

Nelspoort - Input Variables for Water Demand Model								
Parameter / Variable	Year	Income Categorization				Bus. ^(D)	Other ^(E)	Total
		High	Medium	Low	Sub- Total			
		Units are presented in brackets with the "Parameter Description" - First Column						
Population ^(A)	2023	367	1124	423	1914	-	-	-
	2028	371	1153	488	2012			
	2033	376	1182	557	2115			
	2038	381	1212	630	2223			
	2043	386	1242	708	2336			
	2048	390	1273	791	2455			
Growth (%/year)		Growth in Population				Growth in Demand		-
	2023-2028	0.25%	0.50%	2.89%	1.00%	1%	1%	
	2028-2033	0.25%	0.50%	2.67%	1.00%	1%	1%	
	2033-2038	0.25%	0.50%	2.50%	1.00%	1%	1%	
	2038-2043	0.25%	0.50%	2.36%	1.00%	1%	1%	
	2043-2048	0.25%	0.50%	2.24%	1.00%	1%	1%	
Unit Demand (l/c/d) ^(B)	2023	160.0	130.0	85.0	-	-	-	-
Average Annual Daily Demand (Kl/d - NRW Excluded)	2023	59	146	36	-	15	100	356
	2028	59	150	41		16	105	372
	2033	60	154	47		17	111	388
	2038	61	157	54		17	116	406
	2043	62	161	60		18	122	424
	2048	62	166	67		19	128	443
NRW (%) ^(C)	2023	25.0	25.0	25.0	-	25.0	25.0	-
	2028	20.0	20.0	20.0		20.0	20.0	
	2033	18.8	18.8	18.8		18.8	18.8	
	2038	17.5	17.5	17.5		17.5	17.5	
	2043	16.3	16.3	16.3		16.3	16.3	
	2048	15.0	15.0	15.0		15.0	15.0	
Average Annual Daily Demand (Kl/d)	2023	78	195	48	-	20	133	474
	2028	74	187	52		20	131	465
	2033	74	189	58		20	136	478
	2038	74	191	65		21	141	492
	2043	74	193	72		22	146	506
	2048	73	195	79		23	151	521
Average Peak Month Daily Demand (Kl/d)	2023	95	236	58	-	24	161	574
	2028	90	227	63		24	159	562
	2033	90	229	71		25	165	578
	2038	89	231	79		26	170	595
	2043	89	233	87		26	176	612
	2048	89	236	96		27	183	630
Peak Day Demand (Kl/d)	2023	118	295	73	-	30	202	718
	2028	112	283	78		30	199	703
	2033	112	286	88		31	206	723
	2038	112	289	98		32	213	744
	2043	111	292	109		33	220	765
	2048	111	295	120		34	228	788
Total Annual Demand (Kl/year)	2023	28563	71123	17510	-	7300	48686	173182
	2028	27114	68362	18931		7193	47972	169571
	2033	27032	69010	21269		7443	49643	174397
	2038	26957	69680	23704		7705	51385	179430
	2043	26888	70373	26240		7977	53200	184678
	2048	26826	71089	28882		8260	55091	190148
Peak Month Factor ^(F)	1.21							
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 2023/2024 is based on the Census 2011 data and the estimated future population growth, as agreed with Municipality.

(B) - Residential unit demands estimated.

(C) - Water Losses: Calculated NRW from July 2023 to June 2024 was 63.1%. NRW of 25% was however included in the model, because it is estimated that the billed metered consumption data from the Finance Department is not correct. Reduction of 5% over the next five years.

(D) - Businesses: Estimated

(E) - Others represents the following (July 2023 to June 2024):

Nurses House	0.56 kl/d	Hospital (Incl. Church & Pastorie)	36.30 kl/d
Skutkraal	0.00 kl/d	Restvale Primary School	4.04 kl/d
Police	2.54 kl/d	Restvale Hostel	0.02 kl/d
Police house 1	0.18 kl/d	Restvale Sport Grounds	0.00 kl/d
Police house 2	1.62 kl/d	Nelspoort Sport Grounds	7.27 kl/d
Dagbreek	0.00 kl/d	Community Farm	38.98 kl/d
Garlicsaal	0.00 kl/d	Bloekomboom Park	0.00 kl/d
Municipal Office	7.95 kl/d	Werkswinkel	0.58 kl/d
Total		100.04 kl/d	

(F) - Peak Month Factor: Maximum value calculated from July 2019 to June 2024 data.

(G) - Peak Day Factor: Estimated

Nelspoort Projected Water Requirements and Allocations (Kl/a)															WW Flow and Projections (Kl/a)				
Year *	Water Requirements										Safe Yields of Boreholes (GEOSS 2021/09-27 Report) and River					Registered Volume 22023971	WWTW		
	Historical Measured Supply (Raw Water)	Projected requirements from WSDP model	Historical Measured Supply (System Input Volume)	Other Projections					BH 1	BH 2	Bos Nw BH 3	Salt River	Total Safe Yield Volume	Measured Effluent (Number of months with measured data)			Effluent / Water %	Future Projected Effluent	
				1% Annual growth on 2023/2024 Demand	2% Annual growth on 2023/2024 Demand	All Towns Reconciliation Strategy (2015)													
						Low	Medium	High						3.4 l/s @ 12 hrs	3.2 l/s @ 24 hrs				11.8 l/s @ 8 hrs
2005										53 611	100 915		98 926	253 452	98 926	Effluent was not measured at WWTW			
2006	110 047		103 860							53 611	100 915		98 926	253 452	98 926				
2007	114 485		101 323							53 611	100 915		98 926	253 452	98 926	32 552	12 Months data	55%	
2008	178 669		119 070							53 611	100 915		98 926	253 452	98 926	43 064	9 Months data	46%	
2009	134 470		102 020							53 611	100 915		98 926	253 452	98 926	55 359	4 Months data	79%	
2010	168 083		103 550							53 611	100 915		98 926	253 452	98 926	66 762	Estimated	76%	
2011	215 657		114 083							53 611	100 915	124 042	98 926	377 494	98 926	66 844	6 Months data	60%	
2012	167 816		115 133							53 611	100 915	124 042	98 926	377 494	98 926	57 424	12 Months data	66%	
2013	158 836		126 384							53 611	100 915	124 042	98 926	377 494	98 926	56 639	12 Months data	69%	
2014	173 157		133 130			158 000	158 000	158 000		53 611	100 915	124 042	98 926	377 494	98 926	61 542	12 Months data	68%	
2015	168 608		142 380			159 000	159 000	160 000		53 611	100 915	124 042	98 926	377 494	98 926	67 712	12 Months data	77%	
2016	170 673		146 250							53 611	100 915	124 042	98 926	377 494	98 926	75 307	12 Months data	85%	
2017	147 406		126 940							53 611	100 915	124 042	98 926	377 494	98 926	61 507	12 Months data	80%	
2018	158 206		118 090							53 611	100 915	124 042	98 926	377 494	98 926	64 950	Estimated	79%	
2019	165 969		133 420							53 611	100 915	124 042	98 926	377 494	98 926	73 381	Estimated	85%	
2020	202 313		153 440			161 000	163 000	168 000		53 611	100 915	124 042	98 926	377 494	98 926	84 392	Estimated	80%	
2021	199 175		145 620							53 611	100 915	124 042	98 926	377 494	98 926	80 091	Estimated	77%	
2022	219 985		143 236							53 611	100 915	124 042	98 926	377 494	98 926	78 780	Estimated	69%	
2023	173 106	173 182	119 190	173 106	173 106					53 611	100 915	124 042	98 926	377 494	98 926	65 555	Estimated	73%	
2028		169 571		181 936	191 123	164 200	170 200	182 400		53 611	100 915	124 042	98 926	377 494	98 926			75%	101742
2033		174 397		191 217	211 015	166 200	174 400	191 700		53 611	100 915	124 042	98 926	377 494	98 926			75%	106273
2038		179 430		200 971	232 978	168 200	178 400	201 200		53 611	100 915	124 042	98 926	377 494	98 926			75%	111023
2043		184 678		211 222	257 226					53 611	100 915	124 042	98 926	377 494	98 926			75%	116001
2048		190 148		221 997	283 999					53 611	100 915	124 042	98 926	377 494	98 926			75%	121219

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 2023 is therefore from July 2023 up to June 2024.

