

Riebeeck Kasteel Distribution System - Input Variables for Water Requirement Model								
Parameter / Variable	Year	Income Categorization				Com. & Ind. ^(D)	Other & Farms ^(E)	Total
		HI	MI	LI	Sub- Total			
Units are presented in brackets with the "Parameter Description" - First Column								
Population ^(A)	2018	1850	4641	1154	7645			
	2023	2043	5512	3168	10723			
	2028	2255	6546	6238	15039			
	2033	2490	7775	10829	21093			
	2038	2749	9234	17601	29584			
	2043	3035	10967	27491	41493			
Growth (%/year)		Growth in Population				Growth in Demand		
	2018-2023	2.00%	3.50%	22.38%	7.00%	4%	2%	
	2023-2028	2.00%	3.50%	14.51%	7.00%	4%	2%	
	2028-2033	2.00%	3.50%	11.66%	7.00%	4%	2%	
	2033-2038	2.00%	3.50%	10.20%	7.00%	4%	2%	
2038-2043	2.00%	3.50%	9.33%	7.00%	4%	2%		
Unit Demand (l/c/d) ^(B)	2018	80.0	60.0	40.0	-	-	-	-
Average Annual Daily Water Requirement (Kl/d - NRW Excluded)	2018	148	278	46		61	54	588
	2023	163	331	127		74	60	755
	2028	180	393	250		90	66	979
	2033	199	466	433		110	73	1281
	2038	220	554	704		134	80	1692
	2043	243	658	1100		163	89	2252
NRW (%) ^(C)	2018	13.8	13.8	13.8		13.8	13.8	
	2023	10.0	10.0	10.0		10.0	10.0	
	2028	10.0	10.0	10.0		10.0	10.0	
	2033	10.0	10.0	10.0		10.0	10.0	
	2038	10.0	10.0	10.0		10.0	10.0	
	2043	10.0	10.0	10.0		10.0	10.0	
Average Annual Daily Water Requirement (Kl/d)	2018	172	323	54		71	63	682
	2023	182	367	141		82	66	839
	2028	200	436	277		100	73	1088
	2033	221	518	481		122	81	1424
	2038	244	616	782		149	89	1880
	2043	270	731	1222		181	98	2502
Average Peak Month Daily Water Requirement (Kl/d)	2018	258	485	80		106	94	1023
	2023	272	551	211		124	99	1258
	2028	301	655	416		150	110	1631
	2033	332	777	722		183	121	2136
	2038	367	923	1173		223	134	2820
	2043	405	1097	1833		271	148	3753
Peak Day Water Requirement (Kl/d)	2018	322	606	100		133	117	1278
	2023	340	689	264		155	124	1572
	2028	376	818	520		188	137	2039
	2033	415	972	902		229	151	2669
	2038	458	1154	1467		278	167	3525
	2043	506	1371	2291		339	185	4691
Total Annual Water Requirement (Kl/year)	2018	62672	117899	19553		25829	22865	248819
	2023	66274	134115	51399		30099	24179	306066
	2028	73172	159286	101191		36620	26696	396965
	2033	80787	189182	175663		44553	29475	519660
	2038	89196	224689	285531		54206	32542	686164
	2043	98479	266860	445969		65950	35929	913187
Peak Month Factor ^(F)	1.50							
Peak Day Factor ^(G)	1.25							

Notes :



TO USE THIS SHEET, FILL IN THE VARIABLES IN THE SHADED BLOCKS ABOVE

References:

- (A) - Total population based on Census 2011 data. Future estimated growth agreed with Municipality in January 2014.
- (B) - Residential unit demands estimated.
- (C) - Non Revenue Water (NRW): Calculated NRW from July 2018 to June 2019. Estimated 3.8 % reduction of NRW over the next five years.
- (D) - Commercial and Industrial: Calculated from Billed Metered Consumption data for the period July 2016 to June 2017. Average 61 kl/d.
- (E) - Others and Farms: Calculated from Billed Metered Consumption data for the period July 2016 to June 2017. Average 54 kl/d.
- (F) - Peak Month Factor: Maximum value calculated from July 2014 to June 2019 data.
- (G) - Peak Day Factor : Estimated

Riebeek Kasteel Distribution System Projected Water Requirement (Kl/a)								
Year *	Measured Potable Water Requirement (System Input)	Projected Water Requirement from model	Other Projections					Annual WWTW Flows (Estimated from Billed Metered Consumption Data)
			2% Annual growth on 2016/2017 Water Requirement	4% Annual growth on 2016/2017 Water Requirement	DWS's Reconciliation Strategy (March 2016)			
					Low	Medium	High	
2001	120,933							
2002	157,215							
2003	209,142							76,931
2004	162,254							63,992
2005	218,651							76,316
2006	226,158							85,438
2007	241,840							101,498
2008	257,634							108,821
2009	222,052							103,236
2010	263,467							114,418
2011	253,825							111,779
2012	284,585							110,726
2013	300,867							116,107
2014	329,440							127,364
2015	287,140				330,000	330,000	330,000	114,282
2016	250,636							98,969
2017	169,061							55,752
2018	183,446	248,819	250,636	250,636				75,399
2023		306,066	276,722	304,937	552,200	573,600	596,600	
2028		396,965	305,524	371,303	756,400	804,600	856,600	
2033		519,660	337,323	451,381	1,070,900	1,173,000	1,285,500	
2038		686,164	372,432	549,174	1,442,400	1,613,000	1,803,000	
2043		913,187	411,195	668,155				

Notes: (*) The years in the above table refer to the Municipal Financial Years and is for the period July till June the following year. The measured demand for 2018 is therefore from July 2018 up to June 2019.

