

Moorreesburg Distribution System - Input Variables for Water Requirement Model								
Parameter / Variable	Year	Income Categorization				Com. & Ind. ^(D)	Other and Farms ^(E)	Total
		High Income	Middle Income	Low Income	Sub- Total			
<i>Units are presented in brackets with the "Parameter Description" - First Column</i>								
Population ^(A)	2020	6358	9855	2115	18328			
	2025	6849	11150	4299	22299			
	2030	7379	12615	7136	27130			
	2035	7949	14273	10786	33008			
	2040	8563	16148	15447	40159			
	2045	9225	18271	21364	48859			
Growth (%/year)		Growth in Population				Growth in Demand		
	2020-2025	1.50%	2.50%	15.24%	4.00%	4%	2%	
	2025-2030	1.50%	2.50%	10.66%	4.00%	4%	2%	
	2030-2035	1.50%	2.50%	8.61%	4.00%	4%	2%	
	2035-2040	1.50%	2.50%	7.45%	4.00%	4%	2%	
	2040-2045	1.50%	2.50%	6.70%	4.00%	4%	2%	
Unit Demand (l/c/d) ^(B)	2020	85.0	55.0	35.0	-	-	-	-
Average Annual Daily Water Requirement (KI/d - NRW Excluded)	2020	540	542	74		305	20	1481
	2025	582	613	150		371	22	1739
	2030	627	694	250		451	24	2046
	2035	676	785	378		549	27	2414
	2040	728	888	541		668	29	2854
	2045	784	1005	748		813	32	3382
NRW (%) ^(C)	2020	20.3	20.3	20.3		20.3	20.3	
	2025	15.0	15.0	15.0		15.0	15.0	
	2030	13.8	13.8	13.8		13.8	13.8	
	2035	12.5	12.5	12.5		12.5	12.5	
	2040	11.3	11.3	11.3		11.3	11.3	
	2045	10.0	10.0	10.0		10.0	10.0	
Average Annual Daily Water Requirement (KI/d)	2020	678	680	93		383	25	1858
	2025	685	721	177		436	26	2046
	2030	727	804	290		523	28	2372
	2035	772	897	431		628	30	2759
	2040	820	1001	609		753	33	3216
	2045	871	1117	831		903	36	3758
Average Peak Month Daily Water Requirement (KI/d)	2020	943	945	129		532	35	2583
	2025	952	1003	246		607	36	2843
	2030	1011	1118	403		727	39	3298
	2035	1073	1247	600		872	42	3835
	2040	1140	1391	847		1046	46	4470
	2045	1211	1552	1155		1255	50	5223
Peak Day Water Requirement (KI/d)	2020	1178	1182	161		665	43	3229
	2025	1190	1254	308		758	45	3554
	2030	1263	1398	503		909	49	4122
	2035	1342	1559	750		1090	53	4793
	2040	1425	1739	1058		1308	58	5588
	2045	1514	1940	1444		1569	63	6529
Total Annual Water Requirement (KI/year)	2020	247498	248229	33902		139634	9068	678331
	2025	250001	263336	64618		159294	9387	746637
	2030	265419	293623	105696		190996	10214	865948
	2035	281847	327462	157473		229056	11116	1006954
	2040	299353	365274	222351		274757	12100	1173836
	2045	318009	407535	303247		329641	13174	1371606
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) - Projected population for 2020/2021 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality during January 2014.

(B) - Residential unit demands estimated.

(C) - Non Revenue Water (NRW): Calculated NRW from July 2020 to June 2021. Estimated 5.3% reduction in NRW over the next five years.

(D) - Commercial and Industrial: Calculated from Billed Metered Consumption data for the period July 2020 to June 2021. Average 304.9 kl/d.

(E) - Others and Farms: Calculated from Billed Metered Consumption data for the period July 2020 to June 2021. Average 19.8 kl/d.

(F) - Peak Month Factor: Maximum value calculated from July 2016 to June 2021 data.

(G) - Peak Day Factor : Estimated

Year *	Measured Potable Water Requirement (System Input)	Projected Water Requirement from model	Moorreesburg Distribution System Projected Water Requirements (KI/a)					WWTW Flow and Projections (KI/a)		
			Other Projections			Metered Annual WWTW Flow	Percentage (WWTW Flow / System Input)	Projected WWTW Flow		
			2% Annual growth on 2020/2021 Water Requirement	4% Annual growth on 2020/2021 Water Requirement	DWS's Reconciliation Strategy (March 2016)					
Low	Medium	High								
1995	620 630									
1996	611 350									
1997	723 280									
1998	705 310									
1999	761 500									
2000	632 570									
2001	647 020									
2002	740 040									
2003	759 670						211 407	27.83%		
2004	672 255						238 317	35.45%		
2005	755 340						242 503	32.11%		
2006	840 580						258 350	30.73%		
2007	822 940						292 230	35.51%		
2008	803 680						322 443	40.12%		
2009	797 450						311 213	39.03%		
2010	762 024						358 339	47.02%		
2011	827 492						322 393	38.96%		
2012	784 940						323 235	41.18%		
2013	778 942						451 958	58.02%		
2014	860 288						451 435	52.47%		
2015	779 557						391 562	48.95%		
2016	659 185				860 000	860 000	378 334	57.39%		
2017	480 789						330 949	68.83%		
2018	532 506						337 553	63.39%		
2019	590 106						351 586	59.58%		
2020	671 591	678 331	671 591	671 591			400 243	59.60%		
2025		746 637	741 491	817 093	1 214 000	1 273 000	1 336 000	70.00%	522 646	
2030		865 948	818 666	994 119	1 441 000	1 549 000	1 665 000	75.00%	649 461	
2035		1 006 954	903 873	1 209 497	1 737 000	1 921 000	2 125 500	80.00%	805 563	
2040		1 173 836	997 949	1 471 539	2 033 000	2 293 000	2 586 000	80.00%	939 069	
2045		1 371 606	1 101 816	1 790 352				80.00%	1 097 285	

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 2020 is therefore from July 2020 up to June 2021.

