

Malmesbury 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)	2016	18212	26643	12740	57595			
	2021	19619	30145	22223	71987			
	2026	21135	34106	34814	90055			
	2031	22769	38588	51404	112760			
	2036	24528	43658	73131	141318			
	2041	26424	49395	101450	177270			
Growth (%/year)		Growth in Population				Growth in Demand		
	2016-2021	1.50%	2.50%	11.77%	4.56%	4%	2%	
	2021-2026	1.50%	2.50%	9.39%	4.58%	4%	2%	
	2026-2031	1.50%	2.50%	8.11%	4.60%	4%	2%	
	2031-2036	1.50%	2.50%	7.31%	4.62%	4%	2%	
2036-2041	1.50%	2.50%	6.77%	4.64%	4%	2%		
Unit Demand (l/c/d) ^(B)	2016	100.0	70.0	50.0	-	-	-	-
Average Annual Daily Water Requirement (Kl/d - NRW Excluded)	2016	1821	1865	637		1180	947	6450
	2021	1962	2110	1111		1435	1046	7664
	2026	2114	2387	1741		1746	1155	9142
	2031	2277	2701	2570		2124	1275	10947
	2036	2453	3056	3657		2584	1407	13157
	2041	2642	3458	5073		3144	1554	15871
NRW (%) ^(C)	2016	13.5	13.5	13.5		13.5	13.5	
	2021	10.0	10.0	10.0		10.0	10.0	
	2026	10.0	10.0	10.0		10.0	10.0	
	2031	10.0	10.0	10.0		10.0	10.0	
	2036	10.0	10.0	10.0		10.0	10.0	
	2041	10.0	10.0	10.0		10.0	10.0	
Average Annual Daily Water Requirement (Kl/d)	2016	2105	2156	736		1364	1095	7457
	2021	2180	2345	1235		1594	1162	8516
	2026	2348	2653	1934		1940	1283	10158
	2031	2530	3001	2856		2360	1416	12164
	2036	2725	3396	4063		2872	1564	14619
	2041	2936	3842	5636		3494	1727	17634
Average Peak Month Daily Water Requirement (Kl/d)	2016	2948	3019	1031		1909	1533	10439
	2021	3052	3282	1728		2232	1627	11922
	2026	3288	3714	2708		2716	1796	14221
	2031	3542	4202	3998		3304	1983	17029
	2036	3816	4754	5688		4020	2189	20467
	2041	4110	5379	7891		4891	2417	24688
Peak Day Water Requirement (Kl/d)	2016	3684	3773	1289		2386	1916	13049
	2021	3815	4103	2161		2790	2033	14902
	2026	4110	4642	3385		3395	2245	17777
	2031	4427	5252	4998		4130	2479	21286
	2036	4769	5942	7110		5025	2737	25584
	2041	5138	6723	9863		6114	3022	30860
Total Annual Water Requirement (Kl/year)	2016	768464	786983	268792		497708	399686	2721632
	2021	795659	855772	450632		581989	424124	3108176
	2026	857151	968227	705950		708079	468267	3707675
	2031	923395	1095460	1042359		861486	517005	4439706
	2036	994759	1239413	1482941		1048130	570815	5336058
	2041	1071638	1402282	2057190		1275210	630226	6436546
Peak Month Factor ^(F)	1.40							
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 2016 to June 2017. Estimated 3.5 % 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 1 179.5 kl/d.

(E) - Others and Farms: Calculated from Billed Metered Consumption data for the period July 2016 to June 2017. Average 947.2 kl/d.

(F) - Peak Month Factor: Maximum value calculated from July 2012 to June 2017 data.

(G) - Peak Day Factor : Estimated

Malmesbury 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 (February 2016)				
					Low	Medium	High		
2001	2,376,180								
2002	2,509,473								
2003	2,575,832							1,230,105	47.76%
2004	2,521,004							1,208,985	47.96%
2005	2,631,087							1,323,050	50.29%
2006	2,756,470							1,428,997	51.84%
2007	2,996,580							1,566,877	52.29%
2008	3,107,700							1,665,596	53.60%
2009	2,892,103							1,575,871	54.49%
2010	3,146,105							1,613,910	51.30%
2011	3,113,432							1,570,887	50.46%
2012	3,149,412							1,642,281	52.15%
2013	3,140,999							1,785,223	56.84%
2014	3,349,489							1,755,627	52.41%
2015	3,141,356							1,706,420	54.32%
2016	2,708,884	2,721,632	2,708,884	2,708,884	3,363,000	3,363,000	3,363,000	1,590,479	58.71%
2021		3,108,176	2,990,827	3,295,772	4,269,200	4,397,400	4,529,200		
2026		3,707,675	3,302,114	4,009,810	5,193,800	5,480,200	5,780,800		
2031		4,439,706	3,645,801	4,878,547	6,347,900	6,868,900	7,431,700		
2036		5,336,058	4,025,259	5,935,498	7,802,400	8,668,400	9,630,200		
2041		6,436,546	4,444,211	7,221,441					

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 2016 is therefore from July 2016 up to June 2017.

