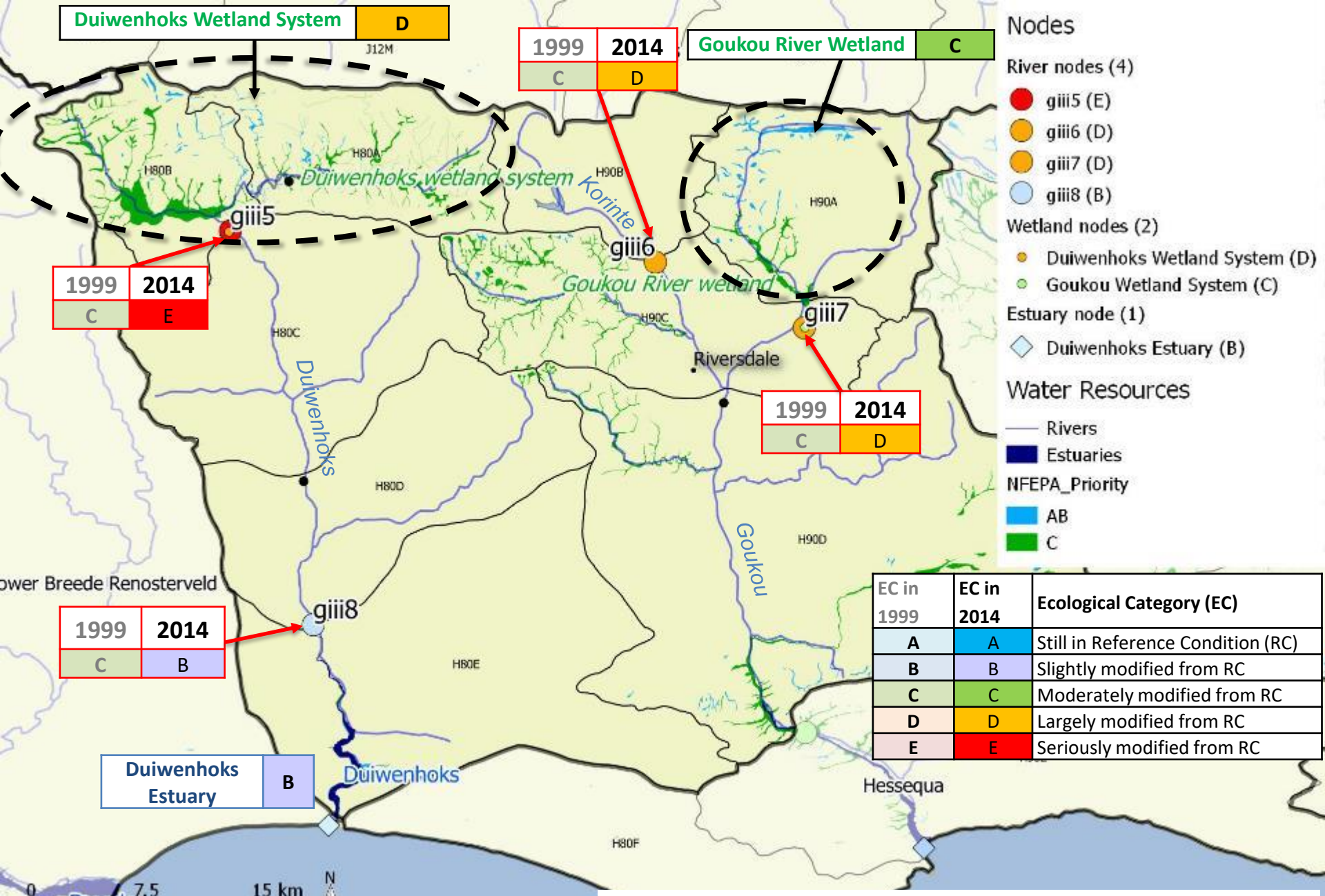
i.e. IUA H16: Overberg West Coastal:

As a resident of Betty's Bay I would like to see the groundwater quality improved

Step 2: Link Value & Condition of Water Resource

Classification Scenarios Framework

	#	Scenario	Description
1	1A	**Maintain PES + low growth (=Baseline)**	River, wetland and estuary systems are maintained in their present condition.
	1B	**Maintain PES + high growth**	
2	2A	**Bottom line + low growth**	The maximum volume of water is made available for abstraction from the system for economic activities, with the proviso that all water resources are just maintained in a D class (the ecological “bottom line”).
	2B	**Bottom line + high growth**	
3	3A	**RECs + low growth**	The RECs determined for rivers, wetlands and estuaries based on present health and conservation importance (but without any consideration of socio-economic effects) are applied in thes scenarios.
	3B	**RECs + high growth**	
4	4A	**Targeted cons+ low growth**	High ECs are given to areas of high conservation importance, but for other areas, the ECs can be below REC. It may end up that this scenario set is similar to the above.
	4B	**Targeted cons+ high growth**	
5	5A	**High conservation + low growth**	This scenario represents the situation where conservation targets are met, with an emphasis on a tourism-based economy, with most resources in a good condition and a significant proportion in EC A or B.
	5B	**High conservation + high growth**	



EC in 1999	EC in 2014	Ecological Category (EC)
A	A	Still in Reference Condition (RC)
B	B	Slightly modified from RC
C	C	Moderately modified from RC
D	D	Largely modified from RC
E	E	Seriously modified from RC

Duiwenhoks IUA current Ecological Condition:

43% D; 28% B; 14.5% C; 14.5% E

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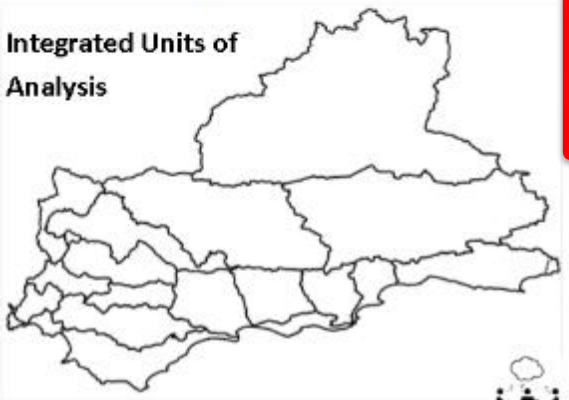

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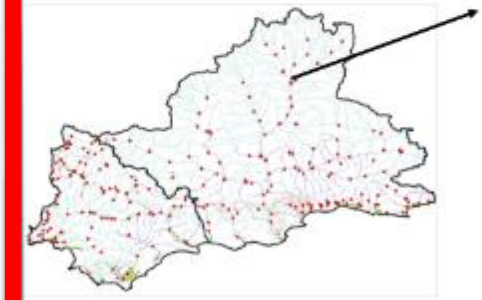

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Step 3: Quantifying the EWR & changes in EGSAs

- Introductory tasks for step 4 & 5 (determining & evaluating scenarios)
- Provides information to be used in later steps of classification procedure, to assess impacts of changes in catchment configuration scenarios:
  - Step 3a: Identify nodes to which existing EWR data can be extrapolated, and extrapolate
  - Step 3b: Develop rule curves, summary tables and modified time series for all nodes for all categories
  - Step 3c: Quantify changes in relevant ecosystem components, functions & attributes for each category for each node

Step 3: Quantifying the EWR & changes in EGSAs

What is the **Ecological Water Requirement (EWR)?**

- In terms of the National Water Act (Act 36 of 1998) calculation of the Reserve is a part of the Classification process
- The Reserve refers to the **Quantity & Quality** of water required to meet certain Ecological State and Basic Human Needs requirements
- **EWRs** are determined for different ecological categories ranging from A (close to natural) to F (heavily degraded)
- **Reserves** can have low, medium or high confidence
- Factors influencing ***confidence*** are:
  - Magnitude of the impact of the proposed use
  - The ecological importance and sensitivity (EIS) of the resource under consideration
  - The present ecological state (PES) of the resource
  - The biodiversity status of the related ecosystems that could be impacted
  - The existing use and potential for conflict amongst users

Step 3: Quantifying the EWR & changes in EGSAs

Step 3 provides information to be used in later steps of classification procedure in order to assess impacts of changes in catchment configuration scenarios

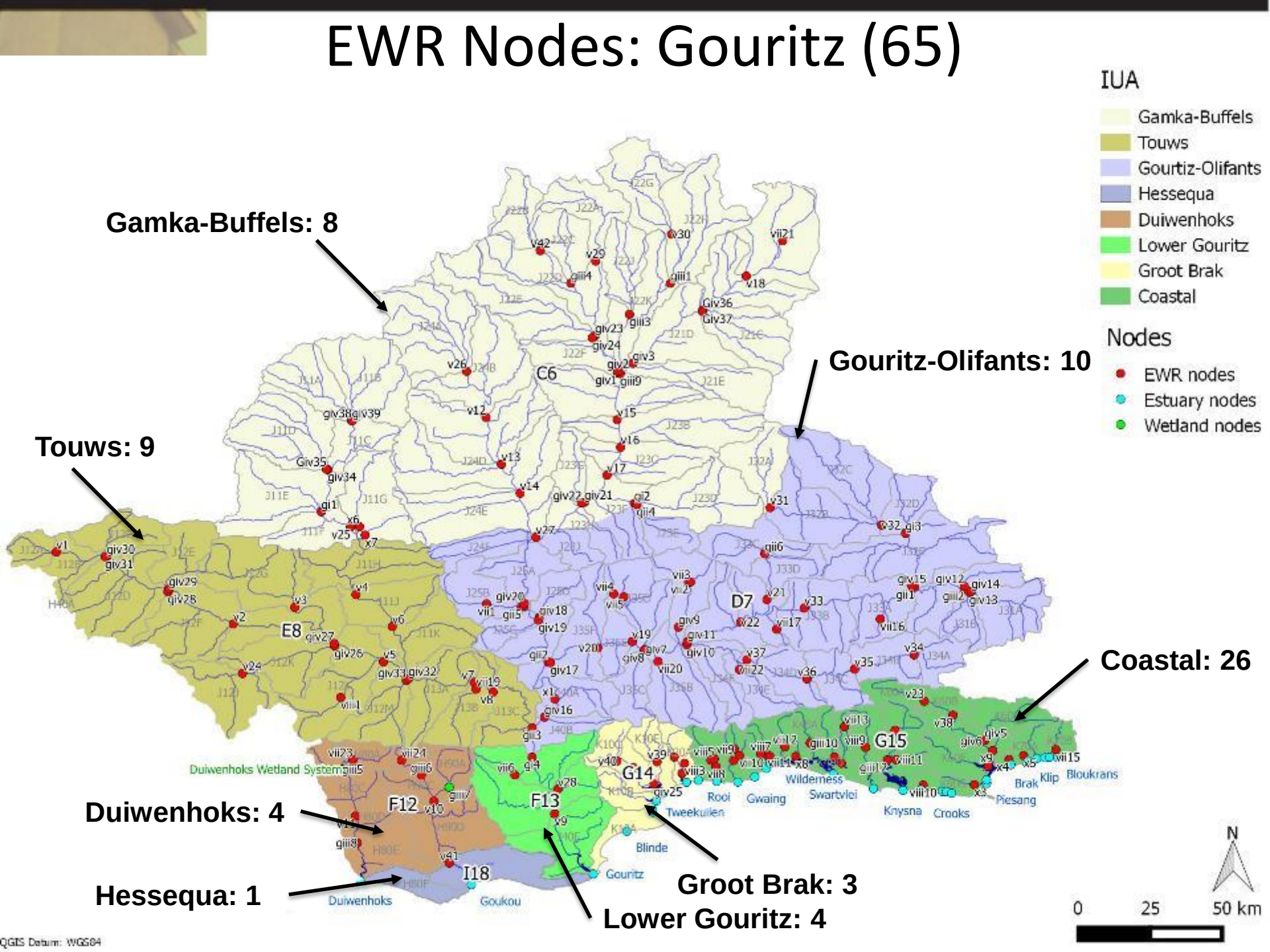
- To be followed by Steps 4 & 5:
  - Step 4: Set baseline for ecological sustainability
  - Step 5: Evaluate scenarios within Integrated Water Resource Management framework

Step 3: Quantifying the EWR & changes in EGSAs

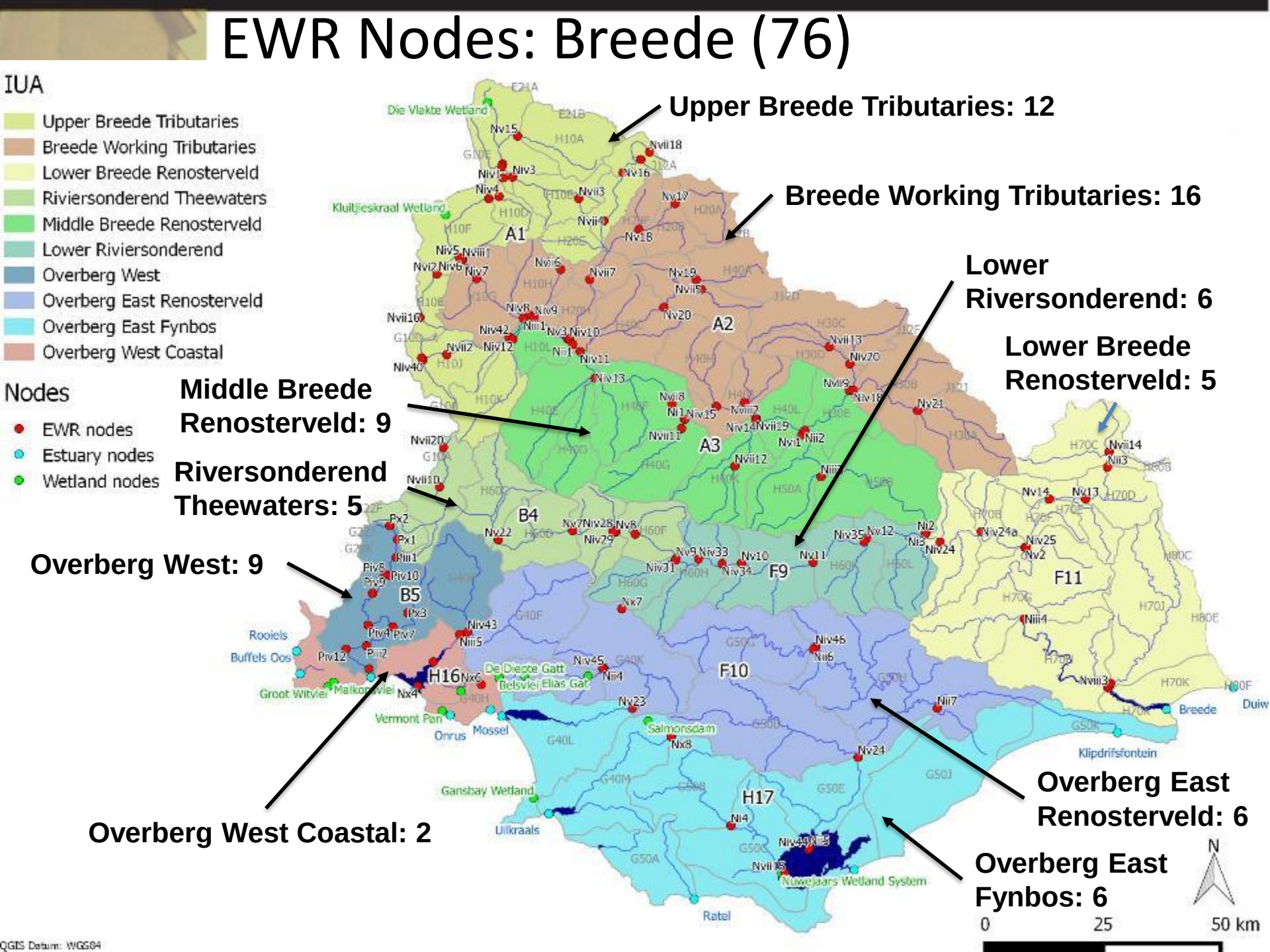
- **Data on Ecological Water Requirements and changes in the non-water quality Ecosystem Goods, Services and Attributes are used to determine:**
  - Flow requirements at individual nodes based on the recommended EC
  - Impact of alternative development scenarios on the ecological condition of individual nodes
- **Associated impact in terms of changes in Ecosystem Goods, Services and Attributes will then be used to evaluate the impacts of alternative scenarios**
- **The general approach to the scenario analysis has been described in STEP 2 and will be further developed as part of STEP 4 (Baseline)**

The development of current and future development scenarios and the analysis of the potential impact of these scenarios is the next step

EWR Nodes: Gouritz (65)



EWR Nodes: Breede (76)



IUA	CODE	RIVER	nMAR	1999EC	2014EC	EWR %	EWR MAR
Duiwen-hoks	giii5	Duiwenhoks	62.5	C	E	26.7	16.7
	giii8	Duiwenhoks	83.2	C	B	40.3	33.6
	giii6	Korinte	34.1	C	D	18.2	6.2
	giii7	Goukou	50.9	C	D	18.0	9.2
Hessequa	gv41	Goukou	105.0	C	C	33.2	34.8
Groot Brak	gvii7	Groot-Brak	27.0	C	BC	25.4	6.9
	gviii2	Groot-Brak	15.3	C	BC	25.4	3.9
	gviii3	Varing	6.6	C	D	25.1	1.7
Coastal	gviii4	Maalgate	15.3	C	B	47.5	7.3
	gvii8	Maalgate	30.1	C	B	47.5	14.3
	gvii9	Malgas	17.3	C	B	47.5	8.2
	gviii6	Gwaing	34.1	C	C	35.7	12.2
	gviii7	Swart	16.1	B	D	14.1	2.3
	gvii11	Kaaimans	18.6	B	B	50.2	9.4
	gviii8	Silver	14.9	B	B	50.2	7.5
	gvii12	Touws	16.7	B	B	30.3	5.1
	gx8	Klein Keurbooms	2.5	B	D	14.1	0.4
	giii10	Diep	12.4	B	B	30.3	3.9
	giii13	Hoekraal	27.9	B	B	30.3	8.5
	gvii13	Karatara	11.2	B	AB	40.2	4.5
	giii11	Karatara	33.8	B	AB	40.2	13.6
	gviii9	Goukou	30.4	B	BC	38.5	11.7
	gvii14	Knysna	26.5	B	B	32.1	8.5
	giii12	Knysna	16.7	B	B	34.1	5.7
	gviii11	Gouna	27.6	B	AB	53.4	14.8
	gvii10	Noetzie	4.8	B	B	52.8	2.5
	gx3	Piesang	7.3	B	D	28.5	2.07
	giv4	Bitou	23.6	B	C	54.5	12.9
	giv6	Keurbooms	46.1	B	C	34.9	16.1
	giv5	Palmiet	42.1	B	A	48.3	20.3
	gx9	Keurbooms	91.3	B	C	34.9	31.9
	gx4	Buffels	1.8	B	B	34.3	0.6
	gx5	Sout	3.8	B	B	34.3	1.3
	gvii15	Bloukrans	31.2	B	B	33.9	10.6

IUA	CODE	RIVER	nMAR	1999EC	2014EC	EWR %	EWR MAR
Touws	giv28	Touws	16.4	C	D	11.2	1.8
	giv27	Touws	26.4	C	B	26.5	7.0
	giv26	Brak	2.9	C	C	17.7	0.5
	gviii1	Doring	2.9	C	D	11.5	0.3
	gv5	Touws	33.5	C	D	11.4	3.8
	gv4	Groot	27.4	D	D	11.4	3.1
	giv32	Groot	30.5	C	D	11.4	3.5
	gv7	Groot	72.7	C	C	16.6	12.0
	gii3	Groot	78.1	C	B	22.5	17.6
Gamka-Buffels	giv34	Buffels	13.1	C	B	26.5	3.5
	gv25	Buffels	24.2	C	C	22.9	5.6
	giv3	Gamka	31.9	C	B	27.1	8.7
	giv1	Koekemoers	7.4	C	C	17.9	1.3
	giv2	Leeu	17.1	C	C	17.9	3.1
	gv17	Gamka	58.1	C	B	22.5	13.1
	gv27	Gamka	69.6	C	C	18.3	12.7
	gv14	Dwyka	4.0	C	A	39.1	1.6
Lower Gouritz	giv20	Gamka	79.8	C	C	18.4	14.7
	gii2	Gamka	111.8	D	C	12.1	13.5
	gi4	Gouritz	489.1	C	C	14.8	72.5
	gv9	Gouritz	571.8	C	C	14.8	84.9
Gouritz-Oliants	giii2	Olifants	11.8	C	C	14.4	1.7
	giv15	Traka	2.7	C	C	14.5	0.4
	gv33	Olifants	25.0	D	D	11.9	3.0
	gv21	Meirings	21.4	D	C	12.3	2.6
	giv11	Olifants	80.0	D	E	12.4	9.9
	gv36	Kammanassie	41.2	D	C	23.2	9.5
	giv10	Leeu	59.2	D	E	15.2	9.0
	gv19	Olifants	224.5	D	E	16.3	36.5
	giv17	Olifants	253.4	D	D	16.2	41.1

	NODE	RIVER	nMAR	1999EC	2014EC	EWR %	EWR MAR
Upper Breede Tributaries	Niv2	Dwars	74.9	D	C	22.0	16.5
	Niv1	Koekedou	18.8	D	D	14.2	2.7
	Niv3	Titus	26.2	C	C	22.0	5.8
	Niv4	Witels	84.3	C	A	43.3	36.6
	Nvi3	Breede	252.8	C	C	38.0	96.0
	Nvii16	Witte	42.6	A	A	46.6	19.8
	Niv5	Witte	141.7	D	A	47.2	66.9
	Niv6	Wabooms	7.4	D	D	14.4	1.1
	Nviii1	Breede	434.9	D	C	31.3	136.0
Breede Working Tributaries	Niv7	Slanghoek	32.6	D	D	14.5	4.7
	Niii1	Breede	497.6	C	D	38.0	189.0
	Niv40	Elands	58.1	C	B	42.4	24.7
	Niv41	Krom	9.0	C	B	42.4	3.8
	Nvii2	Molenaars	105.6	C	C	34.3	36.2
	Niv42	Smalblaar	191.2	C	E	18.6	35.5
	Niv8	Jan du Toit	17.9	C	D	14.4	2.6
	Nvii6	Hartbees	4.0	C	D	14.4	0.6
	Niv9	Hartbees	10.2	C	D	14.4	1.5
	Niv12	Holsloot	474.5	C	C	34.8	165.1
	Nv3	Breede	850.9	C	C	31.3	266.1
	Nvii7	Hex	102.8	D	D	22.9	23.5
	Niv10	Hex	107.1	D	D	22.8	24.5
	Nii1	Breede	958.0	C	C	22.0	210.3
	Nvii5	Koo	0.9	C	D	13.1	0.2
	Niv11	Nuy	29.4	C	E	13.2	3.9
	Niv20	Pietersfontein	17.3	C	D	12.0	2.1
	Nvii9	Keisie	21.5	C	D	11.9	2.5
	Niv18	Kingna	27.1	C	D	12.3	3.3
Middle Breede	Niv13	Doring	47.4	C	E	12.9	6.1
	Nvii8	Breede	1042.8	D	B	45.5	474.7
	Nvii11	Poesnels	16.1	D	D	12.8	2.1
	Niv15	Vink	15.6	D	D	12.4	1.9
	Nvii19	Breede	1082.0	D	B	45.5	492.6
	Niv14	Keisers	12.6	D	D	12.5	1.6
	Nii2	Kogmanskloof	52.0	D	D	18.9	9.8
	Ni2	Breede	1170.1	C	D	17.3	202.2
	Nv2	Breede	1701.4	C	C	26.4	449.8
Riversonderend Theewaters	Nvii10	Du Toits	87.8	C	B	47.3	41.5
	Nv7	Riviersonderend	370.2	C	C	30.0	111.1
	Niv28	Baviaans	7.9	C	B	70.9	5.6
	Niv29	Sersants	4.6	C	D	29.9	1.4
	Niv30	Gobos	12.4	C	C	48.1	6.0
Lower Riversonderend	Niv31	Kwartel	10.7	C	D	13.4	1.4
	Niv33	Soetmelksvlei	4.0	C	D	29.9	1.2
	Niv34	Slang	2.1	C	D	29.9	0.6
	Nv10	Riviersonderend	442.9	D	D	24.5	108.5
	Niv35	Kwassadie	5.9	D	E	17.3	1.0
	Ni3	Riviersonderend	483.8	D	D	24.5	118.5
Lower Breede	Niv24	Leeu	5.8	C	E	12.6	0.7
	Nii3	Tradouw	19.4	C	B	29.9	5.8
	Niv25	Buffeljags	119.4	C	E	14.1	16.9
	Niii4	Breede	1832.7	C	B	40.1	735.5
	Niv26	Slang	10.0	C	E	14.2	1.4
Overberg West	Piii1	Palmiet	39.9	D	D	19.1	7.6
	Piv10	Witklippieskloof	15.1	D	D	21.5	3.2
	Piv9	Palmiet	78.8	D	D	21.5	16.9
	Piv8	Klipdrif	13.6	D	D	21.5	2.9
	Piv4	Klein-Palmiet	13.7	C	D	21.5	3.0
	Piv7	Krom/Ribbok	27.5	C	D	21.5	5.9
	Piii2	Palmiet	206.6	C	C	31.2	64.5
	Piv12	Dwars/Louws	25.2	C	C	100	25.2
	Piii3	Palmiet	250.4	C	C	34.5	86.3
Overberg West Coastal	Niii5	Bot	31.9	D	C	21.3	6.8
	Nx6	Onrus	5.1	C	E	13.4	0.7
Overberg East Renosterveld	Niv43	Swart	42.1	D	E	13.3	5.6
	Niv45	Steenbok	10.8	C	E	12.2	1.3
	Nii4	Hartbees	18.4	C	D	12.5	2.3
	Nv23	Klein	43.0	C	C	19.3	8.3
	Nii6	Sout	4.2	D	D	12.6	0.5
	Nii7	DeHoopVlei	27.1	D	B	30.0	8.1
Overberg East Fynbos	Nx8	Uilkraal	2.4	C	C	19.2	0.5
	Ni4	Nuwejaar	12.5	C	C	13.0	1.6
	Nvii15	Heuningnes	17.8	C	D	13.1	2.3
	Niv44	Heuningnes	18.8	C	D	13.1	2.5
	Nv24	Kars	15.4	C	E	13.3	2.1
	Nii5	Kars	21.6	C	E	20.4	4.4

Estuary	PES	Importance	REC
Knysna	B	100	B
Bot/Kleinmond	C	97	B
Klein	C	97	B
Swartvlei	B	97	B
Gouritz	C/D	88	B
Keurbooms	A/B	88	A
Breede	B	87	B/C
Duiwenhoks	B	84	B
Heuningnes	D	83	A or BAS
Wilderness (Touws)	B	83	A or BAS
Goukou	C	80	B
Groot Brak	D	77	C
Uilkraals	D	76	B
Piesang	C	73	B
Goukamma	B	72	A
Hartenbos	D	66	D
Palmiet	C	63	B
Groot (Wes)	B	63	A or BAS
Onrus	E	59	B
Klein Brak	C	53	C
Bloukrans	A	51	A or BAS
Maalgate	B	38	B
Kaaimans	B	28	B
Noetsie	B	28	B
Gwaing	B	10	B
Haelkraal	C	Not rated	B

Estuaries

- Present ecological status (PES)
- Conservation importance (scale of 1-100)
- Recommended future ecological class (REC)

Wetlands

Ecological importance and sensitivity (EIS)
Present ecological status (PES)

IUA code	IUA	Important Wetlands	EIS	PES
C6	Gamka-Buffels	N/A	Mod	B
D7	Gouritz-Olifants	N/A	Low	C
E8	Touws	N/A	Low	C
F12	Duiwenhoks	Duiwenhoks Wetland System	Mod	D
		Goukou River Wetland	7.1	
F13	Lower Gouritz	N/A	Mod	C/D
G14	Groot Brak	N/A	Mod	C
G15	Coastal	Gwaing River System		
		Wilderness Lakes System	*Refer to Estuaries*	
		Bitou Wetland	Mod	C
I18	Hessequa	Gouriqua Wetland	5	
A1	Upper Breede Tributaries	Die Vlakte Wetland	5.9	
		Kluitjieskraal Wetland	N/A	
A2	Breede Working Tributaries	Papenkuils Wetland	8.3	
F10	Overberg East Renosterveld	Diepte Gatt	5.4	B
		Elias Gat	4.1	C
		Salmonsdam	6.5	A
H16	Overberg West Coastal	Vermont Pan	5.3	B/C
		Groot Witvlei	6.2	B
		Malkopsvlei	6	B
		Hemel-en-Aarde	5.6	B/C
		Belsvlei	5	E
H17	Overberg East Fynbos	Gansbay Wetland	3.8	
		Algulhas Salt Pan	6.2	B
		Soetendalsvlei	9.1	
		Voelvlei	6.2	
		Groot Hagerkraal Wetlands	7.3	A/B

General Discussion

PSC Discussion points

- WMA Vision linking to individual IUAs visions
- Scenario Evaluation Process
- Preliminary Classification Scenarios