

| Riebeeck Kasteel Distribution System - Input Variables for Water Requirement Model | | | | | | | | |
|--|-----------|-----------------------|--------|--------|------------|----------------------------|------------------------------|--------|
| Parameter / Variable | Year | Income Categorization | | | | Com. & Ind. ^(D) | Other & Farms ^(E) | Total |
| | | HI | MI | LI | Sub- Total | | | |
| Units are presented in brackets with the "Parameter Description" - First Column | | | | | | | | |
| Population ^(A) | 2019 | 1980 | 4965 | 1235 | 8180 | - | - | - |
| | 2024 | 2186 | 5897 | 3390 | 11473 | | | |
| | 2029 | 2413 | 7004 | 6674 | 16092 | | | |
| | 2034 | 2664 | 8319 | 11587 | 22570 | | | |
| | 2039 | 2942 | 9880 | 18833 | 31655 | | | |
| | 2044 | 3248 | 11735 | 29416 | 44398 | | | |
| Growth (%/year) | | Growth in Population | | | | Growth in Demand | | |
| | 2019-2024 | 2.00% | 3.50% | 22.38% | 7.00% | 4% | 2% | |
| | 2024-2029 | 2.00% | 3.50% | 14.51% | 7.00% | 4% | 2% | |
| | 2029-2034 | 2.00% | 3.50% | 11.66% | 7.00% | 4% | 2% | |
| | 2034-2039 | 2.00% | 3.50% | 10.20% | 7.00% | 4% | 2% | |
| | 2039-2044 | 2.00% | 3.50% | 9.33% | 7.00% | 4% | 2% | |
| Unit Demand (l/c/d) ^(B) | 2019 | 75.0 | 50.0 | 35.0 | - | - | - | - |
| Average Annual Daily Water Requirement (KI/d - NRW Excluded) | 2019 | 148 | 248 | 43 | | 61 | 54 | 555 |
| | 2024 | 164 | 295 | 119 | | 74 | 60 | 711 |
| | 2029 | 181 | 350 | 234 | | 90 | 66 | 921 |
| | 2034 | 200 | 416 | 406 | | 110 | 73 | 1204 |
| | 2039 | 221 | 494 | 659 | | 134 | 80 | 1588 |
| | 2044 | 244 | 587 | 1030 | | 163 | 89 | 2111 |
| NRW (%) ^(C) | 2019 | 21.4 | 21.4 | 21.4 | | 21.4 | 21.4 | |
| | 2024 | 15.0 | 15.0 | 15.0 | | 15.0 | 15.0 | |
| | 2029 | 13.8 | 13.8 | 13.8 | | 13.8 | 13.8 | |
| | 2034 | 12.5 | 12.5 | 12.5 | | 12.5 | 12.5 | |
| | 2039 | 11.3 | 11.3 | 11.3 | | 11.3 | 11.3 | |
| | 2044 | 10.0 | 10.0 | 10.0 | | 10.0 | 10.0 | |
| Average Annual Daily Water Requirement (KI/d) | 2019 | 189 | 316 | 55 | | 78 | 69 | 706 |
| | 2024 | 193 | 347 | 140 | | 87 | 70 | 837 |
| | 2029 | 210 | 406 | 271 | | 105 | 76 | 1068 |
| | 2034 | 228 | 475 | 463 | | 126 | 83 | 1376 |
| | 2039 | 249 | 557 | 743 | | 151 | 90 | 1789 |
| | 2044 | 271 | 652 | 1144 | | 181 | 98 | 2346 |
| Average Peak Month Daily Water Requirement (KI/d) | 2019 | 283 | 474 | 83 | | 116 | 103 | 1059 |
| | 2024 | 289 | 520 | 209 | | 131 | 105 | 1255 |
| | 2029 | 315 | 609 | 406 | | 157 | 114 | 1602 |
| | 2034 | 343 | 713 | 695 | | 188 | 125 | 2064 |
| | 2039 | 373 | 835 | 1114 | | 226 | 136 | 2683 |
| | 2044 | 406 | 978 | 1716 | | 271 | 148 | 3518 |
| Peak Day Water Requirement (KI/d) | 2019 | 354 | 592 | 103 | | 146 | 129 | 1324 |
| | 2024 | 362 | 650 | 262 | | 164 | 132 | 1569 |
| | 2029 | 393 | 761 | 508 | | 196 | 143 | 2002 |
| | 2034 | 428 | 891 | 869 | | 235 | 156 | 2580 |
| | 2039 | 466 | 1044 | 1393 | | 282 | 170 | 3354 |
| | 2044 | 507 | 1222 | 2145 | | 339 | 185 | 4398 |
| Total Annual Water Requirement (KI/year) | 2019 | 68947 | 115292 | 20076 | | 28327 | 25076 | 257718 |
| | 2024 | 70391 | 126620 | 50953 | | 31869 | 25602 | 305436 |
| | 2029 | 76591 | 148206 | 98860 | | 38212 | 27857 | 389725 |
| | 2034 | 83355 | 173507 | 169163 | | 45826 | 30317 | 502168 |
| | 2039 | 90735 | 203170 | 271094 | | 54969 | 33001 | 652968 |
| | 2044 | 98787 | 237950 | 417538 | | 65950 | 35929 | 856155 |
| Peak Month Factor ^(F) | 1.50 | | | | | | | |
| 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 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 6.4 % 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 61 kl/d.
- (E) - Others and Farms: Calculated from Billed Metered Consumption data for the period July 2016 to June 2017. Average 54 kl/d.
- (F) - Peak Month Factor: Maximum value calculated from July 2015 to June 2020 data.
- (G) - Peak Day Factor : Estimated

| Riebeeck Kasteel Distribution System Projected Water Requirement (Kl/a) | | | | | | | Wastewater Flow | |
|---|---|--|---|---|--|-----------|-----------------|--|
| Year * | 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 | | | Annual Wastewater Flows (Estimated from Billed Metered Consumption Data) |
| | | | | | DWS's Reconciliation Strategy (March 2016) | | | |
| | | | | | Low | Medium | High | |
| 1995 | 192 784 | | | | | | | |
| 1996 | 157 602 | | | | | | | |
| 1997 | 176 707 | | | | | | | |
| 1998 | 187 919 | | | | | | | |
| 1999 | 160 439 | | | | | | | |
| 2000 | 157 930 | | | | | | | |
| 2001 | 120 933 | | | | | | | |
| 2002 | 157 215 | | | | | | | |
| 2003 | 209 142 | | | | | | | 76 931 |
| 2004 | 162 254 | | | | | | | 63 992 |
| 2005 | 218 651 | | | | | | | 76 316 |
| 2006 | 226 158 | | | | | | | 85 438 |
| 2007 | 241 840 | | | | | | | 101 498 |
| 2008 | 257 634 | | | | | | | 108 831 |
| 2009 | 222 052 | | | | | | | 103 236 |
| 2010 | 263 467 | | | | | | | 114 418 |
| 2011 | 253 825 | | | | | | | 111 779 |
| 2012 | 284 585 | | | | | | | 110 726 |
| 2013 | 300 867 | | | | | | | 116 107 |
| 2014 | 329 440 | | | | | | | 127 364 |
| 2015 | 297 140 | | | | | | | 114 232 |
| 2016 | 250 636 | | | | 330 000 | 330 000 | 330 000 | 98 969 |
| 2017 | 169 061 | | | | | | | 55 752 |
| 2018 | 183 446 | | | | | | | 75 399 |
| 2019 | 223 405 | 257 718 | 250 636 | 250 636 | | | | 83 782 |
| 2024 | | 305 436 | 276 722 | 304 937 | 585 600 | 610 800 | 637 800 | |
| 2029 | | 389 725 | 305 524 | 371 003 | 802 200 | 856 800 | 915 800 | |
| 2034 | | 502 168 | 337 323 | 451 381 | 1 145 200 | 1 281 000 | 1 389 000 | |
| 2039 | | 652 968 | 372 432 | 549 174 | 1 516 700 | 1 701 000 | 1 906 500 | |
| 2044 | | 856 155 | 411 195 | 668 155 | | | | |

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.

