

Koringberg Distribution System - Input Variables for Water Requirement Model								
Parameter / Variable	Year	Income Categorization				Com. & Ind. <sup>(D)</sup>	Other <sup>(E)</sup>	Total
		High Income	Middle Income	Low Income	Sub- Total			
<i>Units are presented in brackets with the "Parameter Description" - First Column</i>								
Population <sup>(A)</sup>	2020	321	1277	130	1728			
	2025	345	1445	312	2102			
	2030	372	1635	551	2558			
	2035	401	1849	862	3112			
	2040	432	2092	1262	3786			
	2045	465	2367	1774	4606			
Growth (%/year)		Growth in Population				Growth in Demand		
	2020-2025	1.50%	2.50%	19.07%	4.00%	4%	2%	
	2025-2030	1.50%	2.50%	12.04%	4.00%	4%	2%	
	2030-2035	1.50%	2.50%	9.35%	4.00%	4%	2%	
	2035-2040	1.50%	2.50%	7.93%	4.00%	4%	2%	
	2040-2045	1.50%	2.50%	7.05%	4.00%	4%	2%	
Unit Demand (l/c/d) <sup>(B)</sup>	2020	90.0	60.0	45.0	-	-	-	-
Average Annual Daily Water Requirement (Kl/d - NRW Excluded)	2020	29	77	6		3	3	118
	2025	31	87	14		4	4	139
	2030	33	98	25		5	4	165
	2035	36	111	39		6	4	196
	2040	39	126	57		7	5	233
	2045	42	142	80		9	5	278
NRW (%) <sup>(C)</sup>	2020	23.7	23.7	23.7		23.7	23.7	
	2025	20.0	20.0	20.0		20.0	20.0	
	2030	18.8	18.8	18.8		18.8	18.8	
	2035	17.5	17.5	17.5		17.5	17.5	
	2040	16.3	16.3	16.3		16.3	16.3	
	2045	15.0	15.0	15.0		15.0	15.0	
Average Annual Daily Water Requirement (Kl/d)	2020	38	100	8		4	4	155
	2025	39	108	18		5	5	174
	2030	41	121	31		6	5	203
	2035	44	134	47		7	5	238
	2040	46	150	68		9	6	279
	2045	49	167	94		10	6	327
Average Peak Month Daily Water Requirement (Kl/d)	2020	72	192	15		8	8	295
	2025	74	207	34		10	9	333
	2030	79	231	58		11	9	388
	2035	83	257	90		14	10	454
	2040	89	286	130		16	11	532
	2045	94	319	179		20	12	625
Peak Day Water Requirement (Kl/d)	2020	90	240	18		10	10	369
	2025	93	259	42		12	11	416
	2030	98	288	73		14	12	486
	2035	104	321	112		17	13	568
	2040	111	358	162		21	14	665
	2045	118	399	224		25	15	781
Total Annual Water Requirement (Kl/year)	2020	13800	36651	2808		1579	1579	56416
	2025	14179	39549	6411		1832	1662	63633
	2030	15040	44058	11142		2194	1807	74241
	2035	15956	49092	17157		2629	1965	86800
	2040	16933	54714	24750		3151	2137	101685
	2045	17973	60994	34278		3778	2325	119348
Peak Month Factor <sup>(F)</sup>	1.91							
Peak Day Factor <sup>(G)</sup>	1.25							

Notes :



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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 3.7 % reduction of 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 3.3 kl/d.

(E) - Others: Calculated from Billed Metered Consumption data for the period July 2020 to June 2021. Average 3.3 kl/d.

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

(G) - Peak Day Factor : Estimated

Year *	Koringberg Distribution System Projected Water Requirements (Kl/a)				Other Projections			WWTW Flow and Projections (Kl/a)		
	Measured Potable Water Requirement (System Input)	Projected Water Requirement from model	2% Annual growth on 2020/2021 Water Requirement	4% Annual growth on 2020/2021 Water Requirement	DWS's Reconciliation Strategy (March 2016)			Annual WWTW Flow (Estimated from Billed Metered Consumption Data)	Percentage (WWTW Flow / System Input)	Projected WWTW Flow
					Low	Medium	High			
1995	43 050									
1996	53 931									
1997	47 897									
1998	36 821									
1999	41 634									
2000	38 066									
2001	30 064									
2002	29 589							25 970	87.77%	
2003	39 878							28 931	72.55%	
2004	42 388							25 544	60.26%	
2005	47 543							28 668	56.09%	
2006	58 136							28 866	49.65%	
2007	57 829							29 578	51.15%	
2008	62 809							38 561	61.39%	
2009	85 766							31 896	37.19%	
2010	59 952							32 616	54.40%	
2011	48 167							33 156	68.83%	
2012	62 777							32 247	51.37%	
2013	56 396							34 115	60.49%	
2014	69 202							41 287	59.66%	
2015	64 578				69 000	69 000	69 000	38 802	60.09%	
2016	60 128							35 886	59.69%	
2017	44 157							20 961	47.47%	
2018	46 609							22 341	47.93%	
2019	51 908							24 452	47.11%	
2020	56 412	56 416	56 412	56 412				30 112	53.38%	
2025		63 633	62 283	68 634	98 000	103 000	108 000		60.00%	38 180
2030		74 241	68 766	83 504	116 000	125 000	134 000		70.00%	51 969
2035		86 800	75 923	101 595	140 000	155 000	171 000		80.00%	69 440
2040		101 685	83 825	123 606	164 000	185 000	208 000		80.00%	81 348
2045		119 348	92 550	150 385					80.00%	95 478

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

