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DEPARTMENT OF WATER AND SANITATION

NO. 54 **22 JANUARY 2016**

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

PROPOSED CLASSES OF WATER RESOURCES AND RESOURCE QUALITY OBJECTIVES FOR THE LETABA CATCHMENT

I, Nomvula Paula Mokonyane, in my capacity as Minister of Water and Sanitation, and duly authorised in terms of section 13(4) of the National Water Act (Act No. 36 of 1998) hereby publish, for public comment, the proposed classes of water resources and the proposed resource quality objectives for the Letaba catchment, in the Schedule. Notice No.823 of 2014 published in Government Gazette 37999 of 19 September 2014 is hereby repealed.

Any person who wishes to submit written comments with regard to the proposed classes and resource quality objectives should submit the comments within 60 days from the date of publication of this Notice to:

Chief Director: Water Ecosystems
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MRS NP MOKONYANE
MINISTER OF WATER AND SANITATION
DATE: 19 ,12 ,2015

SCHEDULE

DESCRIPTION OF WATER RESOURCE

The proposed classes and resource quality objectives are determined for all or part of every significant water resource within the Letaba catchment as set out below:

Water Management Area:	Limpopo North West
Drainage Region:	B8 Secondary Drainage Region
River(s):	Letaba River System

PROPOSED CLASSES OF WATER RESOURCES AS REQUIRED IN TERMS OF SECTION 13(4)(a)(i)(aa) OF THE NATIONAL WATER ACT, 1998

1. A summary of the water resource classes for Integrated Units of Analysis (Figure 1) and ecological categories for the Letaba catchment is set out in Table 1.

2. Integrated units of Analysis are classified in terms of their extent of permissible utilization and protection as either Class I: indicating high environmental protection and minimal utilization; or Class II indicating moderate protection and moderate utilization; and Class III indicating sustainable minimal protection and high utilization.

PROPOSED RESOURCE QUALITY OBJECTIVES OF WATER RESOURCES AS REQUIRED IN TERMS OF SECTION 13(4)(a)(i)(bb) OF THE NATIONAL WATER ACT, 1998

1. A summary of resource quality objectives for hydrology, water quality, biota and habitat for resource units (quaternary catchments) is set out in Tables 2 – 5 respectively.

2. Resource quality objectives will apply from the date signed off as determined in terms of Section 13(1) of the National Water Act, 1998, unless otherwise specified by the Minister.

PROPOSED WATER RESOURCE CLASSES FOR THE LETABA CATCHMENT

Table 1: Summary of Water Resource Classes and Ecological Categories

Integrated Units of Analysis	Class for Integrated Units of Analysis	Biophysical node	River Name	Target Ecological Category
1. Letaba Upstream of Tzaneen Dam	II	B81A-00242	Broederstroom	C
		B81A-00256	Unnamed tributary	D
		B81A-00263	Unnamed tributary	D
		B81A-00270	Broederstroom	C
		B81B-00233	Mahitse	C
		B81B-00234	Mahitse	C
		B81B-00246	Politsi	C
		B81B-00251	Unnamed tributary	D
		B81B-00269	Morudi	B
		B81B-00227	Mahitse	D
		B81B-00240	Politsi	C
		B81B-00247	Groot Letaba	C
		EWR1	Groot Letaba	C
2. Letsitele and Thabina	III	B81D-00277	Thabina	D
		B81D-00280	Bobs	B
		B81D-00296	Mothlaka-Semeetse	B
		EWR2	Letsitele	D
		B81D-00272	Letsitele	C
3. Letaba Downstream of Tzaneen to Proposed Nwamitwa Dam	III	B81C-00245	Groot Letaba	C
		B81E-00213	Nwanedzi	D
		B81E-00244	Groot Letaba	D
4. Letaba from Proposed Nwamitwa Dam to Klein Letaba Confluence	II	EWR3	Groot Letaba	C
		B81F-00212	Groot Letaba	C
		B81F-00215	Groot Letaba	C
		B81F-00218	Groot Letaba	C
		B81F-00231	Groot Letaba	C
		B81J-00209	Groot Letaba	C
		EWR4	Groot Letaba	C
5. Southern Tributaries of Letaba in Integrated Units of Analysis 4 (from proposed Nwamitwa Dam to Klein Letaba Confluence)	I	B81F-00228	Reshwele	B
		B81F-00232	Makwena	B
6. Northern Tributaries to Letaba in Integrated Units of Analysis 4 (from proposed Nwamitwa Dam to Klein Letaba Confluence)	III	B81F-00189	Merekome	C
		B81F-00203	Lerwatlou	C
		B81G-00164	Molototsi	D
		B81H-00162	Metsemola	C
		B81H-00171	Molototsi	D
		B81J-00187	Mbhawula	C
7.	III	B82A-00168	Middle Letaba	C

Integrated Units of Analysis	Class for Integrated Units of Analysis	Biophysical node	River Name	Target Ecological Category
Upper Middle Letaba and Tributaries Upstream of Middle Letaba Dam		B82B-00173	Koedoes	D
		B82C-00175	Brandboontjies	E
		B82D-00163	Lebjelebore	C
		B82D-00154	Middle Letaba	D
		B82D-00166	Mosukodutsi	D
		B82D-00146	Middle Letaba	E
8. Klein Letaba Upstream of Middle Letaba Dam	II	B82E-00149	Khwali	B
		B82E-00150	Klein Letaba	C
		B82F-00141	Soeketse	C
		B82F-00128	Klein Letaba	C
		B82F-00137	Klein Letaba	D
9. Klein Letaba Downstream of Middle Letaba Dam	III	EWR5	Klein Letaba	C/D
		B82J-00165	Klein Letaba	C/D
		B82J-00178	Klein Letaba	C/D
		B82J-00201	Klein Letaba	C/D
		B82J-00207	Klein Letaba	C/D
10. Lower Klein Letaba Tributaries	I	B82H-00127	Nsama	C
		B82H-00139	Magobe	B
		B82H-00157	Nsama	B
		B82J-00153	Nalatsi	A
		B82J-00159	Byashishi	A
		B82J-00197	Ka-Malilibone	B
11. Letaba River (main stem) in the Kruger National Park	II	B83A-00220	Letaba	B
		B83A-00230	Letaba	C
		EWR6	Letaba	C
		B83A-00252	Letaba	C
		B83D-00250	Letaba	C
		EWR7	Letaba	C
		B83E-00265	Letaba	C
12. Letaba Tributaries in the Kruger National Park	I	B83A-00193	Shipikani	A
		B83A-00238	Nharhweni	A
		B83A-00254	Ngwenyeni	A
		B83B-00161	Tsende	A
		B83D-00204	Manyeleti	A
		B83D-00208	Makhadzi	A

Note (1): nMAR is the natural Mean Annual Runoff in million cubic meters per annum.

Note (2): The monthly flow requirements for EWR 3, 4, 5 and 7 represent the total flow defined by the recommended scenario where the Present Ecological State low flows and releases for water users defines the minimum requirements for the respective EWR sites.

Note (3): Ecological Water Requirements not specified as primary problems are related to water quality or rivers inundated by consecutive dams.

Note (4): Ecological Water Requirements not relevant as rivers situated in its totality within the Greater Kruger National Park and should stay natural.

RESOURCE QUALITY OBJECTIVES

Table 2 provides an indication of the hydrological RQOs for Rivers expressed in terms of flow at biophysical nodes and Ecological Water Requirement (EWR) sites. These summarised statistics are representative of the required flow regime in the river where the variability is dependent on the seasonal and temporal pattern of natural flow conditions. The mean monthly flows represent low flow requirements of a representative wet (April) and dry (October) month. Two alternative hydrological RQOs are defined for specific biophysical nodes affected by potential future water resource developments. These developments are Tzaneen Dam raising, construction of Nwamitwa Dam on the Groot Letaba River as well as a water resource development on the Klein Letaba River such as the potential Crystelfontein Dam.

Table 2: Summary of key hydrological RQOs for RIVERS for the Letaba River catchment

Biophysical node	River	Target EC	nMAR[1] (MCM)	Low flows (%nMAR)[2]	Total flows (%nMAR)[2]	October (m^3/s)		April (m^3/s)	
						Mean of monthly flows at the indicated frequency.[4]			
						90%	60%	90%	60%
IUA 1: LETABA RIVER UPSTREAM OF TZANEEN DAM									
B81B-00264 EWR1	Groot Letaba	C	99.84	11.8	21	0.125	0.198	0.155	0.352
B81B-00247	Groot Letaba	C	99.84	11.8	21	0.125	0.198	0.155	0.352
IUA 2: LETSITELE AND THABINA RIVERS									
B81D-00271 EWR2	Letsitele	D	116.55	15.3	23.7	0.042	0.100	0.131	0.753
IUA 4: LETABA FROM PROPOSED NWAMITWA DAM TO KLEIN LETABA CONFLUENCE									
RQOs applicable before the implementation of Nwamitwa Dam.									
B81F-00200 EWR 3(3)	Groot Letaba	C	394.93	-	46.1	0.254	0.806	0.720	1.261
B81J-00219 EWR4(3)	Groot Letaba	C	441.29	-	49.4	0.497	0.597	0.595	1.083
RQOs applicable when Nwamitwa Dam is implemented with high flow releases in January, February and March.									
B81F-00200 EWR 3(3)	Groot Letaba	C	394.93	-	43.91	1.092	1.222	1.318	2.500
B81J-00219 EWR4(3)	Groot Letaba	C	441.29	-	42.53	0.523	0.554	0.679	1.517
IUA 9: KLEIN LETABA FROM THE MIDDLE LETABA DAM									
RQOs applicable before the implementation of a water resource development in the Klein Letaba River.									
B82G-00135 EWR5(3)	Klein Letaba	C	124.18	-	54	0.004	0.015	0.008	0.040
RQOs applicable when a water resource development is implemented in the Klein Letaba River.									
B82G-00135 EWR5(3)	Klein Letaba	C/D	124.18	-	45	0.015	0.030	0.031	0.065
IUA 11: LETABA MAIN STEM IN THE KNP									
RQOs applicable before the implementation of Nwamitwa Dam.									

Biophysical node	River	Target EC	nMAR[1] (MCM)	Low flows (%nMAR)[2]	Total flows (%nMAR)[2]	October (m^3/s)		April (m^3/s)	
						Mean of monthly flows at the indicated frequency.[4]			
						90%	60%	90%	60%
B83D-00255 EWR7[(3)]	Letaba	C	646	-	55.8	0.579	0.579	0.590	1.155
RQOs applicable when Nwamitwa Dam is implemented with high flow releases in January, February and March.									
B83D-00255 EWR7[(3)]	Letaba	C	646	-	49.3	0.522	0.554	0.696	1.549

Note (1): nMAR is the natural Mean Annual Runoff in million cubic meters per annum.
Note (2): %nMAR is flow required at the nodes expressed as a percentage of the natural Mean Annual Runoff, Low flows and Total flows.
Note (3): The monthly flow requirements for EWR 3, 4, 5 and 7 represent the total flow defined by the indicated scenario where the Present Ecological State low flows and releases for water users defines the minimum requirements for the respective EWR sites.
Note (4): Percentage points on the monthly low flow frequency distribution continuum at the nodes, expressed as the percentage of the months (90% and 60%) that the flow should equal or exceed the indicated minimum values.

Table 3 provides the habitat, biota and water quality RQOs for each IUA for HIGH priority Resource Units. RQOs and the target Ecological Category relevant prior to the construction of the future dams are provided for each component and/or indicator. Expected changes after the construction of Nwamitwa and/or when a water resource development is implemented in the Klein Letaba River are indicated where relevant.

Table 3: RQOs for RIVERS for water quality, geomorphology, riparian vegetation, macro-invertebrates and fish in priority Resource Units (RU) in the Letaba Catchment

Component/ Indicator	Target EC*1	RQO
IUA 1 **RESOURCE UNIT RU EWR 1 (Letaba River, B81B-00264, B81B-00247)**		
Geomorphology	**C/D**	Maintain the current EC of C/D (≥ 58 %), and geomorphological structure.
Fish	**C**	Do not reduce current 22 species. Fish ecological category: C (≥ 62 %). Indicator of fast flowing habitats is the stargazer.
Invertebrates	**C**	Community representative of small foothill stream assemblage. Maintain the current EC of C (≥ 62 %), good stones in current (SIC) and marginal vegetation.
Riparian vegetation	**C**	Maintain target EC of C (≥ 62 %), Keep aliens in check (not more than 20-20% cover of perennial aliens). Maintain viable populations of matumi, leadwood, apple leaf.
Water quality	**B**	***Water quality RQOs immediately applicable.***
		Ensure that nutrient levels are within Acceptable limits: 50th percentile of the data must be less than 0.015 mg/L PO_4-P (Aquatic ecosystems: driver).
		Ensure that toxics are within Ideal limits or A categories: 95th percentile of the data must be within the Target Water Quality Range (TWQR) for toxics.
IUA 2 **RESOURCE UNIT RU EWR 2 (Letsitele River, B81D-00271)**		
Geomorphology	**D**	Maintain the current EC of D (≥ 42 %), and geomorphological structure.

Component/ Indicator	Target EC*1	RQO
Fish	**C/D**	Do not reduce current 24 species. Fish ecological category: C/D (≥ 58 %). Indicator of fast flowing habitats is the stargazer.
Invertebrates	**C**	Community representative of small foothill stream assemblage. Maintain the C (≥ 62 %) EC, good SIC and marginal vegetation.
Riparian vegetation	**D**	Keep aliens in check (not more than 20-50% cover of perennial aliens). Maintain viable populations of matumi, leadwood, apple leaf.
Water quality	**C**	***Water quality RQOs immediately applicable.*** • Ensure that nutrient levels are within Tolerable limits: 50th percentile of the data must be less than or equal to 0.025 mg/L PO_4-P (Agriculture - irrigation: driver). • Ensure that electrical conductivity (salt) levels are within Ideal limits: 95th percentile of the data must be less than or equal to 30 mS/m (Aquatic ecosystems: driver). • Ensure that toxics are within Ideal limits or A categories: 95th percentile of the data must be within the TWQR for toxics.
		Phase 1: Select an instream monitoring point and develop a baseline of data for faecal coliforms and E. coli. ***Phase 2: Water quality RQOs become applicable once a database of information has been produced.*** Meet faecal coliform and *E.coli* targets for recreational (full contact) use: Meet the TWQR of 0-130 counts per 100 ml (DWAF, 1996a).
IUA 3 **IUA 4** **RESOURCE UNIT RU EWR 3 (Letaba River, B81F-00200; B81C-00245; B81E-00244; B81F-00212; B81F-00215; B81F-00218; B81F-00231)**		
Geomorphology	**D**	Maintain the current EC (≥ 42 %), and geomorphological structure.
Fish	**C**	Do not reduce current 20 species. Fish ecological category: C (≥ 62 %). Indicator of fast flowing habitats is the shortspinesuckermouth.
Invertebrates	**C**	Community representative of Lowveld river in the middle with seasonal traits. Maintain the C (≥ 62 %) EC, diversity and integrity.
Riparian vegetation	**C/D→C**	Pre Nwamitwa: Maintain C/D (≥ 58%) EC. Keep aliens in check. Maintain viable populations of matumi, leadwood, apple leaf. Post Nwamitwa: Under the C (≥ 62 %) EC conditions it is expected that the marginal and lower zones will improve due to reduced encroachment on the macro-channel floor. RQOs to maintain this condition must be set post Nwamitwa Dam.
Water quality	**B/C**	***Ortho-phosphate RQO immediately applicable, i.e. before implementation of Nwamitwa Dam.*** Ensure that nutrient levels are within Acceptable limits: 50th percentile of the data must be less than or equal to 0.025 mg/L PO_4-P. ***Ortho-phosphate RQO applicable after implementation of Nwamitwa Dam.*** Ensure that nutrient levels are within Acceptable limits: 50th percentile of the data must be less than or equal to 0.015 mg/L PO_4-P (Aquatic ecosystems: driver).
		Electrical Conductivity RQO immediately applicable, i.e. before implementation of Nwamitwa Dam. Ensure that electrical conductivity (salt) levels are within Acceptable limits: 95th percentile of the data must be less than or equal to 55 mS/m, ***Electrical conductivity (salt) RQO applicable after implementation of Nwamitwa Dam.*** Ensure that electrical conductivity (salt) levels are within Ideal limits: 95th percentile of the data must be less than or equal to 30 mS/m (Industry Cat 3:

Component/ Indicator	Target EC*1	RQO
		driver).
		pH RQO is immediately applicable. Ensure that pH stays within Ideal limits: 5th and 95th percentiles of pH data must be between 6.5 and 8.0 (Aquatic ecosystems: driver).
		Toxics RQOs are immediately applicable. Ensure that toxics are within Ideal limits or A categories: 95th percentile of the data must be within the TWQR for toxics.
RESOURCE UNIT RU EWR 4 (Letaba River, B81J-00219; B81J-00209)		
Geomorphology	**C/D →D**	Maintain the geomorphological characteristics associated with the Ecological Categories.
Fish	**C**	Do not reduce current 26 species. Fish ecological category: C (≥ 62 %). Indicator of fast flowing habitats is the shortspinesuckermouth.
Invertebrates	**C→C/D**	Pre Nwamitwa: Community representative of Lowveld river in the middle with seasonal traits. Maintain the C/D (≥ 58 %) diversity and integrity. Post Nwamitwa: Under the C/D conditions it is expected that reduced high flows will reduce substrate quality. RQOs for the C/D (≥ 58 %) must be set post Nwamitwa Dam.
Riparian vegetation	**C**	Maintain C (≥ 62 %). Keep aliens in check (not more than 20- 20% cover of perennial aliens). Maintain viable populations of matumi, leadwood, apple leaf.
Water quality	**B/C**	***Water quality RQOs immediately applicable.*** • Ensure that nutrient levels are within Acceptable limits: 50th percentile of the data must be less than or equal to 0.025 mg/L PO_4-P (Aquatic ecosystems: driver). • Ensure that electrical conductivity (salt) levels are within Ideal limits: 95th percentile of the data must be less than or equal to 30 mS/m (Industry Cat 3: driver). • Ensure that pH stays within Acceptable limits: 5th and 95th percentiles of pH data must be between 6.5 and 8.4 (Industry Cat 3: driver). • Ensure that toxics are within Ideal limits or A categories: 95th percentile of the data must be within the TWQR for toxics.
		Phase 1: Select an instream monitoring point and develop a baseline of data for turbidity. ***Phase 2: Turbidity RQO becomes applicable once a database of information has been produced.*** Ensure that turbidity or clarity levels stay within Acceptable limits: A moderate change from present with temporary high sediment loads and turbidity during runoff events (Aquatic ecosystems: driver).
IUA 9 **RESOURCE UNIT RU EWR 5 (Klein Letaba River, B82G-00135; B82J-00165; B82J-00178; B82J-00201; B82J-00207)**		
Geomorphology	**C/D→D**	Maintain the geomorphological characteristics associated with the ecological categories.
Fish	**C**	Do not reduce current 22 species. Fish ecological category: C (≥ 62 %). Indicator of fast flowing habitats is the sawfinsuckermouth.
Invertebrates	**C/D→D**	Pre Klein Letaba development Community representative of Lowveld river assemblage with seasonal traits for a C/D : Under the C/D (≥ 58 %) conditions it is expected that reduced high flows will reduce substrate quality. RQOs for the C/D (≥ 58 %) must be set post Nwamitwa Dam.
Riparian vegetation	**C→C/D**	Keep aliens in check (not more than 20% (pre Klein Letaba development); not more than 30% (post Klein Letaba development) cover of perennial aliens). Agricultural activities should not encroach. Maintain viable populations of

Component/ Indicator	Target EC*1	RQO
		matumi, leadwood, apple leaf.
Water quality: B82G-00135, up to Giyani	**B/C→C**	***Ortho-phosphate RQO immediately applicable, i.e. before the implementation of water resource developments in the Klein Letaba River.*** Ensure that nutrient levels are within Acceptable limits: 50th percentile of the data must be less than or equal to 0.025 mg/L PO_4-P. ***Ortho-phosphate RQO applicable after the implementation of water resource developments in the Klein Letaba River.*** Ensure that nutrient levels are within Tolerable limits: 50th percentile of the data must be less than or equal to 0.075 mg/L PO_4-P (Aquatic ecosystems: driver).
		Phase 1: Select an instream monitoring point and develop a baseline of data for faecal coliforms and E. coli. ***Phase 2: Water quality RQOs become applicable once a database of information has been produced.*** Meet faecal coliform and *E. coli* targets for recreational (full contact) use: Meet the TWQR of 0-130 counts per 100 ml (DWAF, 1996a).
		Phase 1: Select an instream monitoring point and develop a baseline of data for turbidity. ***Phase 2: Turbidity RQO becomes applicable once a database of information has been produced.*** Ensure that turbidity or clarity levels stay within Acceptable limits: A moderate change from present with temporary high sediment loads and turbidity during runoff events. (Aquatic ecosystems: driver).
		Toxics RQOs immediately applicable. Ensure that toxics are within Ideal limits or A categories: 95th percentile of the data must be within the TWQR for toxics
Water quality: Downstream Giyani	**C**	***Ortho-phosphate RQO immediately applicable.*** Ensure that nutrient levels are within Tolerable limits: 50th percentile of the data must be less than or equal to 0.125 mg/L PO_4-P (Aquatic ecosystems: driver).
		Electrical conductivity (salt) RQO immediately applicable. Ensure that electrical conductivity (salt) levels are within Acceptable limits: 95th percentile of the data must be less than or equal to 55 mS/m (Aquatic ecosystems: driver).
		Phase 1: Select an instream monitoring point and develop a baseline of data for faecal coliforms and E. coli. ***Phase 2: Water quality RQOs become applicable once a database of information has been produced.*** Meet faecal coliform and *E. coli* targets for recreational (full contact) use: Meet the TWQR of 0-130 counts per 100 ml (DWAF, 1996a).
		Phase 1: Select an instream monitoring point and develop a baseline of data for turbidity. ***Phase 2: Turbidity RQO becomes applicable once a database of information has been produced.*** Ensure that turbidity or clarity levels stay within Acceptable limits: A moderate change from present with temporary high sediment loads and turbidity during runoff events. (Aquatic ecosystems: driver).
		Toxics RQOs immediately applicable. Ensure that toxics are within Ideal limits or A categories: 95th percentile of the data must be within the TWQR for toxics.
IUA 11 **RESOURCE UNIT RU EWR 7 (Letaba River, B83D-00255; B83A-00220; B83A-00230; B83A-00235 B83A-00252; B83D-00250; B83E-00265)**		

Component/ Indicator	Target EC*1	RQO
Geomorphology	**C→C/D**	Maintain the geomorphological characteristics associated with the Ecological Category
Fish	**C→C/D**	Do not reduce current 29 species. Maintain present FROC for a C (≥ 62 %) and, post Nwamitwa, the FROC for a C/D (≥ 58 %). Indicators of fast flowing habitats are the sawfinsuckermouth and largescale yellowfish.
Invertebrates	**C→C/D**	Community representative of a Lowveld River assemblage. Maintain rare SIC habitat and marginal vegetation. Set revised RQOs post Nwamitwa as the EC will change due sedimentation in pools and stagnation.
Riparian vegetation	**C**	Maintain C (≥ 62 %). No increase in alien vegetation. Maintain viable populations of matumi, leadwood, apple leaf, torch wood.
Water quality	**B**	***Water quality RQOs immediately applicable.*** Ensure that nutrient levels are within Acceptable limits: 50th percentile of the data must be less than or equal to 0.025 mg/L PO_4-P (Aquatic ecosystems: driver). Ensure that electrical conductivity (salt) levels are within Acceptable limits: 95th percentile of the data must be less than or equal to 55 mS/m (Aquatic ecosystems: driver). Ensure that toxics are within Ideal limits or A categories: 95th percentile of the data must be within the TWQR for toxics.
		Phase 1: Select an instream monitoring point and develop a baseline of data for turbidity. ***Phase 2: Turbidity RQO become applicable once a database of information has been produced.*** Ensure that turbidity or clarity levels stay within Ideal limits: A small change from natural state (Aquatic ecosystems: driver).

*1 Where two Ecological Categories are provided, the second category refers to expected change after the implementation of Nwamitwa Dam and when a water resource development is implemented in the Klein Letaba River.

*2 DWAF, 1996a: Department of Water Affairs and Forestry, South Africa. 1996a. South African Water Quality Guidelines. Volume 2, Recreational Use.

Table 4 provides the habitat and biota RQOs for priority wetlands in each IUA. The locality of the wetlands is linked to the river RU and biophysical nodes. The target Ecological Category is provided for the relevant wetlands in the Resource Unit. All target EC are set to maintain the PES and are therefore immediately applicable.

Table 4: Summary of key RQOs for BIOTA and HABITAT in WETLANDS in priority RUs in the Letaba Catchment

Biophysical node/RU	Target EC	Indicator	RQO
IUA 1: LETABA RIVER UPSTREAM OF TZANEEN DAM			
B81A-00270	**C**	Riparian vegetation	No increase in wetland fragmentation. No construction of furrows, canals, and excavations; no dredging. Maintain species composition and vegetative cover. No increase in the cover or abundance of woody invasive alien species. Forestry activities should not expand or intensify towards or into wetlands.
		Biota	No decline in populations of *Gunnera perpensa* (IUCN threat status of "Declining"). No decline in dark-footed forest shrews, Angoni vlei rats, vlei rats or water rats; herons, ducks, moorhens, greenshank or sandpiper;

Biophysical node/RU	Target EC	Indicator	RQO
			Natal ghost frog, green and brown water snakes. Periodic flooding of wetlands should support fish breeding/productivity.
IUA 2: LETSITELE AND THABINA RIVERS			
B81D-00277	**D**	Riparian vegetation	No increase in wetland fragmentation. No construction of furrows, canals, and excavations; no dredging. Maintain species composition and vegetative cover. Allow periodic flooding to maintain wetland EC. No increase in the cover or abundance of woody invasive alien species. Forestry activities should not expand or intensify towards or into wetlands.
		Biota	No decline in populations of *G. perpensa* (IUCN threat status of "Declining"). No decline in herons, ducks, moorhens; Natal ghost frog, green and brown water snakes. Periodic flooding of wetlands should support fish breeding/productivity.
IUA 3: LETABA RIVER DOWNSTREAM OF TZANEEN DAM TO THE PROPOSED NWAMITWA DAM			
B81C-00245	**D**	Riparian vegetation	No increase in wetland fragmentation. No construction of furrows, canals, and excavations; no dredging. Maintain species composition and vegetative cover. Allow periodic flooding to maintain wetland EC. No increase in the cover or abundance of woody invasive alien species. Forestry activities should not expand or intensify towards or into wetlands.
		Biota	No decline in populations of *G. perpensa* (IUCN threat status of "Declining"). No decline in herons, ducks, moorhens; Natal ghost frog, green and brown water snakes. Periodic flooding of wetlands should support fish breeding/productivity.
IUA 4: LETABA FROM PROPOSED NWAMITWA DAM TO KLEIN LETABA CONFLUENCE			
B81F-00231 (EWR 3)	**C/D**	Riparian vegetation	No increase in wetland fragmentation. No construction of furrows, canals, and excavations; no dredging. Maintain species composition and vegetative cover. Allow periodic flooding to maintain wetland EC. No increase in the cover or abundance of woody invasive alien species. Forestry activities should not expand or intensify towards or into wetlands.
		Biota	No decline in Angoni vlei rats or vlei rats; herons, ducks, moorhens, greenshank or sandpiper; Natal ghost frog, green and brown water snakes. Periodic flooding of wetlands should support fish breeding/productivity.
B81F-00200 (EWR 3)	**C**	Riparian vegetation	No increase in wetland fragmentation. No construction of furrows, canals, and excavations; no dredging. Maintain species composition and vegetative cover. Allow periodic flooding to maintain wetland EC. No increase in the cover or abundance of woody invasive alien species. Forestry activities should not expand or intensify towards or into wetlands.
		Biota	No decline in Angoni vlei rats or vlei rats; herons, ducks, moorhens, greenshank or sandpiper; Natal ghost frog, green and brown water

Biophysical node/RU	Target EC	Indicator	RQO
			snakes. Periodic flooding of wetlands should support fish breeding/productivity.
IUA 7: UPPER MIDDEL LETABA RIVER AND TRIBUTARIES UPSTREAM OF MIDDLE LETABA DAM			
B82B-00173	**D**	Riparian vegetation	No increase in wetland fragmentation. No construction of furrows, canals, and excavations; no dredging. No encroachment of agricultural activities into the wetland. Allow periodic flooding to maintain wetland EC.
		Biota	No decline in populations of *G. perpensa* (IUCN threat status of "Declining"). No decline in herons, ducks, moorhens; Natal ghost frog, green and brown water snakes. Periodic flooding of wetlands should support fish breeding/productivity.
B82C-00175	**D**	Riparian vegetation	No increase in wetland fragmentation. No construction of furrows, canals, and excavations; no dredging. No encroachment of agricultural activities into the wetland. Allow periodic flooding to maintain wetland EC.
		Biota	No decline in populations of *G. perpensa* (IUCN threat status of "Declining"). No decline in herons, ducks, moorhens; Natal ghost frog, green and brown water snakes. Periodic flooding of wetlands should support fish breeding/productivity.
IUA 9: KLEIN LETABA FROM THE MIDDLE LETABA DAM			
B82G-00135 (EWR 5)	**C/D**	Riparian vegetation	No encroachment of agricultural activities into the wetland. No construction of furrows, canals, and excavations; no dredging. Maintain species composition and vegetative cover.

Table 5 provides an indication of the narrative and numerical RQOs for groundwater expressed in terms of guidelines and limitations of groundwater abstractions. The groundwater assessment is undertaken on a quaternary catchment scale which has been grouped within the relevant IUAs.

Table 5: Summary of RQOs for GROUNDWATER in the Letaba Catchment

IUA 1: B81A; B81B	
Groundwater narrative RQO	
Abstraction	Significant ground water abstraction within 500m of a perennial channel should be restricted. All users to comply with existing allocation schedules and individual license conditions within the confirmed available yield.
Baseflow	Compliance to the low flow requirements for inflows to Tzaneen Dam.
Water Level	Water level in the aquifer must be higher than the water level in the surface water.
Water Quality	Shall not deteriorate from natural background.
Groundwater numerical RQO	
The total registered water use should remain below 7.52 Mm^3.	
IUA 2: B81D	
Groundwater narrative RQO	
Abstraction	Significant ground water abstraction within 500m of a perennial channel should be restricted. All users to comply with existing allocation schedules and individual licence conditions within the confirmed available yield.
Baseflow	Compliance to the low flow requirements at EWR 2. Impacts of baseflow reduction

	should be monitored at B1H010.
Water Level	Water level in the aquifer must be higher than the water level in the surface water.
Water Quality	Shall not deteriorate from natural background.
Groundwater numerical RQO	
The total registered water use should remain below 7.77 Mm^3.	
IUA 3: B81C	
Groundwater narrative RQO	
Abstraction	No further groundwater abstraction to take place. All users to comply with existing allocation schedules and individual license conditions within the confirmed available yield.
Baseflow	Compliance to the low flow requirements at EWR 3. Impacts of baseflow reduction should be monitored at B1H017.
Water Level	Water level in the aquifer must be higher than the water level in the surface water.
Water Quality	Shall not deteriorate from natural background.
IUA 3: B81E	
Groundwater narrative RQO	
Abstraction	No further groundwater abstraction to take place. All users to comply with existing allocation schedules and individual license conditions within the confirmed available yield.
Baseflow	Compliance to the low flow requirements at EWR 3. Impacts of baseflow reduction should be monitored at B1H017.
Water Level	No negative trend in water levels during annual during dry seasons. Water level monitoring network required near high abstraction zones.
Water Quality	Shall not deteriorate from natural background.
IUA 4 - 6: B81F	
Groundwater narrative RQO	
Abstraction	All users to comply with existing allocation schedules and individual license conditions within the confirmed available yield.
Water Level	No negative trend in water levels during annual during dry seasons. Water level monitoring network required near high abstraction zones.
Water Quality	Shall not deteriorate from present conditions. Monitoring of nitrates needs to be expanded.
Groundwater numerical RQO	
The total registered water use should remain below 14.40 Mm^3.	
IUA 4 - 6: B81J	
Groundwater narrative RQO	
Abstraction	All users to comply with existing allocation schedules and individual license conditions within the confirmed available yield.
Water Level	No negative trend in water levels during annual during dry seasons. Water level monitoring network required near high abstraction zones.
Water Quality	Shall not deteriorate from present conditions.
Groundwater numerical RQO	
The total registered water use should remain below 6.46 Mm^3/a.	
IUA 6: B81G	
Groundwater narrative RQO	

Abstraction	All users to comply with existing allocation schedules and individual licence conditions within the confirmed available yield.
Water Level	No negative trend in water levels during annual during dry seasons. Water level monitoring network required near high abstraction zones.
Water Quality	Shall not deteriorate from present conditions. Monitoring of nitrates needs to be expanded.
Groundwater numerical RQO	
The total registered water use should remain below 6.78 Mm^3.	
IUA 4 - 6: B81H	
Groundwater narrative RQO	
Abstraction	All users to comply with existing allocation schedules and individual license conditions within the confirmed available yield.
Water Level	No negative trend in water levels during annual during dry seasons.
Water Quality	Shall not deteriorate from present conditions. Monitoring of nitrates needs to be expanded.
Groundwater numerical RQO	
The total registered water use should remain below 7.97 Mm^3/a.	
IUA 7: B82A; B82D	
Groundwater narrative RQO	
Abstraction	Significant ground water abstraction within 500 m of a perennial channel should be restricted. All users to comply with existing allocation schedules and individual licence conditions within the confirmed available yield.
Baseflow	October inflows into the Middle Letaba Dam should be monitored.
Water Level	Water level in the aquifer must be higher than the water level in the surface water. No negative trend in water levels during annual during dry seasons.
Water Quality	Shall not deteriorate from present conditions.
Groundwater numerical RQO	
The total registered water use should remain below 17.47 Mm^3.	
IUA 7: B82B; B82C	
Groundwater narrative RQO	
Abstraction	All users to comply with existing allocation schedules and individual license conditions within the confirmed available yield. No further groundwater abstraction should be permitted as it will reduce the inflows into the Middle Letaba Dam.
Water Level	Water level in the aquifer must be higher than the water level in the surface water. No negative trend in water levels during annual during dry seasons.
Water Quality	Shall not deteriorate from present conditions.
IUA 8: B82E; B82F	
Groundwater narrative RQO	
Abstraction	All users to comply with existing allocation schedules and individual licence conditions within the confirmed available yield.
Water Level	No negative trend in water levels during annual during dry seasons.
Water Quality	Shall not deteriorate from present conditions. Monitoring of nitrates needs to be expanded.
Groundwater numerical RQO	
The total registered water use should remain below 18.46 Mm^3.	
IUA 9: B82G	

Groundwater narrative RQO	
Abstraction	All users to comply with existing allocation schedules and individual licence conditions within the confirmed available yield.
Water Level	No negative trend in water levels during annual during dry seasons.
Water Quality	Shall not deteriorate from present conditions. Monitoring of nitrates needs to be expanded.
Groundwater numerical RQO	
The total registered water use should remain below 11.02 Mm^3.	
IUA 9 - 10: B82H; B82J	
Groundwater narrative RQO	
Abstraction	All users to comply with existing allocation schedules and individual licence conditions within the confirmed available yield.
Water Level	No negative trend in water levels during annual during dry seasons.
Water Quality	Shall not deteriorate from present conditions. Monitoring of nitrates needs to be expanded.
Groundwater numerical RQO	
The total registered water use should remain below 14.89 Mm^3.	
IUA 12*: B83A; B83B; B83C; B83D; B83E	
Groundwater narrative RQO	
Abstraction	All users to comply with existing allocation schedules and individual licence conditions within the confirmed available yield.
Water Level	No negative trend in water levels during annual during dry seasons.
Water Quality	Shall not deteriorate from present conditions.
Groundwater numerical RQO	
The total registered water use should remain below 29.44 Mm^3.	

* It is acknowledged that IUA 12 falls in the KNP.

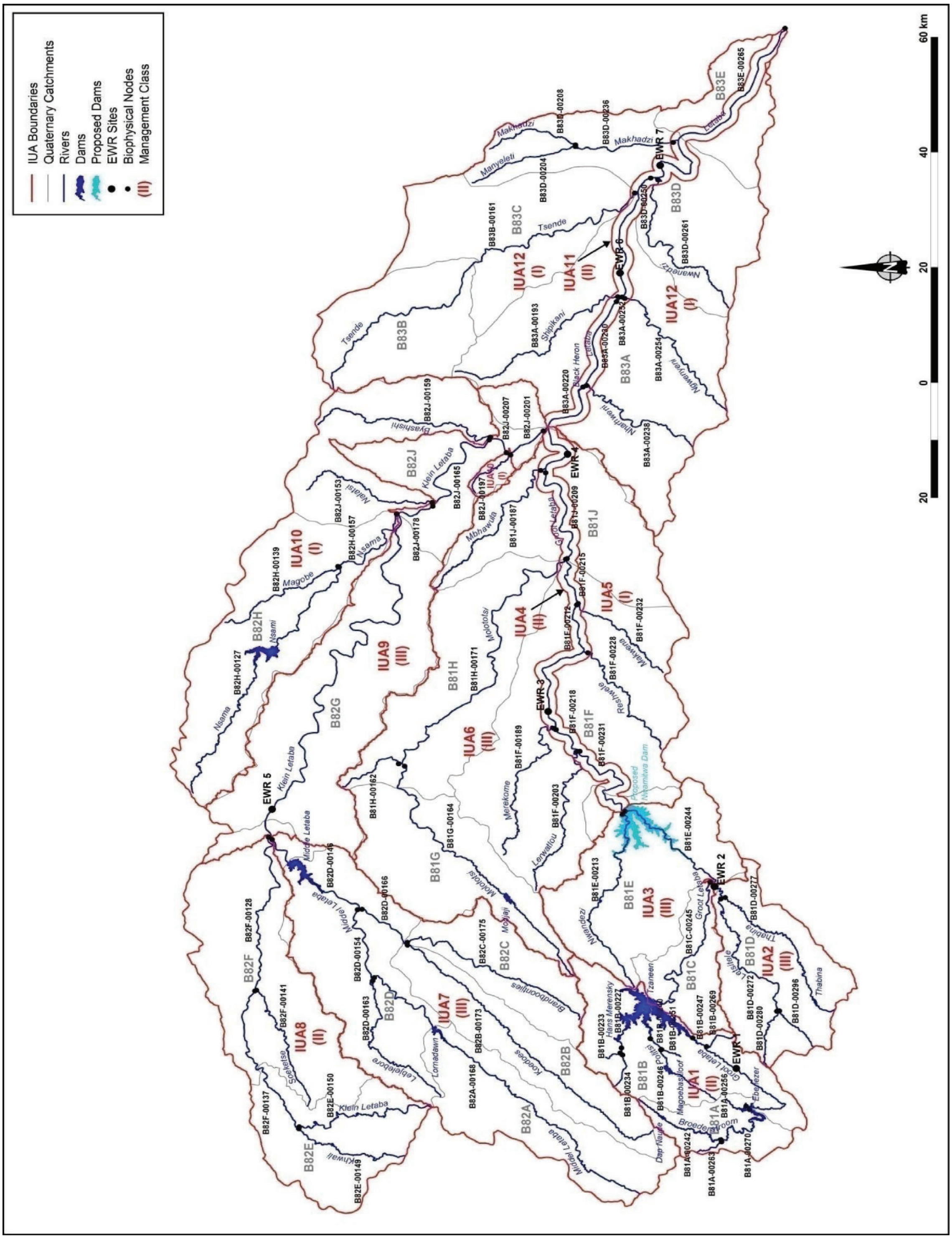

Figure 1: Integrated Units of Analysis of the Letaba Catchment