

Moorreesburg Distribution System - Input Variables for Water Requirement Model								
Parameter / Variable	Year	Income Categorization				Com. & Ind. ^(D)	Other and Farms ^(E)	Total
		HI	MI	LI	Sub- Total			
Units are presented in brackets with the "Parameter Description" - First Column								
Population ^(A)	2018	5878	9111	1955	16945			
	2023	6333	10309	3975	20616			
	2028	6822	11663	6598	25083			
	2033	7349	13196	9972	30517			
	2038	7917	14930	14282	37129			
	2043	8529	16892	19752	45173			
Growth (%/year)		Growth in Population				Growth in Demand		
	2018-2023	1.50%	2.50%	15.24%	4.00%	4%	2%	
	2023-2028	1.50%	2.50%	10.66%	4.00%	4%	2%	
	2028-2033	1.50%	2.50%	8.61%	4.00%	4%	2%	
	2033-2038	1.50%	2.50%	7.45%	4.00%	4%	2%	
2038-2043	1.50%	2.50%	6.70%	4.00%	4%	2%		
Unit Demand (l/c/d) ^(B)	2018	85.0	60.0	30.0	-	-	-	-
Average Annual Daily Water Requirement (Kl/d - NRW Excluded)	2018	500	547	59		250	67	1422
	2023	538	619	119		304	74	1654
	2028	580	700	198		370	82	1929
	2033	625	792	299		450	90	2256
	2038	673	896	428		548	100	2645
	2043	725	1014	593		666	110	3107
NRW (%) ^(C)	2018	20.7	20.7	20.7		20.7	20.7	
	2023	15.0	15.0	15.0		15.0	15.0	
	2028	13.8	13.8	13.8		13.8	13.8	
	2033	12.5	12.5	12.5		12.5	12.5	
	2038	11.3	11.3	11.3		11.3	11.3	
	2043	10.0	10.0	10.0		10.0	10.0	
Average Annual Daily Water Requirement (Kl/d)	2018	630	689	74		315	84	1793
	2023	633	728	140		358	87	1946
	2028	672	811	229		429	95	2237
	2033	714	905	342		515	103	2578
	2038	758	1009	483		617	112	2980
	2043	806	1126	658		741	122	3453
Average Peak Month Daily Water Requirement (Kl/d)	2018	876	958	103		438	117	2493
	2023	880	1011	195		497	121	2705
	2028	935	1128	319		596	132	3109
	2033	992	1258	475		715	143	3584
	2038	1054	1403	671		858	156	4142
	2043	1120	1565	915		1029	170	4799
Peak Day Water Requirement (Kl/d)	2018	1095	1198	129		548	147	3116
	2023	1100	1264	244		622	151	3381
	2028	1168	1410	399		745	165	3887
	2033	1240	1572	594		894	179	4480
	2038	1317	1754	839		1072	195	5177
	2043	1400	1957	1144		1287	212	5999
Total Annual Water Requirement (Kl/year)	2018	229980	251628	27002		115069	30839	654518
	2023	231140	265603	51209		130611	31765	710328
	2028	245395	296150	83762		156606	34563	816475
	2033	260583	330280	124793		187813	37615	941085
	2038	276768	368418	176208		225284	40945	1087625
	2043	294017	411042	240316		270286	44579	1260241
Peak Month Factor ^(F)	1.39							
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 5.7% reduction in 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 250 kl/d.
- (E) - Others and Farms: Calculated from Billed Metered Consumption data for the period July 2016 to June 2017. Average 67 kl/d.
- (F) - Peak Month Factor: Maximum value calculated from July 2014 to June 2019 data.
- (G) - Peak Day Factor : Estimated

Moorreesburg Distribution System Projected Water Requirements (KI/a)										
Year *	Measured Potable Water Requirement (System Input)	Projected Water Requirement from model	Other Projections					Metered Annual WWTW Flow	Percentage of WWTW Flow / System Input	
			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	647,020									
2002	740,049									
2003	759,670									
2004	672,255							211,407	27.83%	
2005	755,340							238,317	35.45%	
2006	840,580							242,503	32.11%	
2007	822,940							258,350	30.73%	
2008	803,680							292,230	35.51%	
2009	797,450							322,443	40.12%	
2010	762,024							311,213	39.03%	
2011	827,492							358,339	47.02%	
2012	784,940							322,393	38.96%	
2013	778,942							323,235	41.18%	
2014	860,288							451,958	58.02%	
2015	779,557							451,435	52.47%	
2016	659,185					860,000	860,000	860,000	381,562	48.95%
2017	480,789								378,334	57.39%
2018	532,506	654,518	659,185	659,185					330,949	68.83%
2023		710,328	727,794	801,999	1,137,200	1,182,600	1,230,400		337,553	63.39%
2028		816,475	803,543	975,755	1,350,200	1,438,600	1,533,400			
2033		941,085	887,176	1,187,155	1,818,600	1,772,200	1,941,300			
2038		1,087,625	979,514	1,444,356	1,914,600	2,144,200	2,401,800			
2043		1,260,241	1,081,463	1,757,279						

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.

