DEPARTMENT OF WATER AND SANITATION

NO. 1617 **30 DECEMBER 2016**

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

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

I, Sifiso Mkhize, in my capacity as Acting Director-General of the Department of Water and Sanitation, and duly authorised in terms of sections 13(1) and 63(1)(a) of the National Water Act, 1998 (Act No.36 of 1998), hereby publish the notice for the classes of water resources and the resource quality objectives for the Letaba Catchment.

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ACTING DIRECTOR-GENERAL OF THE DEPARTMENT OF WATER AND SANITATION
DATE: 24/11/2016

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

CLASSES OF WATER RESOURCES AS REQUIRED IN TERMS OF SECTION 13(1)(a) 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.

RESOURCE QUALITY OBJECTIVES OF WATER RESOURCES AS REQUIRED IN TERMS OF SECTION 13(1)(b) OF THE NATIONAL WATER ACT, 1998

1. Resource Quality Objectives (RQO) are defined for each prioritised resource unit (RU) for every IUA in terms of water quantity, habitat and biota, and water quality, as shown in Table 2 – 6, respectively.

2. Where specified, the ecological category or Recommended Ecological Category (REC) means the assigned ecological condition by the Minister to a water resource that reflects the ecological condition of that water resource in terms of the deviation of its biophysical components from a predevelopment condition.

3. 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.

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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

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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.

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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 for all the months. 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)	Months	RQO (m^3/s)	
							90%[4]	60%
IUA 1: LETABA RIVER UPSTREAM OF TZANEEN DAM								
B81B-00264 EWR1	Groot Letaba	C	99.84	11.8	21	Oct	0.13	0.20
						Nov	0.12	0.20
						Dec	0.13	0.23
						Jan	0.15	0.27
						Feb	0.15	0.33
						Mar	0.17	0.34
						Apr	0.16	0.35
						May	0.17	0.34
						Jun	0.15	0.33
						Jul	0.15	0.30
						Aug	0.15	0.27
						Sep	0.13	0.23
IUA 2: LETSITELE AND THABINA RIVERS								
B81D-00271 EWR2	Letsitele	D	116.55	14.1	21.2	Oct	0.04	0.10
						Nov	0.05	0.15
						Dec	0.08	0.25
						Jan	0.12	0.42
						Feb	0.15	0.45
						Mar	0.17	0.53
						Apr	0.13	0.45
						May	0.15	0.44
						Jun	0.12	0.32
						Jul	0.09	0.21
						Aug	0.07	0.16
						Sep	0.06	0.11
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	Oct	0.254	0.806
						Nov	0.259	0.738
						Dec	0.463	0.819
						Jan	0.532	1.087
						Feb	0.619	2.484
						Mar	0.744	1.400
						Apr	0.720	1.261
						May	0.343	0.800
						Jun	0.168	0.742
						Jul	0.139	0.632
						Aug	0.067	0.529
						Sep	0.221	0.698

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Biophysical node	River	Target EC	nMAR[1] (MCM)	Low flows (%nMAR)[2]	Total flows (%nMAR)	Months	RQO (m^3/s)	
							90%[4]	60%
B81J-00219 EWR 4[(3)]	Groot Letaba	C	441.29	-	49.4	Oct	0.497	0.597
						Nov	0.082	0.583
						Dec	0.085	0.595
						Jan	0.277	0.828
						Feb	0.448	2.118
						Mar	0.571	1.094
						Apr	0.595	1.083
						May	0.597	0.597
						Jun	0.586	0.598
						Jul	0.530	0.597
						Aug	0.597	0.597
						Sep	0.594	0.598
RQOs applicable when Nwamitwa Dam is implemented with high flow releases in January, February and March.								
B81F-00200 EWR 3[(3)]	Groot Letaba	C	394.91	-	43.9	**Oct**	1.092	1.222
						Nov	0.994	1.253
						Dec	1.035	1.302
						Jan	1.248	3.983
						Feb	1.421	5.323
						Mar	1.461	4.474
						Apr	1.318	2.500
						May	1.338	2.195
						Jun	1.339	1.856
						Jul	1.274	1.626
						Aug	1.226	1.431
						Sep	1.160	1.306
B81J-00219 EWR 4[(3)]	Groot Letaba	C	441.29	-	42.4	**Oct**	0.523	0.554
						Nov	0.498	0.629
						Dec	0.497	0.773
						Jan	0.616	3.589
						Feb	0.733	5.264
						Mar	0.788	3.781
						Apr	0.679	1.517
						May	0.688	1.354
						Jun	0.669	1.129
						Jul	0.650	0.945
						Aug	0.605	0.778
						Sep	0.552	0.632
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 EWR 5[(3)]	Klein Letaba	C	124.18	-	54	Oct	0.004	0.015
						Nov	0.004	0.027
						Dec	0.004	0.057
						Jan	0.019	0.223
						Feb	0.025	0.167
						Mar	0.019	0.074
						Apr	0.008	0.040
						May	0.011	0.030
						Jun	0.008	0.027
						Jul	0.007	0.026
						Aug	0.011	0.022
						Sep	0.008	0.015
RQOs applicable when a water resource development is implemented in the Klein Letaba River.								
B82G-00135 EWR 5[(3)]	Klein Letaba	C/D	124.18	-	45	Oct	0.015	0.030
						Nov	0.023	0.039
						Dec	0.026	0.045

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Biophysical node	River	Target EC	nMAR[1] (MCM)	Low flows (%nMAR)[2]	Total flows (%nMAR)	Months	RQO (m^3/s)	
							90%[4]	60%
						Jan	0.030	0.060
						Feb	0.033	0.074
						Mar	0.034	0.069
						Apr	0.031	0.065
						May	0.030	0.054
						Jun	0.031	0.052
						Jul	0.030	0.049
						Aug	0.030	0.045
						Sep	0.023	0.035
IUA 4: LETABA FROM PROPOSED NWAMITWA DAM TO KLEIN LETABA CONFLUENCE								
RQOs applicable before the implementation of Nwamitwa Dam.								
B83D-00255 EWR 7[(3)]	Letaba	C	646.29	-	55.8	Oct	0.579	0.579
						Nov	0.579	0.590
						Dec	0.590	0.664
						Jan	0.590	1.799
						Feb	0.590	2.879
						Mar	0.590	1.149
						Apr	0.590	1.155
						May	0.590	0.590
						Jun	0.590	0.590
						Jul	0.590	0.590
						Aug	0.590	0.590
						Sep	0.579	0.579
RQOs applicable when Nwamitwa Dam is implemented with high flow releases in January, February and March.								
B83D-00255 EWR 7[(3)]	Letaba	C	646.29	-	49.3	Oct	0.523	0.554
						Nov	0.537	0.660
						Dec	0.601	0.897
						Jan	0.688	5.349
						Feb	0.778	5.909
						Mar	0.871	3.935
						Apr	0.696	1.549
						May	0.691	1.396
						Jun	0.670	1.144
						Jul	0.651	0.951
						Aug	0.613	0.779
						Sep	0.548	0.633

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. Note that for EWR 1 and 2, these only represent the base flows and flood requirements are available in technical documents.

Habitat and biota RQOs are provided as Ecological Categories. There are generic narrative and numerical RQOs associated with the Ecological Categories and Table 3 describes these for each Ecological Category.

Table 4 provides the habitat and biota RQOs for each IUA for HIGH priority Resource Units. RQOs and the target Ecological Category 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.

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Table 5 provides the water quality RQOs for each IUA for priority Resource Units. RQOs 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. Note that water quality includes both the target ecological target (TEC) and the user targets as narrative RQOs.

Table 3: Generic numerical and narrative RQOs associated with Ecological Categories

ECOLOGICAL CATEGORY	GENERIC NARRATIVE RQO	INSTREAM AND RIPARIAN HABITAT NARRATIVE RQO	FISH, MACROINVERTEBRATE AND RIPARIAN VEGETATION NARRATIVE RQO	NUMERICAL RQO
A	Unmodified, near natural.	Very similar to natural reference conditions	Assemblage attributes as specified	≥ A (≥ 92%)
A/B				≥ A/B (≥ 88%)
B	Largely natural with few modifications.	Largely natural with few modifications. The flow regime has been only slightly modified and pollution is limited to sediment. A small change in natural habitats may have taken place. However, the ecosystem functions are essentially unchanged.	Assemblage attributes as specified	≥ B (≥ 82%)
B/C				≥ B/C (≥ 78%)
C	Moderately modified.	Moderately modified. Loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.	Assemblage attributes as specified	≥ C (≥ 62%)
C/D				≥ C/D (≥58%)
D	Largely modified.	Largely modified. A large loss of natural habitat, biota and basic ecosystem functions has occurred.	Assemblage attributes as specified	≥ D (≥ 42%)
D/E				≥ D/E (≥ 38%)
E	Seriously modified.	Seriously modified. The loss of natural habitat, biota and basic ecosystem functions is extensive.	Assemblage attributes as specified	20-39%
F	Critically / Extremely modified.	Critically / Extremely modified. Modifications have reached a critical level and the system has been modified completely with an almost complete loss of natural habitat and biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible.	Assemblage attributes as specified	0-19%

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Table 4: Habitat and biota RQOs for RIVERS for geomorphology, riparian vegetation, macro-invertebrate and fish in priority Resource Units (RU) in the Letaba Catchment

IUA	RESOURCE UNIT (River, Desktop biophysical node)	Geo-morphology	Fish	Macro-invertebrate	Riparian vegetation
IUA 1	RU EWR 1 (Letaba River, B81B-00264, B81B-00247)	**C/D**	**C**	**C**	**C**
IUA 2	RU EWR 2 (Letsitele River, B81D-00271)	**D**	**C/D**	**C**	**D**
IUA 3 & 4	RU EWR 3 (Letaba River, B81F-00200; B81C-00245; B81E-00244; B81F-00212; B81F-00215; B81F-00218; B81F-00231)	**D**	**C**	**C**	**C/D→C**[*1]
IUA 3 & 4	RU EWR 4 (Letaba River, B81J-00219; B81J-00209)	**C/D →D**	**C**	**C→C/D**	**C**
IUA 9	RU EWR 5 (Klein Letaba River, B82G-00135; B82J-00165; B82J-00178; B82J-00201; B82J-00207)	**C/D →D**	**C**	**C/D→D**	**C→C/D**
IUA 11	RU EWR 7 (Letaba River, B83D-00255; B83A-00220; B83A-00230; B83A-00235 B83A-00252; B83D-00250; B83E-00265)	**C→C/D**	**C→ C/D**	**C→C/D**	**C**

*[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.

Table 5: RQOs for RIVERS for water quality (ecological and user) in priority Resource Units (RU) in the Letaba Catchment

IUA	RU	Sub-Component	Target EC[*1]	Narrative RQO	Numerical RQO
IUA 1	RU EWR 1 (Letaba River, B81B-00264, B81B-00247)	Nutrients (phosphate)	**B**	Acceptable	50th percentile of the data must be less than 0.015 mg/L PO_4-P (Aquatic ecosystems: driver)
		Toxics		Ideal	95th percentile of the data must be within the Target Water Quality Range (TWQR) or A categories for toxics.
IUA 2	RU EWR 2 (Letsitele River, B81D-00271)	Nutrients (phosphate)	**C**	Tolerable	50th percentile of the data must be less than 0.025 mg/L PO_4 (Agriculture - irrigation: driver).
		Electrical Conductivity (salts)		Ideal	95th percentile of the data must be less than or equal to 30 mS/m (Aquatic ecosystems: driver).
		Toxics		Ideal	95th percentile of the data must be within the TWQR or A categories for toxics.
		Faecal coliforms and *E.coli*		Recreation (full contact)	Meet the TWQR of 0-130 counts per 100 ml (DWAF, 1996a[*2]).
IUA 3 & 4	RU EWR 3 (Letaba River, B81F-00200; B81C-00245; B81E-00244; B81F-00212; B81F-00215; B81F-00218; B81F-00231)	Nutrients (phosphate)	**B/C**	Acceptable	Immediately applicable: 50th percentile of the data must be less than 0.025 mg/L PO4-P. Post Nwamitwa Dam: 50th percentile of the data must be less than 0.015 mg/L PO4-P (Aquatic ecosystems: driver).
		Electrical Conductivity (salts)		Acceptable	Immediately applicable: 95th percentile of the data must be less than or equal to 55 mS/m.
				Ideal	Post Nwamitwa Dam: 95th percentile of the data must be less than or equal to 30 mS/m (Industry Cat 3: driver).
		pH		Ideal	5th and 95th percentiles of pH data must be between 6.5 and 8.0 (Aquatic ecosystems: driver).
		Toxics		Ideal	95th percentile of the data must be within

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IUA	RU	Sub-Component	Target EC[*1]	Narrative RQO	Numerical RQO
					the TWQR or A categories for toxics.
IUA 3 & 4	RU EWR 4 (Letaba River, B81J-00219; B81J-00209)	Nutrients (phosphate)	B/C	Acceptable	50th percentile of the data must be less than 0.025 mg/L PO4-P (Aquatic ecosystems: driver).
		Electrical Conductivity (salts)		Ideal	95th percentile of the data must be less than or equal to 30 mS/m (Industry Cat 3: driver).
		pH		Acceptable	5th and 95th percentiles of pH data must be between 6.5 and 8.4 (Industry Cat 3: driver).
		Toxics		Ideal	95th percentile of the data must be within the TWQR or A categories for toxics.
		Turbidity		Acceptable	Not available (Aquatic ecosystems: driver)
IUA 9	RU EWR 5: B82G-00135, up to Giyani	Nutrients (phosphate)	B/C→C	Acceptable	Immediately applicable: 50th percentile of the data must be less than 0.025 mg/L PO4-P.
				Tolerable	Post Nwamitwa Dam: 50th percentile of the data must be less than 0.075 mg/L PO4-P (Aquatic ecosystems: driver).
		Faecal coliforms and *E. coli*		Recreation (full contact)	Meet the TWQR of 0-130 counts per 100 ml (DWAF, 1996a).
		Turbidity		Acceptable	Not available (Aquatic ecosystems: driver)
		Toxics		Ideal	95th percentile of the data must be within the TWQR or A categories for toxics.
IUA 9	RU EWR 5 (Klein Letaba River, B82G-00135 downstream from Giyani; B82J-00165; B82J-00178; B82J-00201; B82J-00207)	Nutrients (phosphate)	C	Tolerable	50th percentile of the data must be less than 0.125 mg/L PO4-P (Aquatic ecosystems: driver).
		Electrical Conductivity (salts)		Acceptable	95th percentile of the data must be less than or equal to 55 mS/m (Aquatic ecosystems: driver).
		Faecal coliforms and *E. coli*		Recreation (full contact)	Meet the TWQR of 0-130 counts per 100 ml (DWAF, 1996a).
		Turbidity		Acceptable	Not available (Aquatic ecosystems: driver)
		Toxics		Ideal	95th percentile of the data must be within the TWQR or A categories for toxics.
IUA 11	RU EWR 7 (Letaba River, B83D-00255; B83A-00220; B83A-00230; B83A-00235 B83A-00252; B83D-00250; B83E-00265)	Nutrients (phosphate)	B	Acceptable	50th percentile of the data must be less than 0.025 mg/L PO4-P (Aquatic ecosystems: driver).
		Electrical Conductivity (salts)		Acceptable	95th percentile of the data must be less than or equal to 55 mS/m (Aquatic ecosystems: driver).
		Toxics		Ideal	95th percentile of the data must be within the TWQR or A categories for toxics.
		Turbidity		Ideal	Not available (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 6 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.

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Table 6: 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

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	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	

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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.

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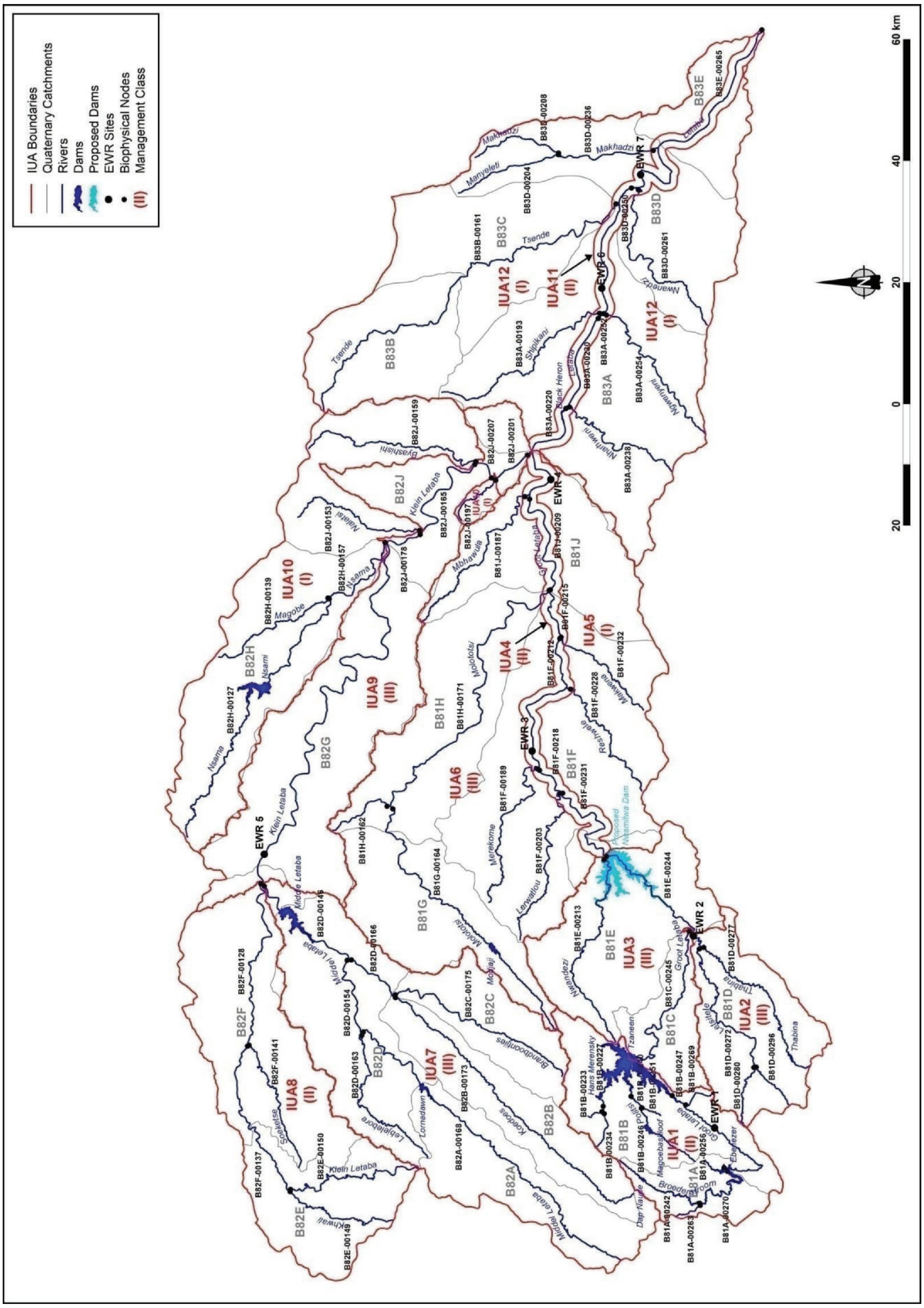

Figure 1: Integrated Units of Analysis of the Letaba Catchment