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NATIONAL DEVELOPMENT PLAN
Our Future - make it work

RESERVE DETERMINATION STUDY FOR SELECTED SURFACE WATER, GROUNDWATER, ESTUARIES AND WETLANDS IN THE F60 AND G30 CATCHMENTS WITHIN THE BERG-OLIFANTS WATER MANAGEMENT AREA (WMA 9)

PSC 4

Date: 23 March 2023



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Project Progress

- Final EcoClassification Report
- EWR Report for Rivers, Wetlands and Estuaries
- Scenario Report for Rivers, Wetlands and Estuaries
- Capacity Building Report
- Integrated EWR Report and Implementation Plan
- Specialist Reports
 - Groundwater
 - Hydrology and Hydraulics
 - Water Quality
 - Estuaries
 - Rivers and Wetlands

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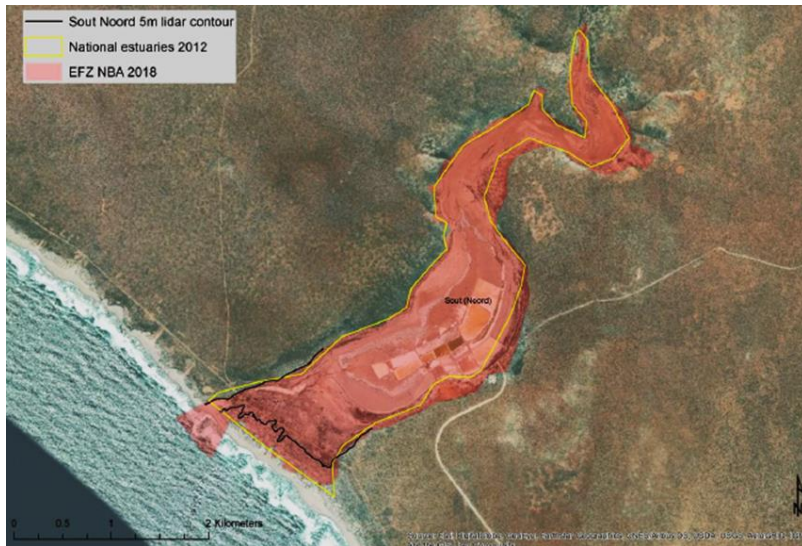
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EWR Report for Rivers, Wetlands & Estuaries

Estuary EWR Sites



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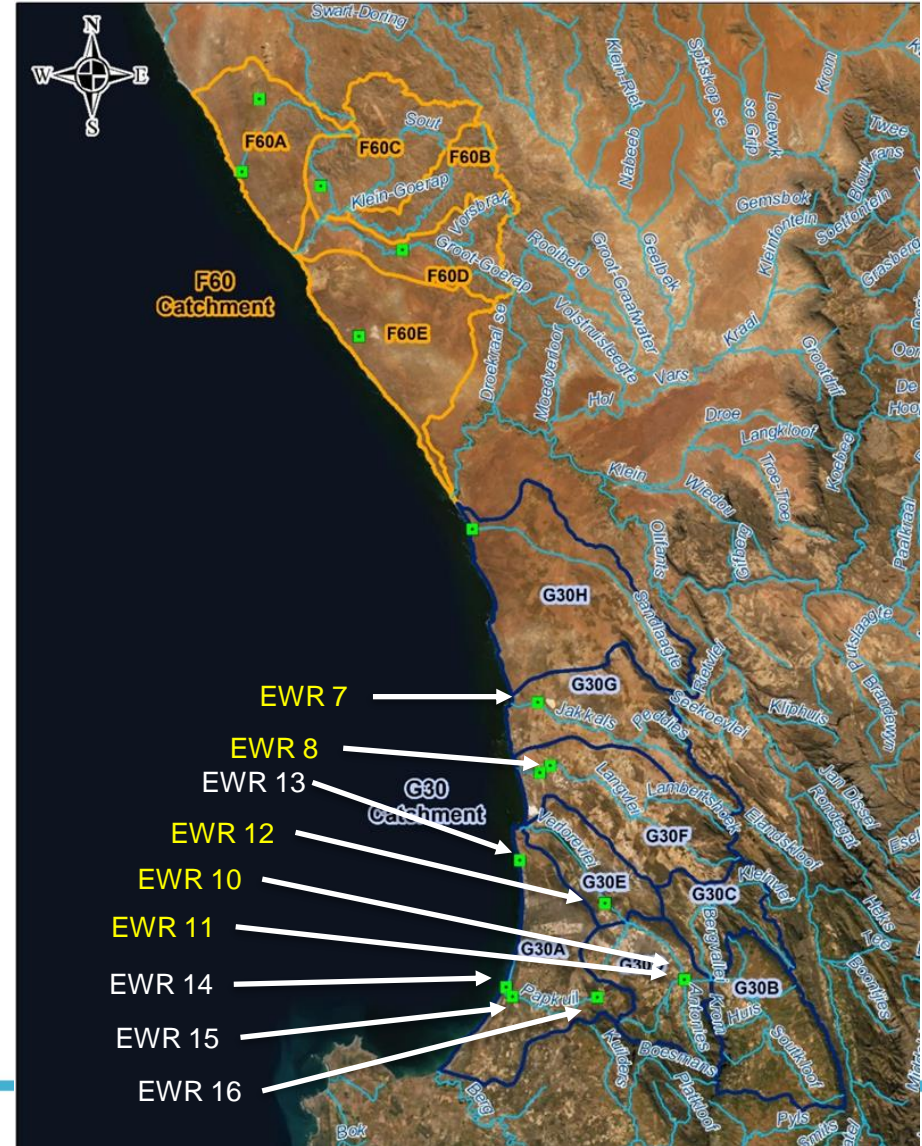
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EWR Report for Rivers, Wetlands & Estuaries

River and Wetland EWR Sites

EWR site No.	Description	Quaternary Catchment
EWR7	Lower Jakkals River	G30G
EWR8	Lower Langvlei River	G30F
EWR10	Lower Kruismans River	G30D
EWR11	Lower Krom Antonies River	G30D
EWR12	Lower Verlorenvlei River	G30E
EWR13	Isolated depression/duneslack wetland	G30A
EWR14	Rocherpan	G30A
EWR15	Lower Papkuils River	G30A
EWR16	Papkuilsvlei	G30A



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EWR Report for Rivers, Wetlands & Estuaries

Estuary Ecoclassification

Estuary	Estuarine Health Score	Estuarine Importance	Recommended Ecological Category	Total EWR (% of nMAR)
Verlorenvlei	D/E	Important (74)	B (Best attainable)	82.6
Wadriфт	D	Important (61)	C (Best attainable)	77
Jakkals	D	Low to Average (40)	D	57
Sout	E	Average (43)	D	

EWR Report for Rivers, Wetlands & Estuaries

Estuary EWR

Summary of the monthly flow (distribution in Mm³) for Verlorenvlei Estuary for REC=C Category

%ile	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep
Max	10.52	5.70	2.19	0.66	0.47	0.62	7.55	26.54	63.09	75.00	44.29	25.86
95%	7.02	4.22	1.26	0.42	0.22	0.26	0.97	11.76	27.65	25.96	29.00	15.22
90%	6.07	3.67	1.02	0.37	0.17	0.15	0.47	7.92	19.63	17.19	23.22	12.42
80%	4.83	2.37	0.72	0.29	0.13	0.11	0.24	1.67	6.84	10.54	11.21	7.48
70%	4.09	2.12	0.61	0.25	0.11	0.08	0.18	1.03	5.36	6.79	8.79	6.56
60%	3.86	1.79	0.55	0.23	0.11	0.08	0.13	0.55	3.98	5.19	6.78	5.73
50%	3.41	1.65	0.49	0.21	0.09	0.06	0.10	0.47	2.75	4.51	5.85	5.15
40%	3.27	1.47	0.46	0.20	0.09	0.06	0.09	0.37	1.66	4.10	5.16	4.54
30%	2.79	1.27	0.40	0.18	0.08	0.05	0.07	0.23	1.29	3.22	4.54	4.20
20%	2.50	1.06	0.35	0.16	0.08	0.05	0.06	0.17	0.87	2.28	3.56	3.40
10%	1.93	0.82	0.27	0.13	0.06	0.04	0.05	0.13	0.61	1.72	2.93	2.80
5%	1.69	0.65	0.22	0.11	0.06	0.03	0.03	0.07	0.31	1.29	2.57	2.72
Min	0.85	0.37	0.13	0.09	0.05	0.03	0.02	0.04	0.17	0.44	1.02	1.27

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EWR Report for Rivers, Wetlands & Estuaries

River and Wetland Ecoclassification

River/ Wetland	Present Ecological Status	Ecological Importance & Sensitivity	Recommended Ecological Category	Attainable Ecological Category	Trajectory of change	Total EWR (% of nMAR)
Jakkals	C/D	Moderate	B/C	C	Negative	45
Langvlei	E	Moderate	D	D	Negative	19
Kruismans	D	High	B/C	C	Negative	40
Krom Antonies	C/D	High	B/C	C	Negative	37
Verlorenvlei	D	High	B/C	C	Negative	37
Papkuils	D	Moderate	C	C	Negative	29

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EWR Report for Rivers, Wetlands & Estuaries

River and Wetland EWR

Lower Verlorenvlei: EWR results for PES and REC

Month	PES (D)		REC (B/C)		AEC (C)	
	Discharge (m ³ /s)	Depth (m)	Discharge (m ³ /s)	Depth (m)	Discharge (m ³ /s)	Depth (m)
October	1.094	1.060	2.915	1.280	1.905	1.180
November	0.637	0.950	1.353	1.100	0.819	1.000
December	0.183	0.750	0.474	0.900	0.242	0.790
January	0.078	0.640	0.352	0.850	0.175	0.740
February	0.037	0.550	0.24	0.790	0.115	0.690
March	0.022	0.500	0.23	0.780	0.109	0.680
April	0.039	0.560	0.263	0.800	0.127	0.700
May	0.175	0.740	2.424	1.240	1.625	1.140
June	1.061	1.050	5.187	1.430	3.528	1.330
July	1.684	1.150	3.141	1.300	2.053	1.200
August	2.184	1.210	8.538	1.580	5.839	1.470
September	1.987	1.190	3.193	1.300	2.081	1.200

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Scenario Report for Rivers, Wetlands & Estuaries

Scenario Descriptions

- **Reference scenario** (baseflows contribute to surface flow in catchments where the Table Mountain Group aquifer is dominant, with about 30% of annual surface flow being baseflow contribution)
- **Current-day scenario** (primarily agriculture supplied by surface and groundwater sources. Baseflows reduced by 50% from natural)
- **Sustainability scenario (Scenario 1)** (least amount of water that should remain in the water resources within the study area to ensure the long-term sustainability of the associated aquatic ecosystems)
- **Climate change scenario (Scenario 2)** (National Assessment of Potential Climate Change Impacts on the Hydrological Yield of Different Hydro-Climatic Zones of South Africa - in a year of average flows, reductions of 20-40% are foreseen)

Scenario Report for Rivers, Wetlands & Estuaries

Scenario Flows at River/Wetland EWR sites

EWR Site	Description	Natural	Current	Scenario 1	Scenario 2
		Million m ³ /a			
EWR1	Lower Brak River	0.07	0.07 (100%)	0.07 (100%)	0.04 (57%)
EWR3	Lower Groot Goerap River	0.11	0.11 (100%)	0.11 (100%)	0.06 (55%)
EWR6	Lower Sandlaagte River	1.36	1.36 (100%)	1.36 (100%)	0.82 (60%)
EWR7	Lower Jakkals River	2.18	1.26 (58%)	1.32 (61%)	0.77 (35%)
EWR8	Lower Langvlei River	4.69	3.44 (73%)	3.83 (82%)	2.18 (46%)
EWR9	Wadrif Wetland	4.75	3.2 (67%)	3.64 (77)	1.99 (42%)
EWR10	Lower Kruismans River	26.76	18.96 (71%)	22.1 (83%)	13.09 (49%)
EWR11	Lower Krom Antonies River	6.99	5.13 (73%)	6.03 (86%)	3.43 (49%)
EWR12	Lower Verlorenvlei River	47.57	33.35 (70%)	39.31 (83%)	23.21 (49%)
EWR15	Lower Papkuils River	1.24	1.19 (96%)	1.19 (96%)	0.65 (52%)

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Scenario Report for Rivers, Wetlands & Estuaries

Summary of the Ecological Category for the scenarios at the River/Wetland EWR sites

EWR site No.	Description	Scenario			REC
		Current	Scenario 1	Scenario 2	
EWR7	Lower Jakkals River	C/D	C	D	C
EWR8	Lower Langvlei River	E	D	E/F	D
EWR10	Lower Kruismans River	D	C	E	C
EWR11	Lower Krom Antonies River	C/D	C	D	C
EWR12	Lower Verlorenvlei River	D	C	E	C
EWR15	Lower Papkuils River	D	C/D	E	D

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Scenario Report for Rivers, Wetlands & Estuaries

Summary of the Ecological Category for the scenarios at the Estuary EWR sites

Estuary	Scenario		
	Current	Scenario 1	Scenario 2
Verlorenvlei	D (E)	C/D	D/E (E)
Wadrift	D	D	E
Jakkals	D	D	E

Capacity Building and Stakeholder Engagement

Estuary workshop: 22 November 22 (2 March 2023)

2nd Regional Implementation Workshop (4 April 2023)

Stakeholder Information Session (19 April 2023)



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Thank you

