

Malmesbury Distribution System - Input Variables for Water Requirement Model								
Parameter / Variable	Year	Income Categorization				Com. & Ind. <sup>(D)</sup>	Other and Farms <sup>(E)</sup>	Total
		HI	MI	LI	Sub- Total			
Units are presented in brackets with the "Parameter Description" - First Column								
Population <sup>(A)</sup>	2019	20817	30455	14563	65835	-	-	-
	2024	22426	34457	25447	82330			
	2029	24159	38985	39906	103050			
	2034	26026	44108	58968	129102			
	2039	28038	49905	83945	161887			
	2044	30204	56463	116517	203184			
Growth (%/year)		Growth in Population				Growth in Demand		
	2019-2024	1.50%	2.50%	11.81%	4.57%	4%	2%	
	2024-2029	1.50%	2.50%	9.42%	4.59%	4%	2%	
	2029-2034	1.50%	2.50%	8.12%	4.61%	4%	2%	
	2034-2039	1.50%	2.50%	7.32%	4.63%	4%	2%	
	2039-2044	1.50%	2.50%	6.78%	4.65%	4%	2%	
Unit Demand (l/c/d) <sup>(B)</sup>	2019	85.0	60.0	40.0	-	-	-	-
Average Annual Daily Water Requirement (Kl/d - NRW Excluded)	2019	1769	1827	583		1179	947	6305
	2024	1906	2067	1018		1434	1046	7472
	2029	2054	2339	1596		1745	1154	8888
	2034	2212	2647	2359		2123	1275	10615
	2039	2383	2994	3358		2583	1407	12726
	2044	2567	3388	4661		3143	1554	15312
NRW (%) <sup>(C)</sup>	2019	15.0	15.0	15.0		15.0	15.0	
	2024	10.0	10.0	10.0		10.0	10.0	
	2029	10.0	10.0	10.0		10.0	10.0	
	2034	10.0	10.0	10.0		10.0	10.0	
	2039	10.0	10.0	10.0		10.0	10.0	
	2044	10.0	10.0	10.0		10.0	10.0	
Average Annual Daily Water Requirement (Kl/d)	2019	2082	2150	685		1387	1114	7418
	2024	2118	2297	1131		1594	1162	8302
	2029	2282	2599	1774		1939	1283	9876
	2034	2458	2941	2621		2359	1416	11795
	2039	2648	3327	3731		2870	1564	14140
	2044	2853	3764	5179		3492	1726	17014
Average Peak Month Daily Water Requirement (Kl/d)	2019	2789	2881	918		1859	1493	9940
	2024	2838	3078	1515		2136	1557	11124
	2029	3057	3483	2377		2598	1719	13234
	2034	3294	3940	3512		3161	1898	15805
	2039	3548	4458	4999		3846	2095	18947
	2044	3823	5044	6939		4680	2313	22799
Peak Day Water Requirement (Kl/d)	2019	3487	3601	1148		2323	1866	12425
	2024	3548	3848	1894		2670	1946	13905
	2029	3822	4353	2971		3248	2148	16542
	2034	4117	4925	4390		3952	2372	19756
	2039	4435	5573	6249		4808	2619	23684
	2044	4778	6305	8674		5850	2892	28498
Total Annual Water Requirement (Kl/year)	2019	759823	784673	250136		506276	406653	2707562
	2024	773071	838464	412803		581743	424035	3030115
	2029	832817	948645	647364		707779	468168	3604773
	2034	897180	1073305	956586		861121	516896	4305088
	2039	966518	1214346	1361773		1047686	570695	5161017
	2044	1041214	1373921	1890161		1274670	630093	6210058
Peak Month Factor <sup>(F)</sup>	1.34							
Peak Day Factor <sup>(G)</sup>	1.25							

Notes :

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

References:

- (A) - Projected population for 2019/2020 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 2019 to June 2020. Estimated 5.0 % 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 kl/d.
- (E) - Others and Farms: Calculated from Billed Metered Consumption data for the period July 2016 to June 2017. Average 947 kl/d.
- (F) - Peak Month Factor: Maximum value calculated from July 2015 to June 2020 data.
- (G) - Peak Day Factor : Estimated

Year *	Malmesbury Distribution System Projected Water Requirements (KI/a)					WWTW Flow and Projections (KI/a)				
	Measured Potable Water Requirement (System Input)	Projected Water Requirement from model	2% Annual growth on 2016/2017 Water Requirement	4% Annual growth on 2016/2017 Water Requirement	Other Projections			Metered Annual WWTW Flow	Percentage (WWTW Flow / System Input)	Projected WWTW Flow
					DWS's Reconciliation Strategy (March 2016)					
					Low	Medium	High			
1995	1 512 890									
1996	1 512 899									
1997	1 981 019									
1998	2 727 369									
1999	2 782 993									
2000	2 437 000									
2001	2 376 190									
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				3 363 000	3 363 000	3 363 000	1 708 420	54.32%	
2016	2 708 884							1 590 478	58.71%	
2017	1 973 521							1 423 288	72.12%	
2018	2 186 436							1 494 426	68.35%	
2019	2 520 750	2 707 562	2 708 884	2 708 884				1 764 088	69.98%	
2024	3 030 115	3 030 115	2 990 827	3 295 772	4 800 800	5 016 600	5 240 800		80.00%	2 424 092
2029	3 604 773	3 604 773	3 302 114	4 009 810	5 841 200	6 251 800	6 689 200		80.00%	2 863 916
2034	4 305 088	4 305 088	3 645 801	4 878 547	7 220 600	7 948 600	8 750 800		80.00%	3 444 070
2039	5 161 017	5 161 017	4 025 259	5 935 498	8 675 100	9 748 100	10 949 300		80.00%	4 128 813
2044	6 210 058	6 210 058	4 444 211	7 221 441					80.00%	4 968 047

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 2019 is therefore from July 2019 up to June 2020.

