

**DEPARTMENT OF WATER AND SANITATION**

**NO. 1038**

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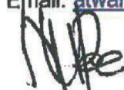
**NATIONAL WATER ACT, 1998  
(ACT NO. 36 OF 1998)**

**PROPOSED RESERVE DETERMINATION OF WATER RESOURCES FOR THE OLIFANTS AND  
LETABA CATCHMENTS**

I, Nomvula Paula Mokonyane, in my capacity as Minister of Water and Sanitation, having complied with section 13 of the National Water Act, 1998 (Act No. 36 of 1998) ("the Act") and regulation 3 of the Regulations for the Establishment of Water Resource Classification System (No. R. 810 Government Gazette No. 33541, 17 September 2010), and duly authorised in terms of section 16(1) of the Act, hereby publish, for public comment in accordance with section 16(3) of the Act, the proposed Reserve determination of water resources for the catchments of the Olifants and Letaba, as set out in the Schedule to this Notice.

Any person who wishes to submit written comments with regard to the proposed Reserve determination should submit the comments within 60 days from the date of publication of this Notice to:

Director: Reserve Determination  
Attention: Mr Yakeen Atwaru  
Department of Water and Sanitation  
Ndinaye Building 185 Francis Baard Street  
Private Bag X313  
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Email: [atwaruy@dws.gov.za](mailto:atwaruy@dws.gov.za)



**MRS NP MOKONYANE  
MINISTER OF WATER AND SANITATION**

# RESERVE DETERMINATION OF WATER RESOURCES FOR THE CATCHMENTS OF THE OLIFANTS AND LETABA IN TERMS OF SECTION 16(1) AND (2) OF THE NATIONAL WATER ACT, 1998 (ACT NO. 36 OF 1998)

## SCHEDULE

### DESCRIPTION OF WATER RESOURCE

1. (1) The Reserve is determined for all or part of every significant water resource within the catchments of the Olifants and Letaba as set out below:

Water Management Area: Olifants

Drainage Regions: B Primary Drainage Region (excluding Shingwedzi catchment (B90))

Rivers: Olifants and Letaba River Systems

(2) The Minister has in terms of section 12 of the National Water Act, 1998 (Act No.36 of 1998) ("the Act"), prescribed a system for classifying water resources by issuing Government Notice No. R. 810, published in Government *Gazette* No. 33541 dated 17 September 2010. In terms of section 16(1) of the Act, the Minister must, as soon as reasonably practicable after the class of all or part of a water resource has been determined, by Notice in the *Gazette*, determine the Reserve for all or part of that water resource.

(3) The Minister, in terms of section 16(3) of the Act, proposes, for the purpose of section 16(1) of the Act, the following Reserves for the catchments of the Olifants and Letaba.

### PROPOSED RESERVE DETERMINATION AS REQUIRED IN TERMS OF SECTION 16(1) AND (2) OF THE NATIONAL WATER ACT, 1998

2. (1)A summary of the quantity component for the Rivers which include the EWR (**Figure 1 & 2**) and the BHN in terms of section 16(1) of the Act for the Olifants and Letaba catchments is set out in item 4. **Table 4.1** includes the results of the priority sites and **Table 4.2** includes the results of the biophysical nodes and the remaining EWR sites.

(2)A summary of the quality component for the River at the EWR sites in terms of section 16(1) of the Act for the Olifants and Letaba catchments is set out in **Table 5.1 - 5.29**.

(3) A summary of the groundwater contribution to the Reserve for Water Quantity in terms of section 16(1) of the Act for the Olifants and Letaba catchments is set out in **Table 6.1**.

(4)A summary of the groundwater contribution to the Reserve for Water Quality in terms of section 16(1) of the Act for the Olifants and Letaba catchments is set out in **Table 7.1, 7.2 and 7.3**.

(5)A summary of the wetland Reserve for Water Quantity & Quality in terms of section 16(1) of the Act for the Olifants and Letaba catchments is set out in **Table 8.1**.

(6)The Reserve will apply from the date signed off as determined in terms of section 16(1) of the Act, unless otherwise specified by the Minister.

### 3. ACRONYMS AND DEFINITIONS

#### 3.1. Acronyms

BHN	Basic Human Needs
EcoSpecs	Ecological Specifications
EIS	Ecological Importance and Sensitivity
EWR	Ecological Water Requirement
GRAII	Groundwater Resource Assessment Phase II
GRDM	Groundwater Reserve Determination Methodology
GRUs	Groundwater Resource Units
MAR	Mean Annual Runoff
MCM	Million Cubic Metres
PES	Present Ecological Status
REC	Recommended Ecological Category
TEC	Target Ecological Category
TPCs	Thresholds of Potential Concern

#### 3.2. Definitions

**Baseflow** is a sustained low flow in rivers during dry or fair weather conditions, but not necessarily all contributed by groundwater; includes contribution from delayed interflow and groundwater discharge.

**EWR (Ecological Water Requirements)** refers to the flow patterns (magnitude, timing and duration) and water quality needed to maintain a riverine ecosystem in a particular condition.

**Recharge** is the addition of water to the zone of saturation, either by downward percolation of precipitation or surface water and/ or the lateral migration of groundwater from adjacent aquifers.

**Reserve** is the quantity and quality of the water required to satisfy the basic human needs by securing a basic water supply and to protect the aquatic ecosystem in order to secure ecologically sustainable development and use of the relevant water resource.

#### 4. SURFACE-WATER - QUANTITY COMPONENT FOR RIVERS

Proposed results for the Reserve determination and ecological categorisation for the Olifants and Letaba Systems, where the Reserve are expressed as a percentage of the NMAR for the respective catchments (cumulative) in terms of section (16)(1).

**Table 4.1:** Summary of the **quantity** component for the Rivers which include the EWR & BHN for the priority sites.

Quaternary Catchment	Water Resource	PES	EI_ES	TEC <sup>5</sup>	Ecological Reserve <sup>3</sup> (%NMAR)	BHN Reserve <sup>4</sup> (%NMAR)	Total Reserve <sup>2</sup> (%NMAR)	NMAR (MCM) <sup>1</sup>
B31C	Upper Elands - Olifants_ELA1	C/D	Very high	C	20.87	0.003	20.873	31.08
B20J	Lower Wilge - Olifants_EWR4	C	High	B	36.28	0.013	36.293	175.59
B20F	Wilge River - Olifants_WIL1	C/D	High	C	15.11	0.008	15.118	44.76
B11J	Olifants - Olifants_EWR1	D	Moderate	D	17.80	0.052	17.852	184.54
B32A	Olifants - Olifants_EWR2	C	High	B/C	29.83	0.008	29.838	500.63
B32A	Kranspoortspruit - OLI_EWR3	C	Very high	B	30.26	0.008	30.268	13.86
B32C	Selons - Olifants_SEL1	D	Very high	C	21.86	0.020	21.88	33.11
B71D	Olifants - Olifants_EWR8	C	Moderate	C/D	15.19	0.020	15.21	813.17
B42H	Lower Spekboom - Olifants_SPE1	C	High	C	23.16	0.091	23.251	148.19
B60B	Upper Blyde - Olifants_BLY1	C	High	B	46.08	0.005	46.085	164.45
B71J	Olifants - Olifants_EWR11	C	High	C/D	12.81	0.052	12.862	1321.92
B60J	Lower Blyde - Olifants_EWR12	C	High	B	31.14	0.052	31.192	383.27
B72D	Olifants - Olifants_EWR13	C	Moderate	C	22.37	0.301	22.671	1762.10
B73H	Olifants - Olifants_EWR16	D	High	C	21.06	0.002	21.062	1918.30
B83D	Letaba - Letaba_EWR7	C/D	High	C	17.34	0.000	17.34	646.28
B81D	Letsitele - Letaba_EWR2	D	High	D	17.59	0.078	17.668	116.55
B81B	Great Letaba - Letaba_EWR1	C/D	High	C	24.76	0.030	24.79	99.85
B81A	Broederstroom - Letaba_BRO1	B/C	High	B/C	49.22	0.012	49.232	6.68
B12E	Klein Olifants - Olifants-EWR3	D	High	C/D	19.8	0.009	19.809	81.54
B32D	Olifants - Olifants-EWR5	C	High	C	12.51	0.060	12.57	571.13
B31G	Lower Elands - Olifants-EWR6	C/D	Moderate	D	10.48	0.033	10.513	60.32
B51G	Olifants - Olifants-EWR7	E	Moderate	D	9.89	0.365	10.255	736.94
B41H	Steelpoort - Olifants-EWR9	D	High	C/D	23.33	3.086	26.416	137.50
B72K	Lower Ga-Selati - Olifants_EWR14b	E	Moderate	D	19.45	0.043	19.493	72.74
B11H	Spookspruit - SPK_EWR1	C	Moderate	C	30.12	0.001	30.121	9.32
B41H	Dwars - DWA_EWR1	B/C	High	B/C	31.24	3.086	34.326	26.10
B41K	Steelpoort - Olifants_EWR10	D	High	D	12.69	0.480	13.17	342.75
B60H	Ohrigstad - OLI_EWR8	C	Moderate	C	17.41	0.512	17.922	67.79
B72H	Upper Ga-Selati - Olifants_EWR14a	C	Moderate	C	27.53	0.123	27.653	52.20

1) NMAR is the Natural Mean Annual Runoff.

2) The total Reserve amount accounts for both the Ecological Reserve and the Basic Human Needs Reserve (BHN).

3) This amount represent the long term mean based on the NMAR. If the NMAR changes, this volume will also change.

4) Represents the percentage of BHN.

5) Target Ecological Category (TEC): The ultimate target to achieve a sustainable system both ecologically and economically taking into account the PES and REC.

**Table 4.2:** Summary of the **quantity** component for the Rivers EWR & BHN for the biophysical nodes and the remaining EWR sites.

Quaternary catchment	Water Resource	PES	EI	ES	REC	Ecological Reserve (%NMAR)	BHN Reserve (%NMAR)	Total Reserve (%NMAR)	NMAR (MCM)
B11A, B11B	Olifants (confluence with Steenkoolspruit)	C	High	High	C	10.25	0.001	10.251	61.30
B11D	Steenkoolspruit (outlet of quaternary)	D	Moderate	High	D	4.70	0.006	4.706	44.60
B11E	Steenkoolspruit (confluence with Olifants)	D	Moderate	High	D	4.70	0.004	4.704	65.40
B11F	Olifants (outlet of quaternary)	D	Moderate	High	D	4.70	0.007	4.707	147.90
<b>B11G</b>	<b>Noupoortspruit (EWR site – NOU-EWR1) (existing)</b>	<b>C/D</b>	<b>EIS-Moderate</b>		<b>C/D</b>	<b>13.90</b>	<b>0.075</b>	<b>13.975</b>	<b>4.28</b>
B11G	Olifants (releases from Witbank Dam)	D	Moderate	High	D	4.70	0.075	4.775	164.00
B11H	Spookspruit (confluence with Olifants)	C	High	High	C	10.25	0.001	10.251	11.40
B11K, B11L	Klipspruit (confluence with Olifants)	D	High	Moderate	D	4.67	0.052	4.722	45.70
B12A	Klein Olifants (outlet of quaternary)	C	High	High	C	18.85	0.001	18.851	12.70
B12B	Klein Olifants (outlet of quaternary)	D	Moderate	High	D	8.11	0.000	8.110	16.90
<b>B12C</b>	<b>Klein Olifants (EWR site – OLI-EWR1) (Rapid site)</b>	<b>C</b>	<b>EIS-Low</b>		<b>C</b>	<b>18.85</b>	<b>0.003</b>	<b>18.853</b>	<b>44.50</b>
B12C	Klein Olifants (releases from Middelburg Dam)	D	High	High	D	5.52	0.003	5.523	53.50
B12D	Klein Olifants (outlet of quaternary)	D	Moderate	High	D	5.52	0.004	5.524	67.30
B20A	Bronkhorstpruit (outlet of quaternary)	C	Moderate	High	C	13.38	0.003	13.383	27.70
B20B	Koffiespruit (confluence with Bronkhorstpruit)	C	Moderate	High	C	13.38	0.005	13.385	15.50
B20C	Bronkhorstpruit (outlet from Bronkhorstpruit Dam)	C	High	High	C	13.44	0.003	13.443	56.40
B20D	Hondespruit (confluence with Bronkhorstpruit)	C	High	High	C	13.39	0.002	13.395	11.90
B20D	Bronkhorstpruit (confluence with Wilge)	C	High	Very High	C	13.45	0.002	13.452	79.90
B20E, B20F	Wilge (confluence with Bronkhorstpruit)	C	High	High	C	13.42	0.003	13.423	45.80
B20G	Saalboomspruit (confluence with Wilge)	C	Moderate	High	C	13.40	0.025	13.425	22.10
B20H	Grootpruit (confluence with Wilge)	C	High	Very high	C	13.40	0.006	13.406	12.80
B20H	Wilge (outlet of quaternary)	B	High	Very high	B	17.92	0.006	17.926	158.20
B32C	Olifants (releases from Loskop Dam)	D	High	High	D	7.22	0.020	7.240	568.60
B32C	Olifants (outlet of quaternary – outlet of IUA3)	D	High	High	D	7.22	0.020	7.240	576.80
B31A, B, C	B31A (Elands) B31B (Hartbeesspruit) B31C (Elands) Node at outlet of B31C releases from Rust de Winter Dam.	C C C	High High High	High Very high Very high	C	12.34	0.003	12.343	33.50

Quaternary catchment	Water Resource	PES	EI	ES	REC	Ecological Reserve (%NMAR)	BHN Reserve (%NMAR)	Total Reserve (%NMAR)	NMAR (MCM)
B31F	Elands (releases from Mkumbe Dam)	C	High	High	C	12.34	0.008	12.348	59.80
B31H, B31J	Elands (outlet of quaternary, confluence with Olifants))	D	Moderate	Moderate	D	6.32	0.084	6.404	84.10
B32E, B32F	B32E (Bloed) B32F (Doringpoortloop) Node at confluence with Olifants in B32F.	B	Moderate High	High Moderate	B	13.90	0.397	14.297	17.20
B32G, B32H	B32G (Moses) B32H (Mametse and Moses) Node at outlet of B32H	C	High High	High High	C	9.93	0.084	10.014	35.40
B51B	Olifants (releases from Flag Boshielo Dam)	D	Moderate	High	D	3.91	1.009	4.919	723.40
B51D, B51E	Olifants (outlet of quaternary – outlet of IUA5)	D	Moderate	High	D	3.81	0.000	3.810	726.60
B41A	Grootspuit (outlet of quaternary) Langspruit, including Lakenvleispruit and Kleinspruit	C D	High High	High Very high	C	20.78	0.003	20.783	41.90
<b>B41B</b>	<b>Steelpoort (EWR site – OLI-EWR2) (Rapid site)</b>	<b>C</b>	<b>EIS=Moderate</b>		<b>C</b>	<b>20.78</b>	<b>0.006</b>	<b>20.786</b>	<b>63.50</b>
B41D, B41E	Steelpoort (inflow to De Hoop Dam)	C	High	Very high	C	20.78	0.394	21.174	117.00
<b>B41F</b>	<b>Klip (EWR site – OLI-EWR4) (Rapid site)</b>	<b>C</b>	<b>EIS=Moderate</b>		<b>C</b>	<b>12.44</b>	<b>0.019</b>	<b>12.459</b>	<b>5.20</b>
B41G	Upper reaches of Dwars (before mining impacts)	C	High	Very high	C	13.33	0.015	13.345	24.50
B51F	Nkumpi (outlet of quaternary)	C	High	Moderate	C	10.73	0.023	10.753	3.80
B52A, E,G,H	Olifants (outlet of quaternary – outlet of IUA7)	D	Moderate	High	D	3.88	0.541	4.421	799.7
<b>B42B</b>	<b>Dorpspruit (EWR site – OLI-EWR9) (Rapid site)</b>	<b>C/D</b>	<b>EIS=Low</b>		<b>C/D</b>	<b>11.99</b>	<b>0.006</b>	<b>11.996</b>	<b>63.20</b>
B42D, B42E	Dorps (confluence with Spekboom) Spekboom (confluence with Dorps)	C C	High High	High Very high	C	14.95	0.011	14.961	69.70
<b>B42D</b>	<b>Spekboom (EWR site – OLI-EWR6) (Rapid site)</b>	<b>C</b>	<b>EIS=High</b>		<b>C</b>	<b>17.15</b>	<b>0.001</b>	<b>17.151</b>	<b>28.00</b>
B42F	Waternals (releases from Buffelskloof Dam)	C	High	Very high	C	17.36	0.011	17.371	28.60
<b>B42G</b>	<b>Waternals (EWR site – OLI-EWR5) (Rapid site)</b>	<b>C</b>	<b>EIS=Moderate</b>		<b>C</b>	<b>15.47</b>	<b>0.283</b>	<b>31.220</b>	<b>36.40</b>
B42H	Spekboom (outlet of quaternary – outlet of IUA 8)	B	High	Moderate	B	28.84	0.091	28.931	149.00
B60E, B60F	Kranskloofspruit (confluence with Ohrigstad) Mantshibi (confluence with Ohrigstad) Ohrigstad (outlet of quaternary) Node at outlet of B60F.	C C D	High High Moderate	Very high Very high Very high	D	6.31	0.012	6.322	35.60



Quaternary catchment	Water Resource	PES	EI	ES	REC	Ecological Reserve (%NMAR)	BHN Reserve (%NMAR)	Total Reserve (%NMAR)	NMAR (MCM)
B60H	Ohrigstad (outlet of quaternary – outlet of IUA9B)	D	High	Very high	D	8.05	0.512	8.562	69.70
B60J	Blyde (confluence with Olifants)	C	Very high	Very high	C	16.13	0.052	16.182	385.70
B71C	Mohlapitse (upper reaches)	B	Very high	Very high	B	26.50	0.103	26.603	42.10
B71D, B71F	Olifants (confluence with Steelpoort)	D	High	Very high	D	4.30	0.253	4.553	937.9
B72A	Makhutswi, including Mounqwane and Malomanye	C	High	High	C	12.89	23.721	36.611	38.00
B72C	Olifants (outlet – outlet of IUA10)	C	High	High	C	18.07	0.616	18.686	1755.5
B72E	Ngwabatse (confluence with Ga-Selati)	D	High	Very high	D	9.05	0.341	9.391	25.70
B72F, G	Ga-Selati (outlet of quaternary)	C	High	Very high	C	19.59	0.023	19.613	13.50
B72J	Molatle (confluence with Ga-Selati)	B	Moderate	Moderate	B	12.67	0.038	12.705	11.40
B72K	Ga-Selati (outlet of quaternary – outlet of IUA11)	E	High	High	D	11.95	0.043	11.993	72.70
<b>B73A</b>	<b>Klaserie (EWR site – OLI-EWR7) (Rapid site)</b>	<b>B/C</b>	<b>EIS=High</b>		<b>B/C</b>	<b>22.31</b>	<b>0.033</b>	<b>22.343</b>	<b>25.50</b>
B73B	Klaserie (confluence with Olifants)	C	High	High	C	15.41	0.008	15.418	37.10
B73D	Nhlalalumi, including Machaton, Nyameni and Thlaralumi	B	High	Low	B	13.65	0.006	13.656	6.80
B73E	Sesete (confluence with Timbavati)	B	High	Low	B	12.24	0.152	12.392	11.10
B73F	Timbavati (outlet of quaternary)	B	High	Moderate	B	12.12	0.003	12.123	18.70
B73J	Olifants (outlet of quaternary – outlet of IUA12)	C	High	Low	C	14.72	0.007	14.727	1918.3
B60A	Blyde (confluence with Lisbon)	C	High	Very high	C	18.73	0.015	18.745	87.10
B60B	Blyde (outlet of quaternary)	B	High	Very high	B	32.86	0.005	32.865	183.80
<b>B60C</b>	<b>Treur (EWR site – TRE-EWR1) (existing)</b>	<b>B</b>	<b>EIS=Very High</b>		<b>B</b>	<b>34.60</b>	<b>0.001</b>	<b>34.601</b>	<b>46.80</b>
B60D	Blyde (inflow to Blyderivierpoort Dam – outlet of IUA13)	B	High	Very high	B	31.57	0.008	31.578	283.90
B81A	00242 - Broederstroom	C	Moderate	High	C	21.90	0.012	21.912	23.83
B81A	00256 - Unnamed tributary	D	Low	High	D	21.90	0.012	21.912	16.34
B81A	00263 - Unnamed tributary	D	Moderate	Moderate	D	21.90	0.012	21.912	5.75
B81A	00270 - Broederstroom	C	Moderate	Very high	C	27.10	0.012	27.112	44..47
B81B	00227 - Mahitse	D	Moderate	High	D	22.10	0.030	22.130	13.60
B81B	00233 - Mahitse	C	Moderate	High	C	27.40	0.030	27.430	2.69
B81B	00234 - Mahitse	C	Moderate	High	C	29.80	0.030	29.130	10.13

Quaternary catchment	Water Resource	PES	EI	ES	REC	Ecological Reserve (%NMAR)	BHN Reserve (%NMAR)	Total Reserve (%NMAR)	NMAR (MCM)
B81B	00240 - Politsi	C	Moderate	High	C	19.10	0.030	19.130	38.98
B81B	00246 - Politsi	C	Moderate	Very high	C	17.70	0.030	17.730	36.26
B81B	00251 - Unnamed tributary	D	Low	Moderate	D	15.40	0.030	15.430	1.34
B81B	00269 - Morudi	B	Moderate	Very high	B	34.60	0.030	34.630	1.95
B81D	00272 - Letsitele	C	High	Very high	C	22.00	0.078	22.078	91.27
B81D	00277 - Thabina	D	High	High	D	13.00	0.078	13.078	25.28
B81D	00280 - Bobs	B	High	Very high	B	29.30	0.078	29.378	18.51
B81D	00296 - Mothlaka-Semeetse	B	High	Very high	B	34.60	0.078	34.678	10.53
B81E	00213 - Nwanedzi	D	Moderate	High	C	8.10	0.249	8.349	17.28
B81F	00189 - Merekome	C	Moderate	Moderate	C	7.10	0.244	7.344	4.74
B81F	00203 - Lerwatlou	C	Moderate	High	C	8.80	0.244	9.044	3.74
B81F	00228 - Reshwele	B	Moderate	Low	B	9.10	0.244	9.344	3.53
B81F	00232 - Makwena	B	Moderate	Low	B	12.80	0.244	13.044	2.75
B81G	00164 - Molototsi	D	Moderate	Moderate	D	6.60	0.288	6.888	16.72
B81H	00162 - Metsemola	C	Moderate	Low	C	9.80	0.545	10.345	0.64
B81H	00171 - Molototsi	D	Moderate	Moderate	D	6.50	0.545	7.045	25.84
B81J	00187 - Mbhawula	C	Moderate	Low	C	9.80	0.024	9.824	2.53
B82A	00168 - Middle Letaba	C	Moderate	Moderate	C	24.30	0.014	24.314	31.12
B82B	00173 - Koedoes	D	Moderate	Moderate	D	12.30	0.013	12.313	23.13
B82D	00154 - Middle Letaba	D	Moderate	Moderate	D	17.30	0.116	17.416	40.53
B82D	00163 - Lebjelebore	C	Moderate	High	C	25.80	0.116	25.916	4.90
B82D	00166 - Mosukodutsi	D	Moderate	Moderate	D	10.20	0.116	10.316	42.25
B82E	00149 - Khwali	B	High	Low	B	13.90	0.158	14.058	4.51
B82E	00150 - Klein Letaba	C	Moderate	Moderate	C	16.00	0.158	16.158	3.48
B82F	00128 - Klein Letaba	C	Moderate	Moderate	C	15.40	0.071	15.471	32.13
B82F	00137 - Klein Letaba	D	Moderate	Moderate	D	9.70	0.071	9.771	13.64
B82F	00141 - Soeketse	C	Moderate	Low	C	12.80	0.071	12.871	7.32
B82H	00127 - Nsama	C	Moderate	High	C	10.60	0.064	10.664	6.91
B82H	00139 - Magobe	B	Moderate	Low	B	14.90	0.064	14.964	3.10
B82H	00157 - Nsama	B	Moderate	Moderate	B	14.40	0.064	14.964	11.72
B82J	00197 - Ka-Malilibone	B	Moderate	Very low	B	13.80	0.013	13.813	0.66



## 5. SURFACE-WATER - QUALITY COMPONENT FOR RIVERS

### Summary of the Quality component at EWR sites

**Table 5.1:** Olifants\_ELA1: **Upper Elands** - EcoSpecs relating to Physico-chemical data

River: Upper Elands		EWR : Olifants_ELA1	Nearest WQ site (downstream Rust De Winter Dam) B3H013. No WQ site in vicinity of EWR site. In situ reading obtaining during survey
Water quality metrics		ECOSPEC: PES AND REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 30$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 70$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 40$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 32$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 30$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 6.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 2.0$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.058$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 20$ µg/L.	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 21$ mg/m <sup>2</sup> .	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 72.5$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 78.5$ µg/L	
	Flouride	The 95 <sup>th</sup> percentile of the data must be $\leq 3.52$ mg/L	

**Table 5.2:** Olifants\_EWR4: **Lower Wilge** - EcoSpecs relating to Physico-chemical data

River: Lower Wilge		EWR : Olifants_EWR4	Downstream B2H015Q01 Wilge River at Zusterstroom
Water quality metrics		ECOSPEC: PES AND REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 50$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 150$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 92.5$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 120$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 55$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 7.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 0.75$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.025$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 20$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 21$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 43.75$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 48.75$ µg/L	
	Aluminium	The 95 <sup>th</sup> percentile of the data must be $\leq 62.5$ µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 2.50$ mg/L	
	Manganese	The 95 <sup>th</sup> percentile of the data must be $\leq 99.0$ µg/L	

**Table 5.3:** Olifants\_WIL1: **Upper Wilge** - EcoSpecs relating to Physico-chemical data

<b>River: Lower Wilge</b>		<b>EWR : Olifants_WIL1</b>	Downstream B2H014Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES AND REC</b>	
<b>Major Ions</b>	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 70mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 40 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 32 mg/L	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 55 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 6.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 2.0 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.058 mg/L	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 20 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 43.75 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 48.75 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 3.52 mg/L	

**Table 5.4:** Olifants\_EWR1: **Olifants** - EcoSpecs relating to Physico-chemical data

<b>River: Olifants</b>		<b>EWR : Olifants_EWR1</b>	No water quality site in vicinity of EWR site
<b>Water quality metrics</b>		<b>ECOSPEC: REC</b>	
<b>Major Ions</b>	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 70 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 250 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 115mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 175 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 85 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.6 – 9.2	
	Temperature	Variation of 2°C or 10% from background average temperature	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 6.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	Nitrite & Nitrate	The 50 <sup>th</sup> percentile of the data must be ≤ 3.0 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.091 mg/L	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 20 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 43.75 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 48.75 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 3.52 mg/L	

**Table 5.5:** Olifants\_EWR2: **Olifants** - EcoSpecs relating to Physico-chemical data

River: Olifants		EWR : Olifants_EWR2	No water quality site in vicinity of EWR site
Water quality metrics		ECOSPEC: REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 50$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 150$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 92.5$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 120$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 55$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 7.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 1.0$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.025$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 20$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 21$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 43.75$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 48.75$ µg/L	
	Aluminium	The 95 <sup>th</sup> percentile of the data must be $\leq 62.5$ µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 2.5$ mg/L	
	Manganese	The 95 <sup>th</sup> percentile of the data must be $\leq 180$ µg/L	

**Table 5.6:** OLI\_EWR3: **Kranspoortspuit** - EcoSpecs relating to Physico-chemical data

River: Kranspoortspuit		EWR : OLI_EWR3	No water quality site in vicinity of EWR
Water quality metrics		ECOSPEC: REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 30$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 70$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 40$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 32$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 30$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 7.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 0.75$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.02$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 15$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 14.56$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 43.75$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 48.75$ µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 3.52$ mg/L	

**Table 5.7:** Olifants\_SEL1: **Selons** - EcoSpecs relating to Physico-chemical data

River: Selons		EWR : Olifants_SEL1	No water quality site in vicinity of EWR site
Water quality metrics		ECOSPEC: PES and REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 50$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 150$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 92.5$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 120$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 55$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.6 – 9.2	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 6.5$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 2.0$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.058$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 20$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 21$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 43.75$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 48.75$ µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 3.52$ mg/L	
	Aluminium	The 95 <sup>th</sup> percentile of the data must be $\leq 0.15$ mg/L	
	Manganese	The 95 <sup>th</sup> percentile of the data must be $\leq 1.30$ mg/L	
	Zinc	The 95 <sup>th</sup> percentile of the data must be $\leq 36$ µg/L.	

**Table 5.8:** Olifants\_EWR8: **Olifants** - EcoSpecs relating to Physico-chemical data

River: Olifants		EWR : Olifants_EWR8	No water quality site in vicinity of EWR site
Water quality metrics		ECOSPEC: PES and REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 50$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 150$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 92.5$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 120$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 55$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 7.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 2.0$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.058$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 20$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 21$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 43.75$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 48.75$ µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 3.52$ mg/L	

**Table 5.9:** Olifants\_SPE1: **Spekboom** - EcoSpecs relating to Physico-chemical data

<b>River: Lower Spekboom</b>		<b>EWR : Olifants_SPE1</b>	No water quality site in vicinity of EWR site
<b>Water quality metrics</b>		<b>ECOSPEC: REC</b>	
<b>Major Ions</b>	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 50 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 150 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 92.5 mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 120 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 55 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 1.0 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.025 mg/L	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 20 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 43.75 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 48.75 µg/L	
	Aluminium	The 95 <sup>th</sup> percentile of the data must be ≤ 150 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 3 mg/L	
	Manganese	The 95 <sup>th</sup> percentile of the data must be ≤ 1.3 mg/L	

**Table 5.10:** Olifants\_BLY1: **Upper Blyde** - EcoSpecs relating to Physico-chemical data

<b>River: Upper Blyde</b>		<b>EWR : Olifants_BLY1</b>	Downstream site B6H001Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES AND REC</b>	
<b>Major Ions</b>	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 70mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 40 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 32 mg/L	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 8.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.5 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.025 mg/L	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 15 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 14.56 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 15 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 9 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 1.5 mg/L	

**Table 5.11:** Olifants\_EWR11: **Olifants** - EcoSpecs relating to Physico-chemical data

River: Olifants		EWR : Olifants_EWR11	Downstream site B7H009Q01
Water quality metrics		ECOSPEC: PES and REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 50 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 150 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 92.5 mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 120 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 55 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 2.0 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.058 mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 20 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 43.75 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 48.75 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 3.52 mg/L	

**Table 5.12:** Olifants\_EWR12: **Lower Bylde** - EcoSpecs relating to Physico-chemical data

River: Lower Bylde		EWR : Olifants_EWR12	Upstream site B6H004Q01
Water quality metrics		ECOSPEC: PES AND REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 70mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 40 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 32 mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 8.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.5 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.020 mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 15 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 14.56 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 15 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 19 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 1.0 mg/L	



**Table 5.13:** Olifants\_EWR13: **Olifants** - EcoSpecs relating to Physico-chemical data

<b>River: Olifants</b>		<b>EWR : Olifants_EWR13</b>	Upstream site B7H007Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES and REC</b>	
<b>Major Ions</b>	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 50 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 150 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 92.5 mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 120 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 55 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 1.0 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.025 mg/L	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 20 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 43.75 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 48.75 µg/L	
	Aluminium	The 95 <sup>th</sup> percentile of the data must be ≤ 62.5 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 2.5 mg/L	

**Table 5.14:** Olifants\_EWR16: **Olifants** - EcoSpecs relating to Physico-chemical data

<b>River: Olifants</b>		<b>EWR : Olifants_EWR16</b>	Downstream site B7H017Q01
<b>Water quality metrics</b>		<b>ECOSPEC: PES and REC</b>	
<b>Major Ions</b>	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 70mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 40 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 32 mg/L	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 30 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 8.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 0.75 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.02 mg/L	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 20 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 21 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 43.75 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 48.75 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 2.5 mg/L	

**Table 5.15:** Olifants\_EWR3: Klein Olifants - EcoSpecs relating to Physico-chemical data

River: Klein Olifants		EWR : Olifants_EWR3	No water quality site in vicinity of EWR site
Water quality metrics		ECOSPEC: REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 50$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 150$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 92.5$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 120$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 55$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.6 – 9.2	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 6.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 2.0$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.058$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 20$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 21$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 43.75$ µg/L.	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 3.52$ mg/L	

**Table 5.16:** Olifants\_EWR5: Olifants - EcoSpecs relating to Physico-chemical data

River: Olifants		EWR : Olifants_EWR5	No water quality site in vicinity of EWR site
Water quality metrics		ECOSPEC: PES and REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 50$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 150$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 92.5$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 120$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 55$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.9 – 8.8	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 7.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 2.0$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.058$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 20$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 21$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 72.5$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 78.5$ µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 3.52$ mg/L	

**Table 5.17:** Olifants\_EWR6: Lower Elands - EcoSpecs relating to Physico-chemical data

River: Elands		EWR : Olifants_EWR6	Downstream site B3R005Q01
Water quality metrics		ECOSPEC: PES and REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 50$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 150$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 92.5$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 120$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 55$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.6 – 9.2	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 6.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 3.0$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.091$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 30$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 42$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 72.5$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 78.5$ µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 3.52$ mg/L	

**Table 5.18:** Olifants\_EWR7: Olifants - EcoSpecs relating to Physico-chemical data

River: Olifants		EWR : Olifants_EWR7	No water quality site in vicinity of EWR site
Water quality metrics		ECOSPEC: PES and REC	
Major Ions	Mg	The 95 <sup>th</sup> percentile of the data must be $\leq 70$ mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be $\leq 250$ mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be $\leq 115$ mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be $\leq 175$ mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be $\leq 80$ mg/L	
Physical variables	EC	The 95 <sup>th</sup> percentile of the data must be $\leq 85$ mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.0 – 10.0	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be $\geq 5.0$ mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
Nutrients	TIN	The 50 <sup>th</sup> percentile of the data must be $\leq 4.0$ mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be $\leq 0.125$ mg/L	
Response variables	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be $\leq 30$ µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be $\leq 42$ mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be $\leq 72.5$ µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be $\leq 78.5$ µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be $\leq 3.52$ mg/L	

**Table 5.19:** Olifants\_EWR9: **Steelpoort** - EcoSpecs relating to Physico-chemical data

River: <b>Steelpoort</b>		EWR : <b>Olifants_EWR9</b>	No water quality site in vicinity of EWR site
Water quality metrics		ECOSPEC: PES and REC	
<b>Major Ions</b>	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 70 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 250 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 115 mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 175 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 80 mg/L	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 85 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.0 – 10.0	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 5.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 4.0 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.125 mg/L	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 30 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 42 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 72.5 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 78.5 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 3.52 mg/L	

**Table 5.20:** Olifants\_EWR10: **Steelpoort** - EcoSpecs relating to Physico-chemical data

River: <b>Lower Steelpoort</b>		EWR : <b>Olifants_EWR10</b>	No water quality site in vicinity of EWR site use upstream site B4H011Q01 (B4H11)
Water quality metrics		ECOSPEC: PES, RQO and TEC	
<b>Major Ions</b>	Mg	The 95 <sup>th</sup> percentile of the data must be ≤ 40 mg/L	
	SO <sub>4</sub>	The 95 <sup>th</sup> percentile of the data must be ≤ 50 mg/L	
	Na	The 95 <sup>th</sup> percentile of the data must be ≤ 40 mg/L	
	Cl	The 95 <sup>th</sup> percentile of the data must be ≤ 50 mg/L	
	Ca	The 95 <sup>th</sup> percentile of the data must be ≤ 50 mg/L	
<b>Physical variables</b>	EC	The 95 <sup>th</sup> percentile of the data must be ≤ 70 mS/m	
	pH	The 5 <sup>th</sup> and 95 <sup>th</sup> percentiles of the data must range from 5.0 – 9.0	
	Temperature	Variation of 2°C or 10% from background average temperature.	
	Dissolved oxygen	The 5 <sup>th</sup> percentile of the data must be ≥ 7.0 mg/L	
	Turbidity	Vary (small amount) from natural turbidity range; minor silting of instream habitats acceptable.	
<b>Nutrients</b>	TIN	The 50 <sup>th</sup> percentile of the data must be ≤ 4.0 mg/L	
	PO <sub>4</sub> -P	The 50 <sup>th</sup> percentile of the data must be ≤ 0.091 mg/L	
<b>Response variables</b>	Chl-a phytoplankton	The 50 <sup>th</sup> percentile of the data must be ≤ 30 µg/L	
	Chl-a periphyton	The 50 <sup>th</sup> percentile of the data must be ≤ 42 mg/m <sup>2</sup>	
	Ammonia	The 95 <sup>th</sup> percentile of the data must be ≤ 72.5 µg/L.	
	Atrazine	The 95 <sup>th</sup> percentile of the data must be ≤ 48.8 µg/L	
	Fluoride	The 95 <sup>th</sup> percentile of the data must be ≤ 0.7 mg/L	
	Aluminium	The 95 <sup>th</sup> percentile of the data must be ≤ 62.5 µg/L	
	Zinc	The 95 <sup>th</sup> percentile of the data must be ≤ 14.4 µg/L	
	Manganese	The 95 <sup>th</sup> percentile of the data must be ≤ 0.68 mg/L	