water and sanitation

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REPUBLIC OF SOUTH AFRICA

Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments

BASIC HUMAN NEEDS REPORT

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Department of Water and Sanitation

Chief Directorate: Water Ecosystems Management

PROJECT NUMBER**:** WP 11387

Basic Human Needs Report

CLASSIFICATION OF SIGNIFICANT WATER RESOURCES AND DETERMINATION OF RESOURCE QUALITY OBJECTIVES FOR WATER RESOURCES IN THE USUTU TO MHLATHUZE CATCHMENTS

JULY 2022

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10	WEM/WMA3/4/00/CON/CLA/1022	Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: **Estuary Survey Report**
11	WEM/WMA3/4/00/CON/CLA/1122	Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: **Wetland Report**
12	WEM/WMA3/4/00/CON/CLA/1222	Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: **Ecological Water Requirements Report**
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	volume 1	Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: **Ecological Consequences Report, Volume 1: Rivers**
	WEM/WMA3/4/00/CON/CLA/0123, volume 2	Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: **Ecological Consequences Report, Volume 2: Estuaries**
15	WEM/WMA3/4/00/CON/CLA/0323	Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: **Ecosystem Services Consequences Report**
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18	WEM/WMA3/4/00/CON/CLA/0623, volume 1	Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: **Resource Quality Objectives Report, Volume 1: Rivers**
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22	WEM/WMA3/4/00/CON/CLA/0324	Classification of Significant Water Resources and Determination of Resource Quality Objectives for Water Resources in the Usutu to Mhlathuze Catchments: **Close out Report**

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APPROVAL

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Mazibuko, M	DWS: Surface Water Reserve Requirements
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EXECUTIVE SUMMARY

BACKGROUND

Chapter 3 of the National Water Act, 1998 (NWA) (Act 36 of 1998), deals with the protection of water resources. Section 12 of the NWA requires the Minister to develop a system to classify water resources. In response to this, the Water Resource Classification System (WRCS) was gazetted on 17 September 2010 and published in the Government Gazette no. 33541 as Regulation 810. The WRCS is a step-wise process, whereby water resources are categorised according to specific classes that represent a management vision of a particular catchment. This vision takes into account, the current state of the water resource, the ecological, social, and economic aspects that are dependent on the resource. Once significant water resources have been classified through the WRCS, Resource Quality Objectives (RQOs) have to be determined to give effect to the class.

The Chief Directorate: Water Ecosystems Management (CD: WEM) of the Department of Water and Sanitation (DWS), initiated a study to determine the Water Resource Classes and RQOs for all significant water resources in the Usutu to Mhlathuze Catchment. The Usutu to Mhlathuze Catchments are amongst many water-stressed catchments in South Africa. These catchment areas are important for conservation, and contain a number of protected areas such as natural heritage sites, cultural and historic sites, as well as other conservation areas that need protection.

STUDY AREA

The study area is the Usutu to Mhlathuze Catchment, which has been divided into six drainage areas, as well as secondary catchment areas:

- W1 catchment (main river: Mhlathuze).
- W2 catchment (main river: Umfolozi).
- W3 catchment (main river: Mkuze).
- W4 catchment (main river: Pongola) - part of this catchment area falls within Eswatini.
- W5 catchment (main river: Usutu) - much of this catchment falls within Eswatini.
- W7 catchment (Kosi Bay and Lake Sibaya).

PURPOSE OF THIS REPORT

The purpose of this report is to quantify the Basic Human Needs Reserve (BHNR) as a key component of the Usutu-Mhlathuze Classification study. The National Water Act (Act No. 36 of 1998) ensures that everyone has access to sufficient water by setting aside a certain amount of water to meet everyone's basic needs, i.e. the BHNR. The BHNR is based upon the current and projected population of those either living within the catchment and directly dependant on the catchment or, critically, not being supplied with water from a recognised formal source. This report therefore documents the basic human needs requirements for the population currently and in the reasonably near future, whom would be relying upon, taking water from or being supplied from the water resource for their essential needs of drinking water, food preparation and personal hygiene.

RESULTS

The summarised population projections per catchment area to 2040 are provided. The complete set of quaternaries by Magisterial district are provided in **Appendix A**.

To calculate the quantity of water for the BHNR, the daily normative allowance of 60 litres per person per day was used for eligible individuals in the population. The figure of 60 litres is used from guidelines as set out in DWAF (1999; 2007 and 2008a;b). The table below sets out the figure expressed in million cubic metres of water per annum for the current date (2022) as well as 2025 and 2030. Figures for all quaternaries are contained in **Appendix A**. Note that the BHNR excludes abstraction from boreholes as these users fall under Schedule 1 use, and water provided by formal schemes. The BHN is therefore use from surface waters such as run of river, springs, dams, lakes, vendors and tankers.

BHN per secondary catchment area expressed in million m^3/annum

Secondary catchment Area	Population BHNR Dependent (excluding boreholes and formal schemes)	BHN as million m^3/annum @ 60 L/day		
		2022	2025	2030
W1	111 687	2.446	2.617	2.847
W2	212 514	4.654	4.979	5.416
W3	202 600	4.437	4.746	5.164
W4	116 746	2.557	2.735	2.976
W5	38 000	0.832	0.890	0.969
W7	18 427	0.404	0.432	0.470
Total	**699 974**	**15.329**	**16.399**	**17.841**

The BHN level is therefore currently at 15.329 million m^3/a, with the entire allocation coming from surface water sources.

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TERMINOLOGY AND ACRONYMS

BHN	Basic Human Needs
BHNR	Basic Human Needs Reserve
CD: WEM	Chief Directorate: Water Ecosystems Management
DWA	Department of Water Affairs
DWAF	Department of Water Affairs and Forestry
DWS	Department of Water and Sanitation
GIS	Geographic Information System
NWA	National Water Act
RQO	Resource Quality Objectives
WMA	Water Management Area
WRCS	Water Resource Classification System

SPELLING

There are multiple references to the spelling of various Rivers, Lakes, Dams and Estuaries, depending on the source of information. For the purposes of this report, the following Table presents the selected spelling of indicated water resources and places.

Selected Spelling for this Study	**Alternate spellings**
Usutu River	Usuthu River
Mhlathuze River	Mhlatuze, uMhlatuze River
Pongola (river, Town & Pongolapoort Dam)	Phongola, Phongolo
Lake Sibaya	Lake Sibiya, Lake Sibhayi, Lake Sibhaya
Eswatini	eSwatini
Umfolozi River	Mfolozi River
Amatigulu River	Amatikulu, Matigulu River
Goedertrouw Dam	Lake Phobane
Mfuli River	Mefule River
aMatigulu/iNyoni Estuary	
Sibiya Estuary	
Mlalazi Estuary	
uMhlathuze /Richards Bay Estuary	
iNhlabane Estuary	
uMfolozi/uMsunduze Estuary	
St Lucia Estuary	
uMgobezeleni Estuary	
Kosi Estuary	
Hluhluwe Game Reserve	
iMfolozi Game Reserve	
Ithala Game Reserve	
Ndumo Game Reserve	
Tembe Elephant Reserve	
iSimangaliso Wetland Park	
Kosi Bay and Coastal Forest Area	
uMkhuze Game Reserve	

GLOSSARY

Basic Human Needs	Water needs to be set aside for basic human needs such as drinking, food preparation, and health and hygiene purposes. This is referred to as the Basic Human Needs Reserve (BHNR).
Ecological Water Requirements (EWR)	The flow patterns (magnitude, timing and duration) and water quality needed to maintain a riverine ecosystem in a particular condition. This term is used to refer to both the quantity and quality components.
Ecosystem services	The benefits people obtain from ecosystems. These include provisioning services such as food and water; regulating services such as flood and disease control; cultural services such as spiritual, recreational, and cultural benefits; and supporting services such as nutrient cycling that maintain the conditions for life on Earth.
Integrated Unit of Analysis (IUAs)	An IUA is a homogeneous area that can be managed as an entity. It is the basic unit of assessment for the Classification of water resources, and is defined by areas that can be managed together in terms of water resource operations, quality, socio-economics and ecosystem services.
Resource Quality Objectives (RQOs)	RQOs are numeric or descriptive goals or objectives that can be monitored for compliance to the Water Resource Classification, for each part of each water resource. “The purpose of setting RQOs is to establish clear goals relating to the quality of the relevant water resources” (NWA, 1998).
Sub-quaternary reaches (SQR)	A finer subdivision of the quaternary catchments (the catchment areas of tributaries of main stem rivers in quaternary catchments), to a sub-quaternary reach or quinary level.
Target Ecological Category (TEC)	This is the ecological category toward which a water resource will be managed once the Classification process has been completed and the Reserve has been finalised. The draft TECs are therefore related to the draft Classes and selected scenario.
Water Resource Class	The Water Resource Class (hereafter referred to as Class) is representative of those attributes that the DWS (as the custodian) and society require of different water resources. The decision-making toward a Class requires a wide range of trade-offs to be assessed and evaluated at a number of scales. Final outcome of the process is a set of desired characteristics for use and ecological condition of the water resources in a given catchment. The WRCS defines three management classes, Class I, II, and III, based on extent of use and alteration of ecological condition from the predevelopment condition.

1 INTRODUCTION

1.1 BACKGROUND

Chapter 3 of the National Water Act, 1998 (NWA) (Act 36 of 1998), deals with the protection of water resources. Section 12 of the NWA requires the Minister to develop a system to classify water resources. In response to this, the Water Resource Classification System (WRCS) was gazetted on 17 September 2010 and published in Government Gazette 33541 as Regulation 810. The WRCS is a stepwise process whereby water resources are categorised according to specific classes that represent a management vision of a particular catchment. This vision takes into account the current state of the water resource, the ecological, social and economic aspects that are dependent on the resource. Once significant water resources have been classified through the WRCS, Resource Quality Objectives (RQOs) must be determined to give effect to the class. The implementation of the WRCS therefore assesses the costs and benefits associated with utilisation versus protection of a water resource. Section 13 of the NWA requires that Water Resource Classes and RQOs be determined for all significant water resources.

Thus, the Chief Directorate: Water Ecosystems Management (CD: WEM) of the Department of Water and Sanitation (DWS) initiated a study for determining the Water Resource Classes and RQOs for all significant water resources in the Usutu to Mhlathuze Catchment. The Usutu to Mhlathuze Catchments are amongst many water-stressed catchments in South Africa. These catchment areas are important for conservation and contain a number of protected areas, natural heritage sites, cultural and historic sites as well as other conservation areas that need protection. There are five RAMSAR[1] sites within the catchment, which includes the world heritage site, St Lucia. The others are Sibaya, Kosi Bay, Ndumo Game Reserve and Turtle Beaches.

1.2 STUDY AREA

The study area is the Usutu to Mhlathuze Catchment that has been divided into six drainage areas and secondary catchment areas as follows (refer to the locality map provided as **Figure 1.1**):

- W1 catchment (main river: Mhlathuze).
- W2 catchment (main river: Umfolozi).
- W3 catchment (main river: Mkuze).
- W4 catchment (main river: Pongola) - part of this catchment area falls within Eswatini.
- W5 catchment (main river: Usutu) - much of this catchment falls within Eswatini.
- W7 catchment (Kosi Bay estuary and Lake Sibaya).

Note that all assessments within Eswatini are excluded apart from the hydrological modelling required to assess any downstream rivers in South Africa that either run through Eswatini or originate (source) in Eswatini.

[1] A Ramsar site is a wetland site designated to be of international importance under the Ramsar Convention, also known as "The Convention on Wetlands", an intergovernmental environmental treaty established in 1971 by UNESCO in the Iranian city of Ramsar, which came into force in 1975.

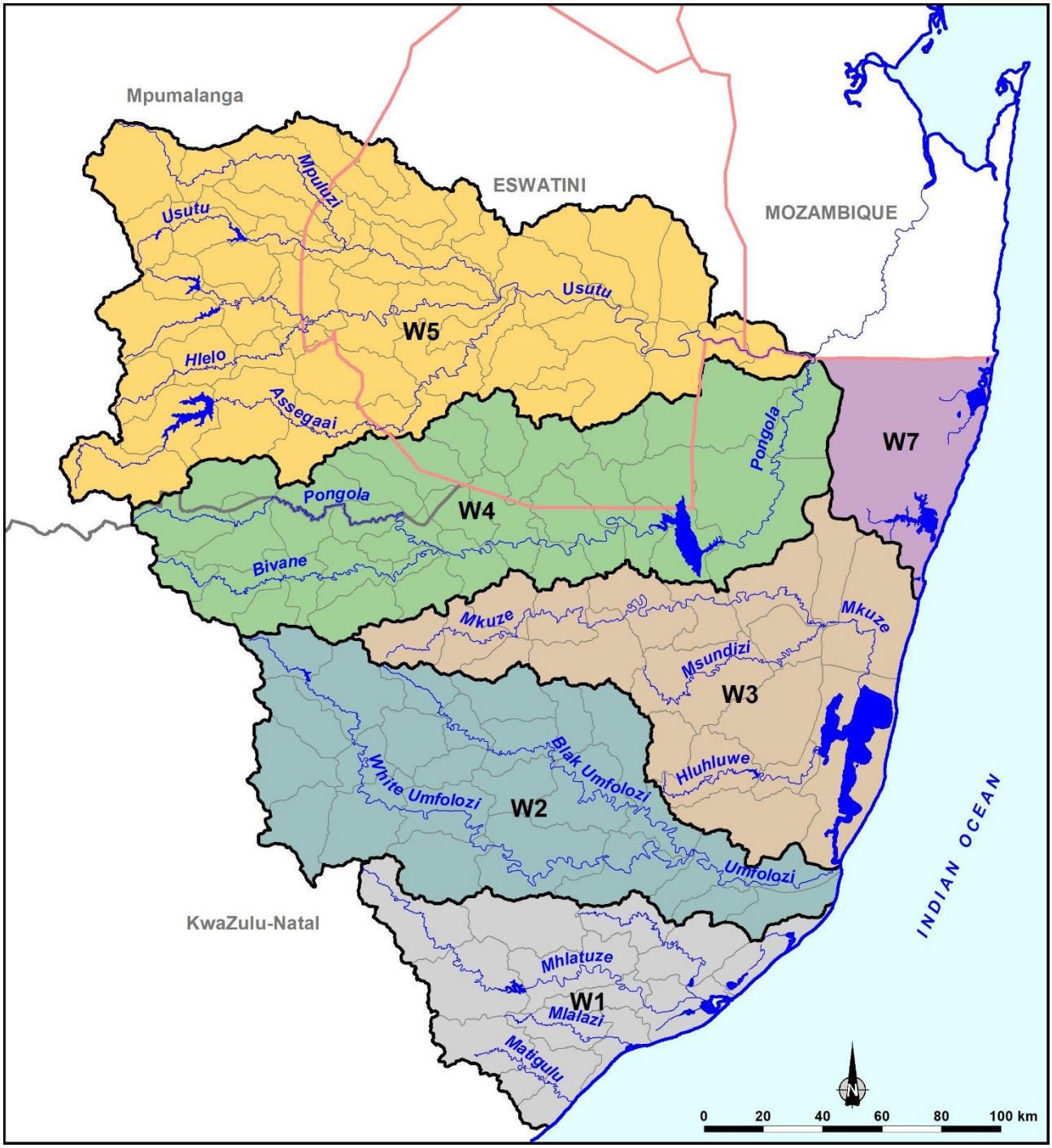

Figure 1.1 Locality Map of the Study Area

1.3 PURPOSE OF THIS REPORT

The purpose of this report is to quantify the Basic Human Needs Reserve as a key component of the Usutu-Mhlathuze Classification study and as per the Project Plan in **Figure 1.2**. Specifically, this report documents the Basic Human Needs requirements for the population currently and in the reasonably near future, living in the catchment and directly dependent on the catchment, i.e. the population who are not being supplied from a recognized formal source and whom would be relying upon, taking water from or being supplied from the water resource for their essential needs of drinking water, food preparation and personal hygiene.

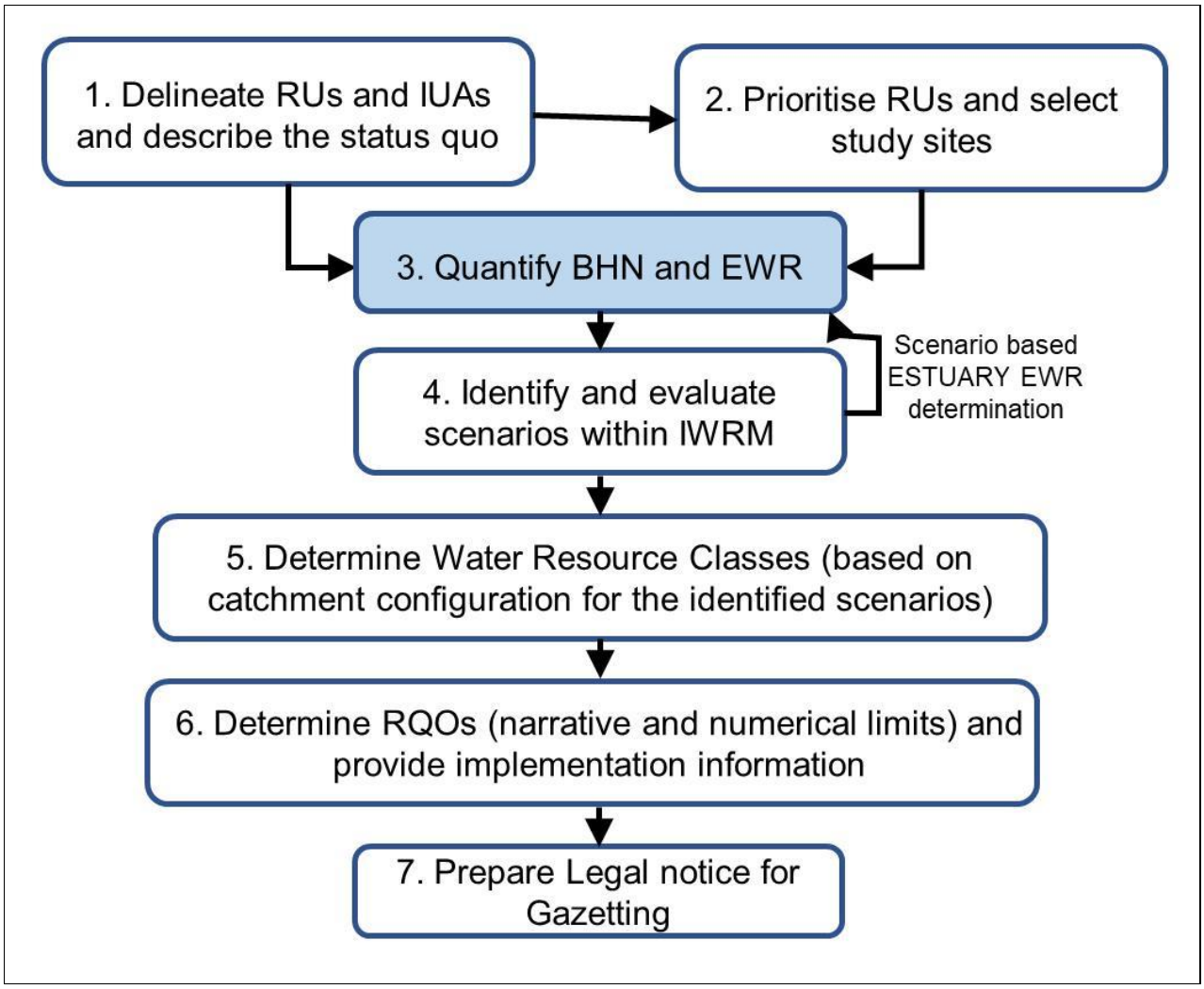

Figure 1.2 Project Plan for the Usutu-Mhlathuze Classification study

1.4 REPORT OUTLINE

The report outline is as follows:

- **Chapter 1** provides general background information on the study area and the Project Plan.
- **Chapter 2** outlines the general approach to determine the Basic Human Needs Reserve (BHNR).
- **Chapter 3** provides the results for the BHNR, based on the daily allowance of 60 litres per person.
- **Chapter 4** is a conclusion.
- **Chapter 5** provides the reference list.

2 APPROACH

Communities likely to be reliant on direct abstraction from run of river and surface water were identified in the study area using Geographic Information System (GIS) mapping and the 2016 population Census. A series of steps were undertaken to determine the population within each quaternary catchment dependant on the water resource. The method follows the approach revised by DWS (DWA, 2008a), with additional steps to improve projections. In this method, the BHNR only applies to the areas in which informal water sources are the means by which communities obtain water. The method adopted is summarized below:

- Quaternary catchments falling within the Usutu to Mhlathuze Catchment were determined, and the area of each catchment was calculated based on GIS information.
- Data from the 2016 Statistics South Africa Community Survey (Stats SA, 2016) was used to determine the number of people within Local Municipalities that fall either entirely or partially within the Usutu to Mhlathuze Catchment. Some quaternary catchments fall within more than one Local Municipality. Local Municipality data is provided with a statistical analysis of level of service with respect to provision and access to water resources.
- The 2016 Statistics South Africa Community Survey (Stats SA, 2016) is the most recent comprehensive national data set. The 2011 Census is out of date as a reliable source of water service information and the current Census (2022) is unavailable.
- The number of people within the Local Municipality was apportioned to the quaternary catchment based on the size of the quaternary relative to the total Municipal Population.
- Based on level of service provided by the Local Municipality, the number of people estimated to be directly dependant on the various water sources were calculated per quaternary catchment. Areas falling completely or partially in each quaternary catchment were used in order to determine households with access to formal and informal water supplies. The former included all households with access to piped water in any configuration, while the latter covers all households without access to piped water and therefore would be reliant on other informal sources such as run of river, springs, dams, lakes, vendors and tankers. It should be noted that in the 2016 Statistics South Africa Community Survey (Stats SA, 2016) water supply was determined by household and therefore the method needed adjustment to account for individuals. Average individuals per household were determined via the analysis of 2016 Statistics South Africa Community Survey (Stats SA, 2016). Total qualifying households multiplied by the average number of individuals was used to determine the total population qualifying under the BHNR. Those who receive water from formal schemes and mechanised groundwater extraction were excluded (see the DWS directive (DWA, 2008a) relating to formal scheme exclusion). Those who use buckets to collect from wells are included. According to the results of the 2016 Statistics South Africa Community Survey, approximately 77% of the overall Water Management Area (WMA) population has access to formal water supply schemes or abstract groundwater via boreholes.
- Having calculated the qualifying population per quaternary catchment the next step in determining the BHNR is to project the population to a target date. The average growth for the applicable Local Municipalities between 2011 Census and 2016 Community survey of 1.7% per annum was used.

3 RESULTS

The summarised population projections per catchment area up to 2030 are provided in **Table 3.1**. The complete set of quaternary catchments by magisterial district is provided in **Table A1**, **Appendix A**.

Table 3.1 Summary of catchment area population and population dependant on BHNR

Secondary catchment Area	Total population	Population BHNR Dependent (excluding boreholes and formal schemes)		
		2022	2030	2040
W1	842 052	111 687	127 811	153 851
W2	758 735	212 514	243 194	292 742
W3	612 763	202 600	231 850	279 086
W4	438 168	116 746	133 601	160 821
W5	425 388	38 000	43 486	52 346
W7	107 693	18 427	21 087	25 384
Total	**3 184 799**	**699 974**	**801031**	**964 229**

To calculate the quantum of water for the BHNR, the daily normative allowance of 60 litres per person per day was used for eligible individuals in the population, according to guidelines set out in DWAF (1999; 2007 and 2008a;b). **Table 3.2** sets out the figure expressed in million cubic metres of water per annum for the current date (2022) as well as for 2025 and 2030. Projecting beyond 2030 was not done as the number is dependant on trajectories of service delivery and these cannot be predicted with certainty. Figures for all quaternaries are contained in **Table A2, Appendix A**.

Table 3.2 Basic Human Needs (BHN) per catchment area expressed in million m^3 per annum

Secondary catchment Area	Population BHNR Dependent 2022 (excl. boreholes and formal schemes)	BHN as Million m^3 per annum @ 60 L/day		
		2022	2025	2030
W1	111 687	2.446	2.617	2.847
W2	212 514	4.654	4.979	5.416
W3	202 600	4.437	4.746	5.164
W4	116 746	2.557	2.735	2.976
W5	38 000	0.832	0.890	0.969
W7	18 427	0.404	0.432	0.470
Total	**699 974**	**15.329**	**16.399**	**17.841**

Table 3.3 sets out the figures for 100 l per day expressed in million cubic metres of water per annum for the current date (2022) as well as for 2025 and 2030. This is for illustrative purposes.

Table 3.3 Basic Human Needs (BHN) per catchment area expressed in million m3 per annum

Secondary catchment Area	Population BHNR Dependent 2022 (excl. boreholes and formal schemes)	BHN as Million m^3 per annum @ 100 L/day		
		2022	2025	2030
W1	111 687	4.077	4.361	4.744
W2	212 514	7.757	8.298	9.027
W3	202 600	7.395	7.911	8.606
W4	116 746	4.261	4.558	4.959
W5	38 000	1.387	1.484	1.614
W7	18 427	0.673	0.719	0.783
Total	**699 974**	**25.549**	**27.331**	**29.735**

Table 3.4 sets out the figures expressed as cubic metres per day.

Table 3.4 Basic Human Needs per catchment area expressed in m^3 per day

Secondary catchment Area	Population BHNR Dependent (excl. boreholes and formal schemes)	BHN as m^3 per day @ 60 L/ day		
		2022	2025	2030
W1	111 687	6 701	6 931	9 231
W2	212 514	12 751	13 188	17 565
W3	202 600	12 156	12 573	16 745
W4	116 746	7 005	7 245	9 649
W5	38 000	2 280	2 358	3 141
W7	18 427	1 106	1 144	1 523
Total	**699 974**	**41 998**	**43 439**	**57 854**

4 CONCLUSION

The calculations used to produce the results show the following population percentages dependent on run of river or surface water sources for BHN across the secondary catchments of the study area:

- W1: 13%
- W2: 28%
- W3: 33%
- W4: 27%
- W5: 9%
- W7 (i.e. W70A): 17%

More detailed results are shown in **Figures 4.1 – 4.5** for the quaternary catchments in each secondary catchment (W1 - W5).

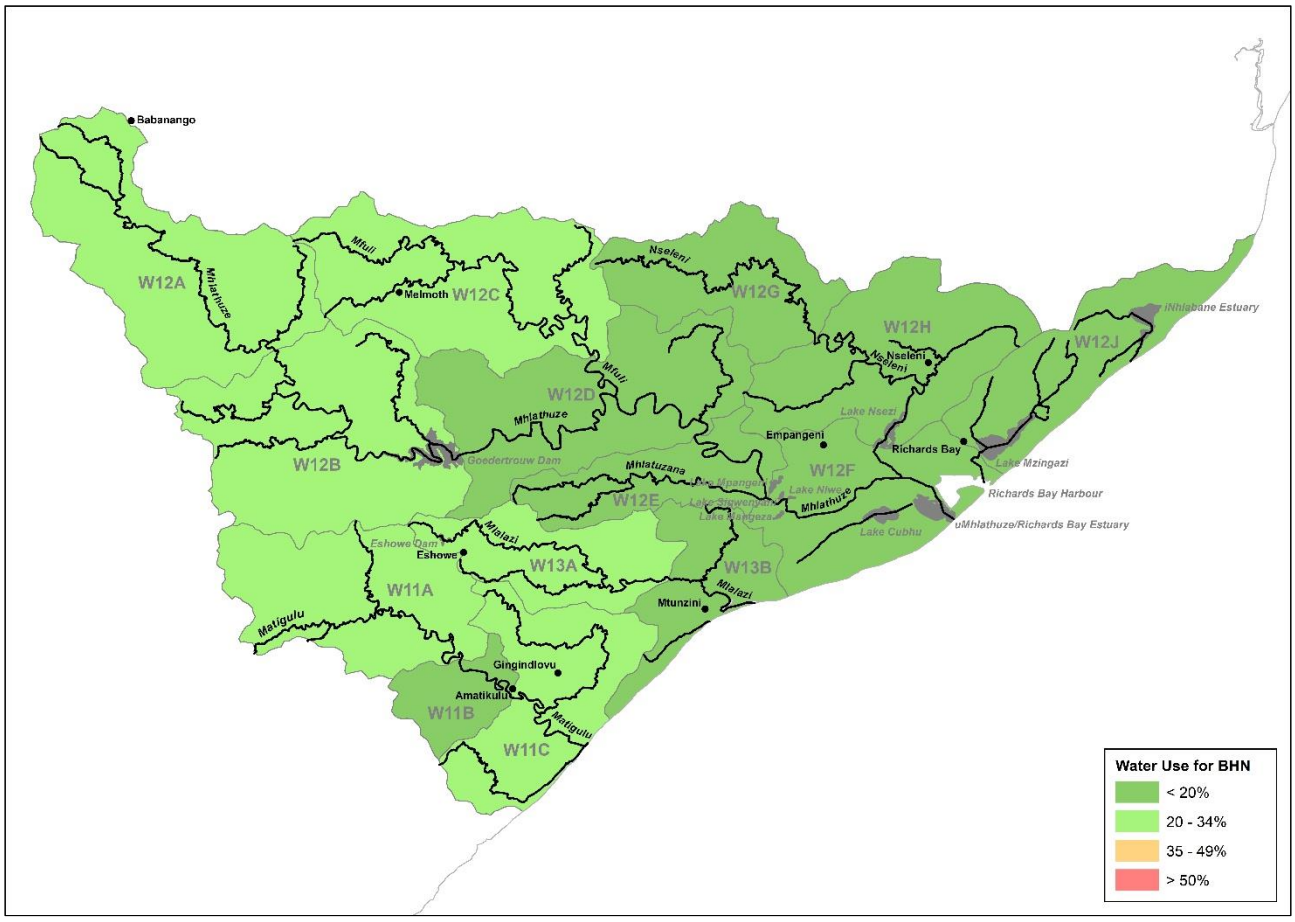

Figure 4.1 Percentage of population dependent on abstraction from surface water resources for BHN in W1

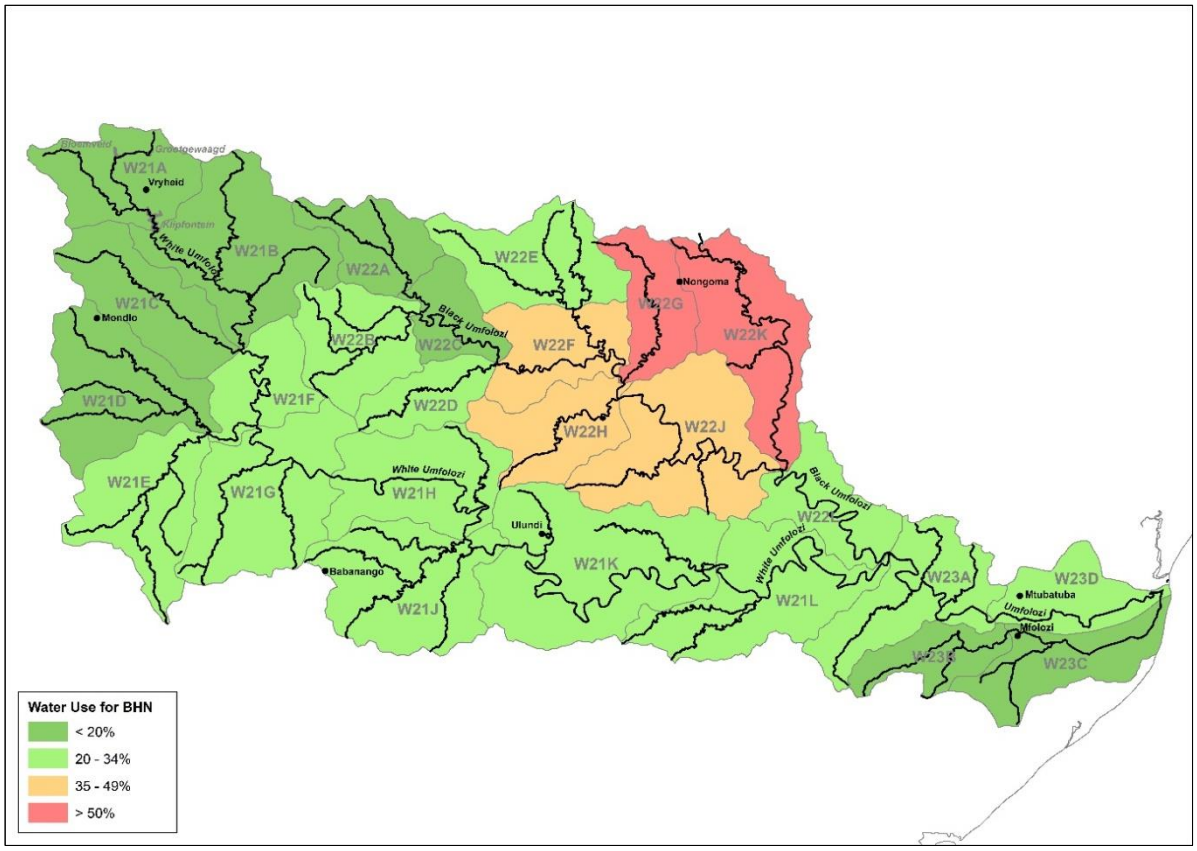

Figure 4.2 Percentage of population dependent on abstraction from surface water resources for BHN in W2

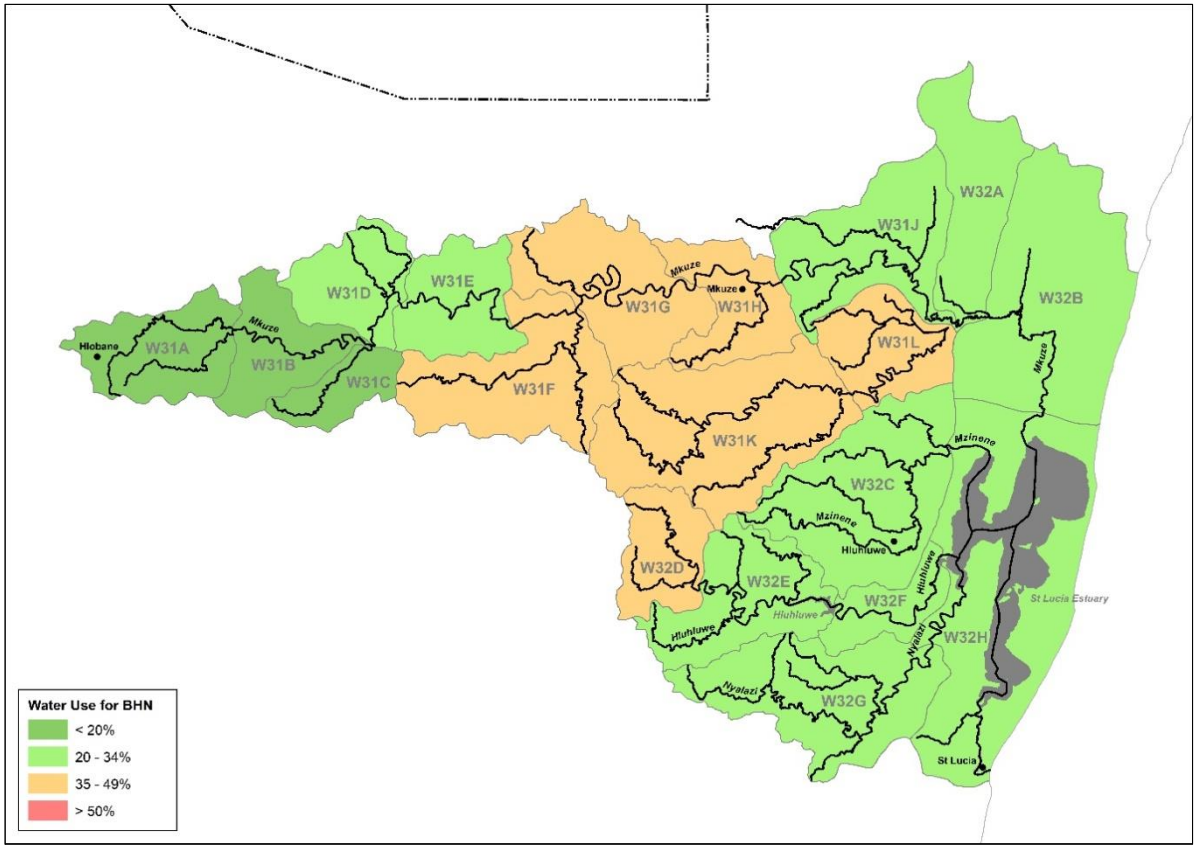

Figure 4.3 Percentage of population dependent on abstraction from surface water resources for BHN in W3

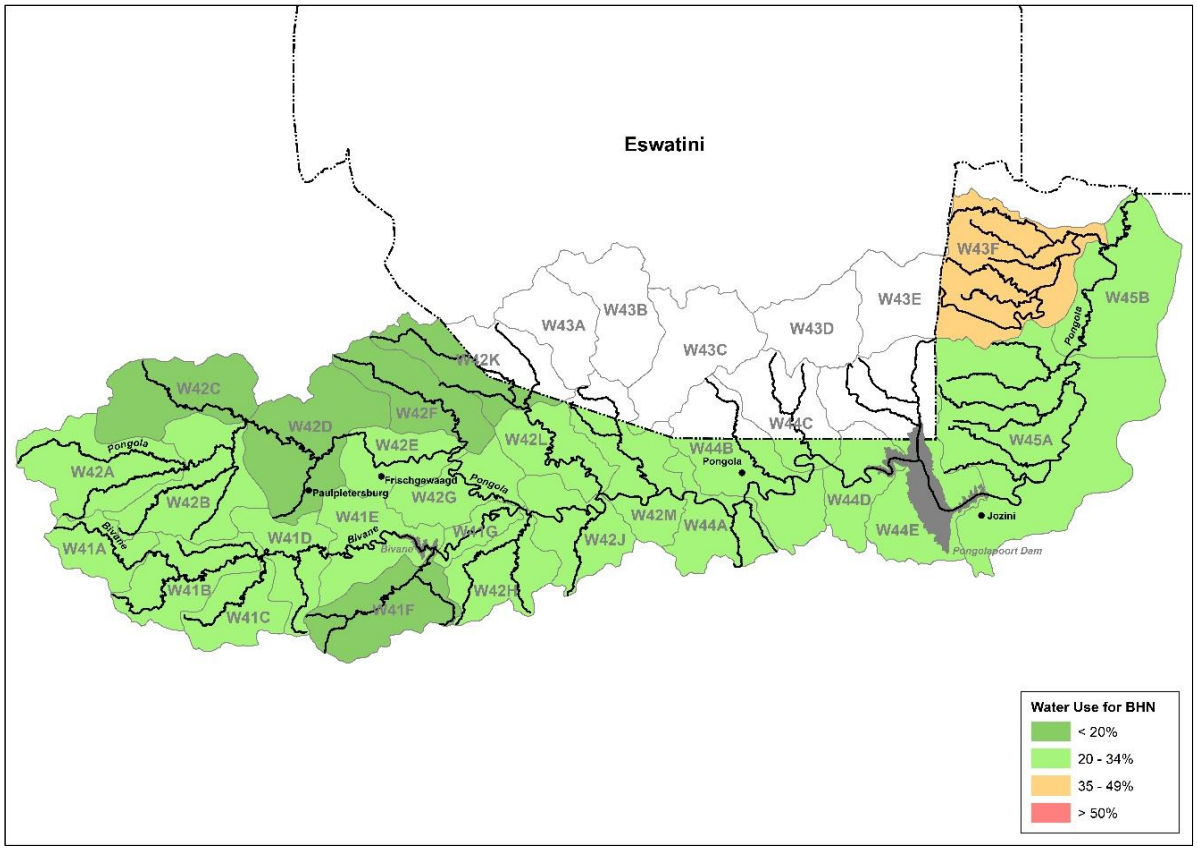

Figure 4.4 Percentage of population dependent on abstraction from surface water resources for BHN in W4

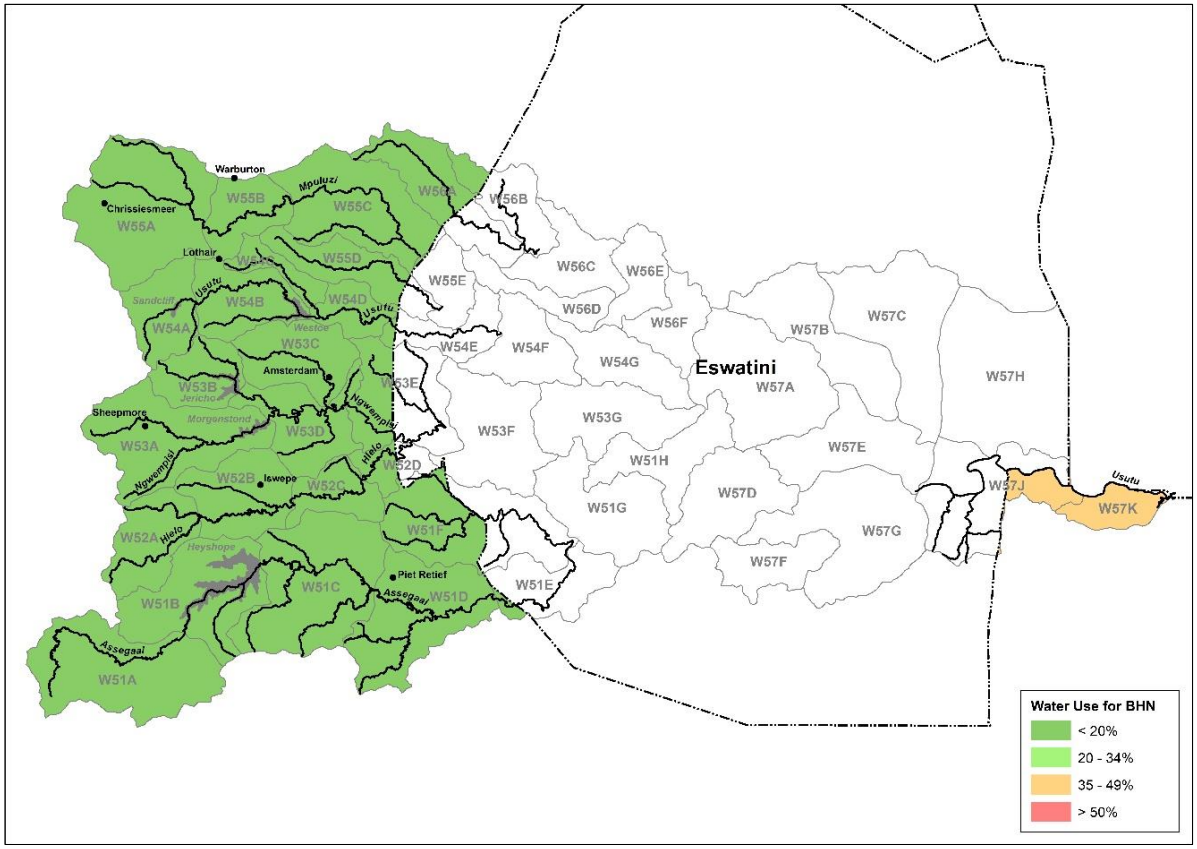

Figure 4.5 Percentage of population dependent on abstraction from surface water resources for BHN in W5

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6 APPENDIX A: SUMMARISED POPULATION PROJECTIONS PER CATCHMENT

Table A1 Population dependant on BHNR by quaternary catchment

Local Municipality	Quaternary catchment	Population in quaternary catchment	Population BHNR Dependent		
			2022	2024	2040
Mandeni	W11A	6 666	1 059	1 077	1 434
uMlalazi	W11A	34 817	11 033	11 221	14 944
Mandeni	W11B	30 913	4 909	4 993	6 650
uMlalazi	W11B	2 202	698	710	945
Mandeni	W11C	53 820	8 547	8 692	11 577
uMlalazi	W11C	21 215	6 723	6 837	9 106
Mthonjaneni	W12A	8 924	2 813	2 861	3 810
Nkandla	W12A	5 905	2 389	2 430	3 236
Ulundi	W12A	8 954	2 959	3 009	4 007
Mthonjaneni	W12B	11 422	3 600	3 662	4 877
Nkandla	W12B	3 815	1 544	1 570	2 091
uMlalazi	W12B	24 449	7 748	7 879	10 494
Mthonjaneni	W12C	28 986	9 137	9 292	12 375
Mthonjaneni	W12D	8 529	2 688	2 734	3 641
uMhlathuze	W12D	59 151	1 431	1 456	1 939
uMlalazi	W12D	25 180	7 979	8 115	10 808
uMhlathuze	W12E	15 654	379	385	513
uMlalazi	W12E	21 930	6 949	7 067	9 413
uMhlathuze	W12F	135 732	3 285	3 341	4 449
uMlalazi	W12F	349	111	112	150
Mfolozi	W12G	8 125	898	914	1 217
Mthonjaneni	W12G	2 688	847	862	1 148
uMhlathuze	W12G	72 852	1 763	1 793	2 388
Mfolozi	W12H	26 614	2 943	2 993	3 987
uMhlathuze	W12H	92 351	2 235	2 273	3 027
Mfolozi	W12J	31 007	3 429	3 487	4 645
uMhlathuze	W12J	24 994	605	615	819
uMhlathuze	W13A	350	8	9	11
uMlalazi	W13A	29 463	9 337	9 495	12 646
Mandeni	W13B	1 588	252	257	342
uMhlathuze	W13B	28 931	700	712	948
uMlalazi	W13B	14 478	4 588	4 666	6 214
Abaqulusi	W21A	18 191	2 711	2 757	3 672
eDumbe	W21A	91	25	25	33
Emadlangeni	W21A	411	126	128	171
Abaqulusi	W21B	35 052	5 223	5 312	7 075
Abaqulusi	W21C	22 324	3 326	3 383	4 506
Abaqulusi	W21D	19 896	2 965	3 015	4 016
Nqutu	W21D	12 912	2 724	2 771	3 690
Nqutu	W21E	38 568	8 137	8 275	11 021
Abaqulusi	W21F	7 630	1 137	1 156	1 540
Nqutu	W21F	797	168	171	228

Local Municipality	Quaternary catchment	Population in quaternary catchment	Population BHNR Dependent		
			2022	2024	2040
Ulundi	W21F	7 278	2 405	2 446	3 257
Nqutu	W21G	25 306	5 339	5 430	7 232
Ulundi	W21G	19 571	6 467	6 577	8 760
Ulundi	W21H	29 219	9 655	9 819	13 078
Mthonjaneni	W21J	2 402	757	770	1 025
Ulundi	W21J	32 594	10 771	10 954	14 589
Big Five Hlabisa	W21K	109	34	34	46
Mthonjaneni	W21K	10 329	3 256	3 311	4 410
Ulundi	W21K	39 928	13 194	13 418	17 871
Big Five Hlabisa	W21L	10 018	3 094	3 146	4 191
Mfolozi	W21L	7 499	829	843	1 123
Mthonjaneni	W21L	10 043	3 166	3 219	4 288
uMhlathuze	W21L	3 398	82	84	111
Abaqulusi	W22A	14 417	2 148	2 185	2 910
Abaqulusi	W22B	11 540	1 720	1 749	2 329
Ulundi	W22B	9 493	3 137	3 190	4 249
Abaqulusi	W22C	9 289	1 384	1 408	1 875
Ulundi	W22C	2 147	709	721	961
Abaqulusi	W22D	36	5	5	7
Ulundi	W22D	13 292	4 392	4 467	5 949
Abaqulusi	W22E	15 081	2 247	2 285	3 044
Nongoma	W22E	6 845	3 655	3 717	4 951
Ulundi	W22E	4 686	1 549	1 575	2 098
uPhongolo	W22E	7	2	3	3
Abaqulusi	W22F	142	21	22	29
Nongoma	W22F	10 145	5 417	5 509	7 337
Ulundi	W22F	14 288	4 721	4 801	6 395
Nongoma	W22G	25 803	13 777	14 011	18 661
Nongoma	W22H	3 960	2 114	2 150	2 864
Ulundi	W22H	18 082	5 975	6 077	8 093
Big Five Hlabisa	W22J	2 148	663	675	899
Nongoma	W22J	26 657	14 233	14 475	19 279
Ulundi	W22J	19 650	6 493	6 604	8 795
Big Five Hlabisa	W22K	2 070	639	650	866
Nongoma	W22K	43 596	23 278	23 673	31 529
Big Five Hlabisa	W22L	10 602	3 274	3 330	4 435
Mfolozi	W22L	0	0	0	0
Mtubatuba	W22L	202	67	68	90
Nongoma	W22L	0	0	0	0
Big Five Hlabisa	W23A	14	4	5	6
Mfolozi	W23A	26 775	2 961	3 011	4 011
Mtubatuba	W23A	23 259	7 676	7 807	10 397
Mfolozi	W23B	22 812	2 523	2 566	3 417
Mfolozi	W23C	29 228	3 232	3 287	4 378
Mtubatuba	W23C	8 162	2 694	2 739	3 648
Mfolozi	W23D	1 466	162	165	220
Mtubatuba	W23D	29 275	9 662	9 826	13 087
Abaqulusi	W31A	22 329	3 327	3 384	4 507

Local Municipality	Quaternary catchment	Population in quaternary catchment	Population BHNR Dependent		
			2022	2024	2040
Abaqulusi	W31B	18 284	2 725	2 771	3 690
uPhongolo	W31B	74	25	26	34
Abaqulusi	W31C	10 361	1 544	1 570	2 091
Abaqulusi	W31D	10 425	1 553	1 580	2 104
uPhongolo	W31D	5 919	2 006	2 040	2 716
Abaqulusi	W31E	3 547	529	538	716
uPhongolo	W31E	13 368	4 530	4 607	6 136
Abaqulusi	W31F	2 198	328	333	444
Nongoma	W31F	33 968	18 137	18 445	24 566
uPhongolo	W31F	10 613	3 596	3 657	4 871
Jozini	W31G	1 423	511	520	693
Nongoma	W31G	20 836	11 125	11 314	15 069
uPhongolo	W31G	14 325	4 854	4 937	6 575
Jozini	W31H	12 935	4 649	4 728	6 297
Nongoma	W31H	2 990	1 596	1 624	2 162
uPhongolo	W31H	3 999	1 355	1 378	1 835
Jozini	W31J	26 580	9 553	9 716	12 940
Umhlabuyalingana	W31J	4 950	861	876	1 167
Big Five Hlabisa	W31K	4 466	1 379	1 403	1 868
Jozini	W31K	21 339	7 670	7 800	10 388
Nongoma	W31K	40 332	21 535	21 901	29 169
Big Five Hlabisa	W31L	1 305	403	410	546
Jozini	W31L	17 583	6 320	6 427	8 560
Big Five Hlabisa	W32A	1	0	0	0
Jozini	W32A	7 281	2 617	2 661	3 545
Umhlabuyalingana	W32A	12 476	2 171	2 208	2 941
Big Five Hlabisa	W32B	9 395	2 902	2 951	3 930
Jozini	W32B	756	272	276	368
Umhlabuyalingana	W32B	28 257	4 917	5 001	6 660
Big Five Hlabisa	W32C	27 631	8 533	8 678	11 558
Jozini	W32C	280	101	102	136
Big Five Hlabisa	W32D	6 267	1 935	1 968	2 621
Nongoma	W32D	10 668	5 696	5 793	7 715
Big Five Hlabisa	W32E	15 959	4 929	5 012	6 676
Mtubatuba	W32E	4 717	1 557	1 583	2 109
Big Five Hlabisa	W32F	3 621	1 118	1 137	1 515
Mtubatuba	W32F	11 503	3 796	3 861	5 142
Big Five Hlabisa	W32G	3 166	978	994	1 324
Mtubatuba	W32G	70 196	23 167	23 561	31 380
Big Five Hlabisa	W32H	27 562	8 512	8 657	11 529
Mtubatuba	W32H	68 879	22 733	23 119	30 792
Emadlangeni	W41A	2 078	638	649	864
eDumbe	W41B	5 001	1 356	1 379	1 837
Emadlangeni	W41B	2 261	694	706	940
Abaqulusi	W41C	823	123	125	166
eDumbe	W41C	7 480	2 029	2 063	2 748
Emadlangeni	W41C	574	176	179	239
Abaqulusi	W41D	487	73	74	98

Local Municipality	Quaternary catchment	Population in quaternary catchment	Population BHNR Dependent		
			2022	2024	2040
eDumbe	W41D	11 324	3 072	3 124	4 160
Abaqulusi	W41E	144	21	22	29
eDumbe	W41E	14 812	4 018	4 086	5 442
Abaqulusi	W41F	11 913	1 775	1 805	2 404
eDumbe	W41F	7 200	1 953	1 986	2 645
Abaqulusi	W41G	2 796	417	424	564
eDumbe	W41G	2 150	583	593	790
uPhongolo	W41G	283	96	98	130
Dr Pixley Ka Isaka Seme	W42A	516	19	20	26
eDumbe	W42A	5 033	1 365	1 388	1 849
Emadlangeni	W42A	3 177	975	992	1 321
Mkhondo	W42A	51	6	6	8
eDumbe	W42B	16 463	4 465	4 541	6 048
Emadlangeni	W42B	449	138	140	187
Mkhondo	W42B	1 795	216	220	293
Dr Pixley Ka Isaka Seme	W42C	9 995	373	379	505
eDumbe	W42C	33	9	9	12
Emadlangeni	W42C	3	1	1	1
Mkhondo	W42C	10 196	1 230	1 250	1 665
eDumbe	W42D	11 427	3 099	3 152	4 198
Mkhondo	W42D	11 067	1 335	1 357	1 808
eDumbe	W42E	6 629	1 798	1 829	2 435
Mkhondo	W42E	4 176	504	512	682
Mkhondo	W42F	13 138	1 584	1 611	2 146
eDumbe	W42G	8 028	2 177	2 214	2 949
Mkhondo	W42G	894	108	110	146
uPhongolo	W42G	3 124	1 059	1 077	1 434
Abaqulusi	W42H	10 295	1 534	1 560	2 078
uPhongolo	W42H	4 971	1 685	1 713	2 282
Abaqulusi	W42J	3 372	502	511	681
uPhongolo	W42J	11 387	3 859	3 924	5 226
Mkhondo	W42K	9 444	1 139	1 158	1 543
uPhongolo	W42K	81	27	28	37
Mkhondo	W42L	2 034	245	249	332
uPhongolo	W42L	9 866	3 343	3 400	4 528
uPhongolo	W42M	14 959	5 069	5 155	6 866
uPhongolo	W43C	236	80	81	108
Jozini	W43E	25	9	9	12
Jozini	W43F	38 585	13 868	14 104	18 784
uPhongolo	W44A	12 361	4 189	4 260	5 674
uPhongolo	W44B	16 709	5 662	5 758	7 669
uPhongolo	W44C	3 255	1 103	1 122	1 494
uPhongolo	W44D	10 359	3 510	3 570	4 754
Jozini	W44E	3 472	1 248	1 269	1 690
uPhongolo	W44E	15 013	5 087	5 174	6 891
Jozini	W45A	58 644	21 078	21 436	28 550
Umhlabuyalingana	W45A	13 807	2 403	2 443	3 254
uPhongolo	W45A	26	9	9	12

Local Municipality	Quaternary catchment	Population in quaternary catchment	Population BHNR Dependent		
			2022	2024	2040
Jozini	W45B	7 904	2 841	2 889	3 848
Umhlabuyalingana	W45B	15 844	2 757	2 804	3 734
Dr Pixley Ka Isaka Seme	W51A	39 442	1 470	1 495	1 992
Emadlangeni	W51A	26	8	8	11
Mkhondo	W51A	3 177	383	390	519
Dr Pixley Ka Isaka Seme	W51B	12 583	469	477	635
Mkhondo	W51B	13 845	1 670	1 698	2 262
Dr Pixley Ka Isaka Seme	W51C	13	1	1	1
Mkhondo	W51C	29 133	3 513	3 573	4 759
Mkhondo	W51D	22 662	2 733	2 779	3 702
Mkhondo	W51E	808	97	99	132
Mkhondo	W51F	13 152	1 586	1 613	2 148
Dr Pixley Ka Isaka Seme	W52A	6 786	253	257	343
Mkhondo	W52A	8 385	1 011	1 028	1 370
Mkhondo	W52B	14 456	1 743	1 773	2 361
Mkhondo	W52C	7 647	922	938	1 249
Mkhondo	W52D	3 089	373	379	505
Dr Pixley Ka Isaka Seme	W53A	90	3	3	5
Mkhondo	W53A	6 414	773	787	1 048
Msukaligwa	W53A	25 958	1 276	1 298	1 729
Mkhondo	W53B	32	4	4	5
Msukaligwa	W53B	14 278	702	714	951
Mkhondo	W53C	12 538	1 512	1 538	2 048
Msukaligwa	W53C	1 575	77	79	105
Mkhondo	W53D	11 324	1 366	1 389	1 850
Msukaligwa	W53D	3 368	166	168	224
Mkhondo	W53E	7 620	919	935	1 245
Mkhondo	W53F	49	6	6	8
Msukaligwa	W54A	16 463	809	823	1 096
Mkhondo	W54B	283	34	35	46
Msukaligwa	W54B	18 054	888	903	1 202
Msukaligwa	W54C	7 045	346	352	469
Chief Albert Luthuli	W54D	1 234	170	173	231
Mkhondo	W54D	1 817	219	223	297
Msukaligwa	W54D	4 161	205	208	277
Chief Albert Luthuli	W54E	113	16	16	21
Mkhondo	W54E	625	75	77	102
Chief Albert Luthuli	W55A	3 225	445	452	603
Msukaligwa	W55A	39 493	1 942	1 975	2 630
Chief Albert Luthuli	W55B	17	2	2	3
Msukaligwa	W55B	14 253	701	713	949
Chief Albert Luthuli	W55C	15 162	2 092	2 127	2 833
Msukaligwa	W55C	7 940	390	397	529
Chief Albert Luthuli	W55D	2 703	373	379	505
Msukaligwa	W55D	10 068	495	503	671
Chief Albert Luthuli	W55E	102	14	14	19
Chief Albert Luthuli	W56A	8 783	1 212	1 232	1 641
Chief Albert Luthuli	W56B	1 597	220	224	298

Local Municipality	Quaternary catchment	Population in quaternary catchment	Population BHNR Dependent		
			2022	2024	2040
Jozini	W57J	5 418	1 947	1 980	2 638
Jozini	W57K	8 382	3 013	3 064	4 081
Umhlabuyalingana	W70A	107 693	18 740	19 059	25 384
Total		**3 184 799**	**699 974**	**723 976**	**964 229**

Table A2 BHNR by quaternary catchment in Million cubic metres per annum

Quaternary catchment	Population BHNR Dependent excluding boreholes and formal schemes	BHNR Million m^3 per annum @ 60L/day		
		2022	2025	2030
W11A	1 041	0.023	0.024	0.027
W11A	10 849	0.238	0.254	0.277
W11B	4 827	0.106	0.113	0.123
W11B	686	0.015	0.016	0.017
W11C	8 404	0.184	0.197	0.214
W11C	6 610	0.145	0.155	0.168
W12A	2 766	0.061	0.065	0.070
W12A	2 349	0.051	0.055	0.060
W12A	2 909	0.064	0.068	0.074
W12B	3 540	0.078	0.083	0.090
W12B	1 518	0.033	0.036	0.039
W12B	7 618	0.167	0.178	0.194
W12C	8 984	0.197	0.210	0.229
W12D	2 643	0.058	0.062	0.067
W12D	1 408	0.031	0.033	0.036
W12D	7 846	0.172	0.184	0.200
W12E	372	0.008	0.009	0.009
W12E	6 833	0.150	0.160	0.174
W12F	3 230	0.071	0.076	0.082
W12F	109	0.002	0.003	0.003
W12G	883	0.019	0.021	0.023
W12G	833	0.018	0.020	0.021
W12G	1 734	0.038	0.041	0.044
W12H	2 894	0.063	0.068	0.074
W12H	2 198	0.048	0.051	0.056
W12J	3 372	0.074	0.079	0.086
W12J	595	0.013	0.014	0.015
W13A	8	0.000	0.000	0.000
W13A	9 180	0.201	0.215	0.234
W13B	248	0.005	0.006	0.006
W13B	688	0.015	0.016	0.018
W13B	4 511	0.099	0.106	0.115
W21A	2 665	0.058	0.062	0.068
W21A	24	0.001	0.001	0.001
W21A	124	0.003	0.003	0.003
W21B	5 136	0.112	0.120	0.131
W21C	3 271	0.072	0.077	0.083
W21D	2 915	0.064	0.068	0.074
W21D	2 679	0.059	0.063	0.068
W21E	8 001	0.175	0.187	0.204
W21F	1 118	0.024	0.026	0.028
W21F	165	0.004	0.004	0.004
W21F	2 365	0.052	0.055	0.060
W21G	5 250	0.115	0.123	0.134
W21G	6 359	0.139	0.149	0.162

Quaternary catchment	Population BHNR Dependent excluding boreholes and formal schemes	BHNR Million m^3 per annum @ 60L/day		
		2022	2025	2030
W21H	9 494	0.208	0.222	0.242
W21J	744	0.016	0.017	0.019
W21J	10 590	0.232	0.248	0.270
W21K	33	0.001	0.001	0.001
W21K	3 201	0.070	0.075	0.082
W21K	12 973	0.284	0.304	0.331
W21L	3 042	0.067	0.071	0.078
W21L	815	0.018	0.019	0.021
W21L	3 113	0.068	0.073	0.079
W21L	81	0.002	0.002	0.002
W22A	2 112	0.046	0.049	0.054
W22B	1 691	0.037	0.040	0.043
W22B	3 084	0.068	0.072	0.079
W22C	1 361	0.030	0.032	0.035
W22C	697	0.015	0.016	0.018
W22D	5	0.000	0.000	0.000
W22D	4 319	0.095	0.101	0.110
W22E	2 210	0.048	0.052	0.056
W22E	3 594	0.079	0.084	0.092
W22E	1 523	0.033	0.036	0.039
W22E	2	0.000	0.000	0.000
W22F	21	0.000	0.000	0.001
W22F	5 326	0.117	0.125	0.136
W22F	4 642	0.102	0.109	0.118
W22G	13 547	0.297	0.317	0.345
W22H	2 079	0.046	0.049	0.053
W22H	5 875	0.129	0.138	0.150
W22J	652	0.014	0.015	0.017
W22J	13 995	0.306	0.328	0.357
W22J	6 385	0.140	0.150	0.163
W22K	629	0.014	0.015	0.016
W22K	22 888	0.501	0.536	0.583
W22L	3 220	0.071	0.075	0.082
W22L	0	0.000	0.000	0.000
W22L	65	0.001	0.002	0.002
W22L	0	0.000	0.000	0.000
W23A	4	0.000	0.000	0.000
W23A	2 912	0.064	0.068	0.074
W23A	7 548	0.165	0.177	0.192
W23B	2 481	0.054	0.058	0.063
W23C	3 178	0.070	0.074	0.081
W23C	2 649	0.058	0.062	0.068
W23D	159	0.003	0.004	0.004
W23D	9 500	0.208	0.223	0.242
W31A	3 272	0.072	0.077	0.083
W31B	2 679	0.059	0.063	0.068
W31B	25	0.001	0.001	0.001

Quaternary catchment	Population BHNR Dependent excluding boreholes and formal schemes	BHNR Million m^3 per annum @ 60L/day		
		2022	2025	2030
W31C	1 518	0.033	0.036	0.039
W31D	1 527	0.033	0.036	0.039
W31D	1 972	0.043	0.046	0.050
W31E	520	0.011	0.012	0.013
W31E	4 454	0.098	0.104	0.114
W31F	322	0.007	0.008	0.008
W31F	17 834	0.391	0.418	0.455
W31F	3 536	0.077	0.083	0.090
W31G	503	0.011	0.012	0.013
W31G	10 939	0.240	0.256	0.279
W31G	4 773	0.105	0.112	0.122
W31H	4 571	0.100	0.107	0.117
W31H	1 570	0.034	0.037	0.040
W31H	1 332	0.029	0.031	0.034
W31J	9 394	0.206	0.220	0.239
W31J	847	0.019	0.020	0.022
W31K	1 356	0.030	0.032	0.035
W31K	7 541	0.165	0.177	0.192
W31K	21 175	0.464	0.496	0.540
W31L	396	0.009	0.009	0.010
W31L	6 214	0.136	0.146	0.158
W32A	0	0.000	0.000	0.000
W32A	2 573	0.056	0.060	0.066
W32A	2 135	0.047	0.050	0.054
W32B	2 853	0.062	0.067	0.073
W32B	267	0.006	0.006	0.007
W32B	4 835	0.106	0.113	0.123
W32C	8 390	0.184	0.197	0.214
W32C	99	0.002	0.002	0.003
W32D	1 903	0.042	0.045	0.049
W32D	5 601	0.123	0.131	0.143
W32E	4 846	0.106	0.114	0.124
W32E	1 531	0.034	0.036	0.039
W32F	1 099	0.024	0.026	0.028
W32F	3 733	0.082	0.087	0.095
W32G	961	0.021	0.023	0.025
W32G	22 780	0.499	0.534	0.581
W32H	8 370	0.183	0.196	0.213
W32H	22 353	0.490	0.524	0.570
W41A	627	0.014	0.015	0.016
W41B	1 334	0.029	0.031	0.034
W41B	682	0.015	0.016	0.017
W41C	121	0.003	0.003	0.003
W41C	1 995	0.044	0.047	0.051
W41C	173	0.004	0.004	0.004
W41D	71	0.002	0.002	0.002
W41D	3 020	0.066	0.071	0.077

Quaternary catchment	Population BHNR Dependent excluding boreholes and formal schemes	BHNR Million m^3 per annum @ 60L/day		
		2022	2025	2030
W41E	21	0.000	0.000	0.001
W41E	3 950	0.087	0.093	0.101
W41F	1 745	0.038	0.041	0.044
W41F	1 920	0.042	0.045	0.049
W41G	410	0.009	0.010	0.010
W41G	574	0.013	0.013	0.015
W41G	94	0.002	0.002	0.002
W42A	19	0.000	0.000	0.000
W42A	1 342	0.029	0.031	0.034
W42A	959	0.021	0.022	0.024
W42A	6	0.000	0.000	0.000
W42B	4 391	0.096	0.103	0.112
W42B	135	0.003	0.003	0.003
W42B	213	0.005	0.005	0.005
W42C	366	0.008	0.009	0.009
W42C	9	0.000	0.000	0.000
W42C	1	0.000	0.000	0.000
W42C	1 209	0.026	0.028	0.031
W42D	3 048	0.067	0.071	0.078
W42D	1 312	0.029	0.031	0.033
W42E	1 768	0.039	0.041	0.045
W42E	495	0.011	0.012	0.013
W42F	1 558	0.034	0.036	0.040
W42G	2 141	0.047	0.050	0.055
W42G	106	0.002	0.002	0.003
W42G	1 041	0.023	0.024	0.027
W42H	1 508	0.033	0.035	0.038
W42H	1 656	0.036	0.039	0.042
W42J	494	0.011	0.012	0.013
W42J	3 794	0.083	0.089	0.097
W42K	1 120	0.025	0.026	0.029
W42K	27	0.001	0.001	0.001
W42L	241	0.005	0.006	0.006
W42L	3 287	0.072	0.077	0.084
W42M	4 984	0.109	0.117	0.127
W43C	79	0.002	0.002	0.002
W43E	9	0.000	0.000	0.000
W43F	13 636	0.299	0.319	0.348
W44A	4 119	0.090	0.096	0.105
W44B	5 567	0.122	0.130	0.142
W44C	1 085	0.024	0.025	0.028
W44D	3 451	0.076	0.081	0.088
W44E	1 227	0.027	0.029	0.031
W44E	5 002	0.110	0.117	0.127
W45A	20 726	0.454	0.486	0.528
W45A	2 362	0.052	0.055	0.060
W45A	9	0.000	0.000	0.000

Quaternary catchment	Population BHNR Dependent excluding boreholes and formal schemes	BHNR Million m^3 per annum @ 60L/day		
		2022	2025	2030
W45B	2 793	0.061	0.065	0.071
W45B	2 711	0.059	0.064	0.069
W51A	1 446	0.032	0.034	0.037
W51A	8	0.000	0.000	0.000
W51A	377	0.008	0.009	0.010
W51B	461	0.010	0.011	0.012
W51B	1 642	0.036	0.038	0.042
W51C	0	0.000	0.000	0.000
W51C	3 455	0.076	0.081	0.088
W51D	2 687	0.059	0.063	0.068
W51E	96	0.002	0.002	0.002
W51F	1 560	0.034	0.037	0.040
W52A	249	0.005	0.006	0.006
W52A	994	0.022	0.023	0.025
W52B	1 714	0.038	0.040	0.044
W52C	907	0.020	0.021	0.023
W52D	366	0.008	0.009	0.009
W53A	3	0.000	0.000	0.000
W53A	761	0.017	0.018	0.019
W53A	1 255	0.027	0.029	0.032
W53B	4	0.000	0.000	0.000
W53B	690	0.015	0.016	0.018
W53C	1 487	0.033	0.035	0.038
W53C	76	0.002	0.002	0.002
W53D	1 343	0.029	0.031	0.034
W53D	163	0.004	0.004	0.004
W53E	904	0.020	0.021	0.023
W53F	6	0.000	0.000	0.000
W54A	796	0.017	0.019	0.020
W54B	34	0.001	0.001	0.001
W54B	873	0.019	0.020	0.022
W54C	341	0.007	0.008	0.009
W54D	167	0.004	0.004	0.004
W54D	215	0.005	0.005	0.005
W54D	201	0.004	0.005	0.005
W54E	15	0.000	0.000	0.000
W54E	74	0.002	0.002	0.002
W55A	437	0.010	0.010	0.011
W55A	1 909	0.042	0.045	0.049
W55B	2	0.000	0.000	0.000
W55B	689	0.015	0.016	0.018
W55C	2 057	0.045	0.048	0.052
W55C	384	0.008	0.009	0.010
W55D	367	0.008	0.009	0.009
W55D	487	0.011	0.011	0.012
W55E	14	0.000	0.000	0.000
W56A	1 191	0.026	0.028	0.030

Quaternary catchment	Population BHNR Dependent excluding boreholes and formal schemes	BHNR Million m^3 per annum @ 60L/day		
		2022	2025	2030
W56B	217	0.005	0.005	0.006
W57J	1 915	0.042	0.045	0.049
W57K	2 962	0.065	0.069	0.076
W70A	18 427	0.404	0.432	0.470
Total		**15.329**	**16.412**	**17.855**

7 APPENDIX B: COMMENTS AND RESPONSE REGISTER

No.	Sect	Comment	From	Addressed?
1	Table 3.1 Pg 3-1	I'm just a bit worried about these 2040 predictions. In 2030, there's 3.3% increase from 2022 and 2040 it's 25% from 2030 data. Isn't this a bit much? Taking into consideration that some of the areas are rural and the average 1.7% population growth mentioned above.	S Majola	Adjusted. The 2040 figure is correct with compounded growth at 1.7%. The 2030 figure was for 2024 I have updated table to 2030.
2	Pg 3-1	Reserve studies/applications use the amount of 25 litres per person per day. In the previous Reserve study they calculated the BHNR using different scenarios of 25L, 60L, 80L & 100L. Now in this study only 60L was applied as compared to 25L, the amount normally used. Is this amount not too strict/stringent?	M Mazibuko	The use of 25l was the original designation for water allocation. However this is based largely on a WHO/UNHCR study for minimum water supply for refugee camps and has largely been replaced by an amount that is deemed to be more acceptable as a basic norm – 60l and this is largely a political decision as much as one based on demonstrated needs. We can adjust the model to reflect other values. I have – for illustrative purposes included a 100l scenario.
3	General	How is the quality component addressed when it comes to the Basic Human Needs? Does there need to be something included in the report to highlight that communities should be made aware about basic home treatment methods when sourcing water directly from the water resource for basic human needs or is this beyond the scope of the report/study?	R Pillay	Quality of river water used for BHN is beyond the scope of this study, but it should be within DWS's responsibility to warn people about poor water quality. It is assumed that people using run-of-river would boil water before drinking.
4	Table A2	Table A2 on pages A-7 to A-12: does the Basic Human Needs (m^3/annum) need to be expressed as a percentage of the pMAR for purposes of the Reserve calculation or is something that will be done by the Head Office Reserve Team; or is that something that is not required at all. Will this get added to the Ecological Reserve requirements to obtain the total Reserve?	R Pillay	Total Reserve requirements are calculated by the Head Office Reserve team as part of preparing the Reserve template and gazette.
5	General	I did go through the report and I understood how the Percentage of population dependent on abstraction from surface water resources was calculated – according to the guidelines. I would like to see how water quality component of the study will be addressed, to ensure that the quantity abstracted for BHN is of drinking water quality standards (if the water is not treated) - e.g. Consideration of maintaining Class I in the IUAs where BHN use apply.	N. Tovhowani	It is not assumed that run-of-river should ever be of drinking water quality standard. Residents of the country are supposed to be provided with potable water through water treatment to the required standards. Maintenance of potable water from run-of-river is not part of the methodology or intent of packaging IUAs into Water Resource Classes or defining Classes I, II and III.