**REPUBLIC OF ZAMBIA**
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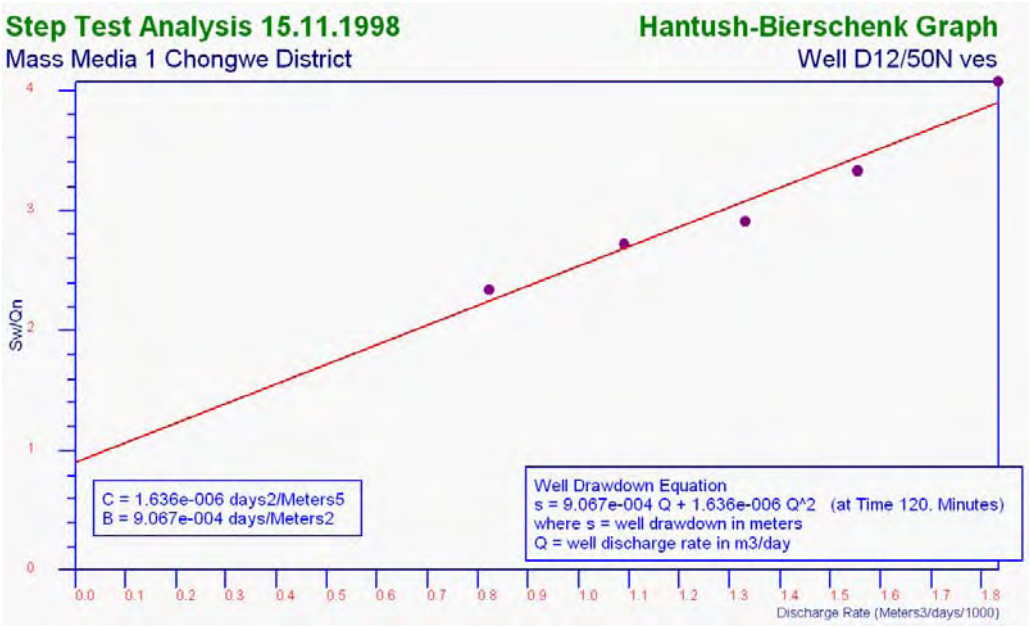
Federal Institute for Geosciences and Natural Resources

# Development of a Groundwater Information & Management Program for the Lusaka Groundwater Systems

## TECHNICAL NOTE NO. 4

## RESULTS OF PUMPING TEST EVALUATION AND STATISTICAL ANALYSIS OF AQUIFER HYDRAULIC PROPERTIES

Roland Bäumle




Lusaka, February 2011

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# RESULTS OF PUMPING TEST EVALUATION AND STATISTICAL ANALYSIS OF AQUIFER HYDRAULIC PROPERTIES

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## Abbreviations

| | |
|---|---|
| *BGR* | Bundesanstalt für Geowissenschaften und Rohstoffe (Federal Institute for Geosciences and Natural Resources) |
| *DWA* | Department of Water Affairs |
| *GReSP* | Groundwater Resources for Southern Province |
| *LWSC* | Lusaka Water and Sewerage Company |
| *E* | Well efficiency |
| *K* | Aquifer hydraulic conductivity |
| Q | Pumping rate or yield of borehole |
| *q* | Specific capacity |
| *T* | Aquifer transmissivity |
| *DWL* | Dynamic water level |
| *RWL* | Residual water level |
| *SWL* | Static water level |
| *m b.g.s.* | Meters below ground surface |

## List of reports compiled by the project in Phase II

| Date | Authors | *Title* | Type |
|---|---|---|---|
| Apr 2009 | Museteka L. & R. Bäumle | *Groundwater Chemistry of Springs and Water Supply Wells in Lusaka - Results of the sampling campaigns conducted in 2008* | Technical Report No. 1 |
| Oct 2009 | R. Bäumle. & S. Kang'omba | *Development of a Groundwater Information & Management Program for the Lusaka Groundwater System: Desk Study and Proposed Work Program Report* | Technical Report No. 2 |
| March 2010 | Hahne K. | *Karstification, Tectonics and Land Use in the Lusaka region* | Technical Report No. 3 |
| Oct 2010 | Mayerhofer C., Shamboko-Mbale B. & R.C. Mweene | *Survey on Commercial Farming and Major Industries: Land Use, Groundwater Abstraction & Potential Pollution Sources-* | Technical Report No. 4 |
| Feb 2008 | Bäumle, R. & J. Nkhoma | *Preliminary Assessment of the Hydrogeological Situation around Lusaka South Local Forest Reserve No. 26* | Technical Note No. 1 |
| Nov 2010 | Tena, T., Nick. A. | *Capacity Building and Awareness Raising Strategy for Phase II (2010-2012)* | Technical Note No. 2 |
| Nov 2010 | Nick, A., Museteka, L., Kringel, R. | *Hydrochemical Sampling of Groundwater in the Lusaka Urban Area (April/May 2010) and Preliminary Findings* | Technical Note No. 3 |

## Summary

**Author:** Dr. Roland Bäumle

**Title:** Results of pumping test evaluation and statistical analysis of aquifer hydraulic properties

**Keywords:** pumping test, step test, single well test, Lusaka Dolomite Formation, Cheta formation, Chunga formation, Karoo sandstone, basement rock.

Documented pumping tests of boreholes located in Lusaka and Central provinces were analysed to determine the hydraulic parameters of boreholes, to identify the distribution of hydraulic characteristics of aquifers in the area and to categorize the potential of aquifers and aquitards in the Mwembeshi and Chongwe catchments for hydrogeological mapping and planned groundwater modelling.

The analysis comprised 150 step-tests and 154 aquifer tests of which all but eleven were single-well tests conducted at a total of 179 borehole sites. The majority of the tests were carried out in sedimentary and metasedimentary rocks of Katanga age including the marbles forming the productive aquifers of the Lusaka area. Other rocks included Basement, clastic sediments of Karoo age and unconsolidated sediments of the Kafue Flats. A statistical analysis of the results was carried out using the test results grouped according to the lithological properties of aquifers. The analysis results were compared with results of previous investigations conducted during the late 1970s and with the classification of aquifers in Southern Province carried out under Phase 1 of this project.

Based on the analysis, the marbles of the Lusaka Dolomite Formation are classified as aquifers of high groundwater potential whereas other carbonate rock aquifers are classified as aquifers of moderate to high potential. Sandstones of Karoo age are considered to be of moderate potential. The potential of the schists of the Cheta and Chunga formations found in the Lusaka area and sediments of the Kafue Flats are rated limited to moderate with respect to their groundwater potential. All other rocks including basement and igneous rock are aquifers of limited potential.

# 1. INTRODUCTION

One of the major components of the study on the development of a groundwater information and management program for the Lusaka groundwater systems includes the determination of groundwater potential and the mapping of groundwater resources.

Existing pumping test data has been collected, digitised and imported into the groundwater database for Lusaka and Central Provinces. It was observed that most of the pumping test data had never been analysed or that the analysis performed was incomplete or did not comply with state of the art methods. It was therefore decided to carry out pumping test analysis on all available datasets and to compare the results with summary reports of previous investigations conducted during the late 1970s, namely the groundwater and management studies for Lusaka water supply (von Hoyer et al. 1978) and the groundwater resources inventory of Zambia (Chenov 1978).

The main objectives of the analysis can be summarised as follows:

- to determine hydraulic parameters such as specific capacity, transmissivity, permeability and the yield of boreholes,
- to identify the distribution of hydraulic characteristics of aquifers and aquitards in the study area,
- to categorize the potential of aquifers and aquitards in the Mwembeshi and Chongwe catchments for hydrogeological mapping,
- to provide important input for the hydrogeological modelling of the Lusaka groundwater systems and the determination of their potential and sustainable yields,
- to identify additional hydraulic information required.

## 2. INVESTIGATION AREA

The area of main interest is defined by the margins of the planned hydrogeological map at scale 1:250,000. This area comprises the catchments of the Chongwe and Mwembeshi rivers and catchments of smaller tributaries to the Kafue Flats and the Kafue Gorge such as the Chilongolo and Funswe streams. Pump testing data from outside these areas were included in the analysis if the geology encountered was considered similar to the geology within the mapping area. The analysed data consequently included hydraulic tests of boreholes located in the whole of Lusaka Province and large portions of Central Province, including Chibombo, Kapiri Mposhi, Kabwe districts as well as the eastern parts of Mumbwa and the western parts of Mkushi districts.

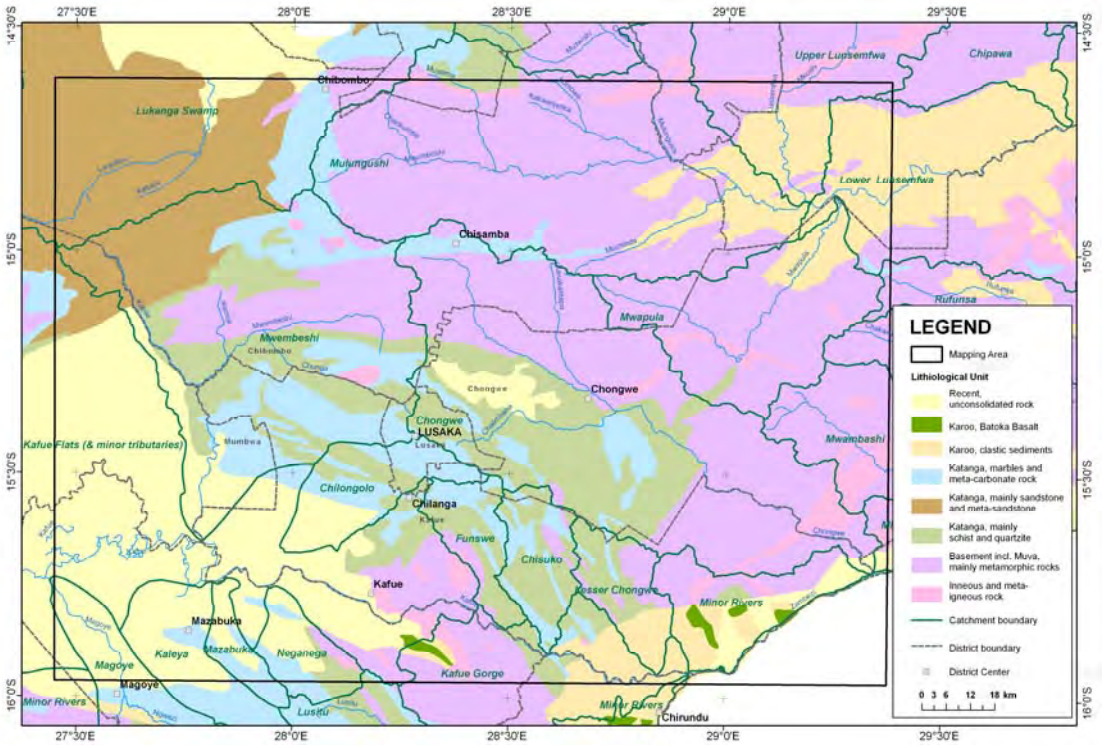


Figure 1 Simplified geology of study area

The Kafue Flats in the southwest are covered by thick deposits of unconsolidated rock (Figure 1). Clastic sediments of the Karoo Supergroup with minor occurrences of basalt are exposed in the northeast in the Lower Lunsemfwa valley and the southeast on the Zambezi valley. The Katanga Supergroup is represented by clastic sedimentary and meta-sedimentary deposits in the northwest (Kawena Formation) and schists, quartzites and metamorphic psammite and pelites in the central and southern parts of the mapping area (Chunga and Cheta formations). Of major interest to this study from a hydrogeological point of view are the carbonate rocks forming the Lusaka groundwater systems comprising the marbles of the so-called Lusaka Dolomite Formation and the adjacent Cheta limestones. Other occurrences of metacarbonate rocks can be found in the Chisamba and Chibombo areas (Nyama Formation). Most of the remaining areas are covered by basement rocks of Precambrian age that are mainly composed of gneiss, granite-gneiss and schist.

## 3. DATA SOURCES

Documented pumping test data could be obtained from the following sources:

1. Project reports for rural water supply development during the early 1990s funded by the Japanese Government for boreholes in Lusaka Province (Japan Techno Co. Ltd 1994a and 1995a) and Central Province (Japan Techno Co. Ltd 1994b, 1995b),
2. Tests conducted in existing exploration boreholes that were drilled during the late 1970s and pump-tested under the North-West Lusaka Water Project (Gibb Ltd. 1999a),
3. Data provided by the Lusaka Water and Sewerage Company (LWSC) on water supply wells drilled and developed after 1999 (Gibb Ltd 1999b, 1999c, 2000, 2002a-m),
4. Report on drilling and pump testing of five exploration boreholes in the Lusaka South area, i.e. the proposed Multi-Facility Economic Zone (Oriental Consultants Co. Ltd. & Yachiyo Engineering Co. Ltd. 2008),
5. Previously unpublished pumping test data of boreholes drilled after 2005 under the Department of Water Affairs (DWA),
6. Unpublished pump testing data for twelve recently completed boreholes in Kabwe provided by JBG Gauff Engineers.

# 4. METHODOLOGY

## 4.1. PUMPING TEST ANALYSIS

**Step tests** also referred to as *well performance tests* were analysed by using the methods of Hantush & Bierschenk (Bierschenk 1963) and Eden & Hazel (1973). Step tests are applied to determine the yield $Q$ and efficiency $E$ of a well. In addition, both methods can be used to determine the nonlinear (turbulent) well-loss coefficient $C$ in Jacob's well-loss equation (Jacob 1947) given as:

$$s_w = B\,Q + C\,Q^2$$

where $s_w$ is the total drawdown in the pumped well, $Q$ is the applied pumping rate, and $B$ is the linear (laminar) head-loss coefficient.

The Eden-Hazel method was additionally applied as it belongs - unlike the Hantush-Bierschenk approach - to the non-equilibrium methods for step-test analysis. This implies that there is no need to estimate the final drawdown for each step and, consequently, it is less crucial that the water levels reach a state of equilibrium at the end of each step. Furthermore, the method is suitable to estimate aquifer transmissivity for homogeneous confined aquifers. A useful summary of both methods is given in Clark (1977) and Krusemann & de Ridder (1991).

**Aquifer tests** also referred to as *constant-discharge tests* were evaluated by fitting analytical solutions for pumping tests to measured data (e.g. Krusemann & de Ridder 1991). Diagnostic plots were used to identify aquifer type (e.g. confined, unconfined), aquifer boundaries and type of flow field (e.g. radial, linear) around the pumped well. Methods applied include solutions for confined and homogeneous aquifers by Theis (1935) and Cooper & Jacob (1946) and for leaky aquifers by Hantush (1961a, b). Single-fracture solutions were also considered during the analysis.

Specific capacity $q$ was calculated from reported pumping rates and dynamic water levels. Aquifer tests were analysed to determine transmissivity $T$ and hydraulic conductivity $K$. Reliable values of storage coefficients $S$ can only be gained from multi-well (piezometer) tests. Values for transmissivity obtained from aquifer tests were compared to and assessed against results from the Eden-Hazel analysis where available.

Table 1 Rating scheme applied to rank the quality of test analysis

| Rate | Description |
|---|---|
| 1 | Good |
| 2 | Fair |
| 2-3 | Questionable |
| 3 | Poor |
| 4 | Unreliable |

Step tests were analysed using the software StepMaster V 2.1 whereas AqteSolv® V4.5 was used for aquifer test analysis.

Poor quality of measured data or complex hydrogeological situations not taken into account by the simplified analytical solutions could result in a poor match between measured data and analytical drawdown curves. The rating scheme described in Table 1 was therefore applied in order to distinguish between good and less reliable analysis results. Poor and unreliable results were discarded and not considered in the statistical analysis of hydraulic parameters.

### 4.2. AQUIFER LITHOLOGICAL GROUPS

Following the approach developed for mapping aquifer systems in Southern Province (Bäumle et al. 2007) major aquifer systems were identified by differentiating between lithological groups and their regional distribution. Geological and lithological information was obtained from the geological map series at scale 1:100,000 published by the Geological Survey Department that fully cover the mapping area as defined in Figure 1.

Table 2 summarises the eleven aquifers identified based on their lithological properties.

Table 2 Main aquifer systems based on lithology and occurrence on proposed map sheet 1:250,000

| No | System | Litho-stratigraphical description | Main occurrence | Coverage*) [%] |
|---|---|---|---|---|
| 1 | Acid to intermediate igneous rock | Granitic intrusions and volcanic and meta-volcanic rock | Various, e.g. Lusaka granite, Mpande Hills | 3.2 |
| 2 | Batoka Basalt & other basic igneous rock | Basalt rock of mainly Upper Karoo age | Not common in this area except in Zambezi valley | 0.3 |
| 3 | Gneiss & undifferentiated metamorphic rock | Predominantly gneiss and granitic gneiss with minor quartzite, schist, pelite and psammite within Basement and Muva Supergroup | Large areas of northern and eastern parts of study area, Mpande Hills in Kafue district | 38.5 |
| 4 | Schist, shale & slate | Schists of the Cheta and Chunga formations | Area south of Chongwe river, and in and around Lusaka (e.g. Chunga valley) | 13.8 |
| 5 | Quartzite | Quartzitic rocks of predominately Precambrian age | Various, Associated with metamorphic and metasedimentary Precambrian rocks | **) |
| 6 | Carbonate & calc-silicate rock | Mainly marbles and other calc-silicate rocks of the Katanga Supergroup | Lusaka Dolomite & Cheta Limestone near Lusaka, Nyama Fm in Chisanga and Chibombo areas, Luimba Fm in areas south of Chongwe | 9.9 |
| 7 | Mudstone (Karoo) | Karoo mudstone | Zambezi valley and in | 7.6**) |

| No | System | Litho-stratigraphical description | Main occurrence | Coverage*) [%] |
|---|---|---|---|---|
| 8 | Pre-Kalahari sand- and siltstone (mostly Karoo) | Karoo sand- and siltstone | the east of study area within the Upper Lunsemfwa valley | |
| 9 | Kalahari sandstone | Consolidated or semi-consolidated sandstone of the Kalahari Group | Not present | -- |
| 10 | Unconsolidated clastic sediments | Interbedded gravel, sand, silt and clay formed by alluvial deposits | Kafue Flats, area near Lusaka International Airport, valley bottoms | 17.8 |
| 11 | Precambrian sedimentary and metasedimentary clastic rocks | Sandstone and meta-sandstone of Pre-Karoo age, mainly Kawena Formation of Katanga Supergroup | Northwest of study area, i.e. Lukanga area | 8.9 |

**Notes:** *) given as percentage of mapping area **) Coverage cannot be determined; quartzites mainly occur within areas of aquifer categories 3 and 4. ***) Combined area coverage of systems no. 7 and 8

### 4.3. AQUIFER POTENTIAL CLASSIFICATION

The aquifer classification proposed by Struckmeyer & Margat (1995) was applied. The scheme distinguishes six categories according to the aquifer potential (productivity and lateral extension) and type of groundwater flow (intergranular or fissured). A description of each category (A to F) is given in Figure 2.

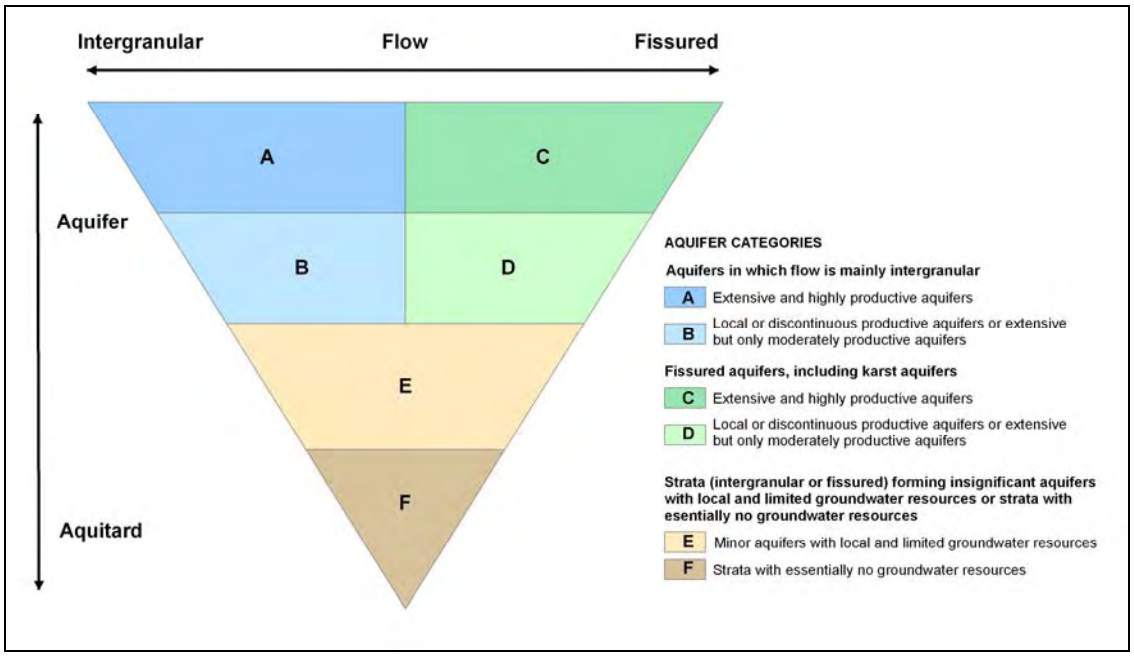


Figure 2 Aquifer classification system (modified after Struckmeyer & Margat, 1995)

An attempt was made in Table 3 to give practical examples for the possible use of the groundwater resources for each category. Roughly, the categories differentiate aquifers with “high”, “moderate”, “limited” and “essentially no” potential. Aquifers with a high potential (categories A and C) for example may permit withdrawals of regional importance such as supply to major towns or large-scale irrigation. Aquifers with limited potential (category E) could suffice for the supply of water to rural villages with a handpump. The table also provides characteristic values for specific capacity, transmissivity, permeability and approximate expected yield for each category. However, it has to be remembered that hydraulic parameters may vary widely, even in areas with relatively uniform lithology, but particularly in areas where groundwater flow is controlled by zones of intense fracturing and faulting.

Table 3 Hydraulic characterisation of the aquifer categories (from Bäumle et al. 1977, modified after Krásny, 1993, Struckmeyer & Margat, 1995)

| **Aquifer category** | **Specific capacity** *[L/s/m]* | **Trans-missivity** *[$m^2$/d]* | **Hydraulic Conductivity** [m/*d]* | **Very approx. expected yield** *[L/s]* | **Groundwater potential** |
|---|---|---|---|---|---|
| **A ,C** | > 1 | > 75 | > 3 | > 10 | High: Withdrawals of regional importance (supply to towns, irrigation) |
| **B, D** | 0.1 – 1 | 5 – 75 | 0.2 – 3 | 1 – 10 | Moderate: Withdrawals for local water supply (smaller communities, small-scale irrigation etc.) |
| **E** | 0.001 – 0.1 | 0.05 – 5 | 0.002 – 0.2 | 0.01 – 1 | Limited: Smaller withdrawals for local water supply (supply through handpump, private consumption) |
| **F** | < 0.001 | < 0.05 | < 0.002 | < 0.01 | Essentially none: Sources for local water supply are difficult to ensure |

# 5. HYDRAULIC TEST RESULTS

## 5.1. SUMMARY OF PUMPING TEST ANALYSIS

The study considered pumping tests at 174 boreholes, of which 129 are located in Lusaka Province and 45 in Central Province. The large majority of the pumping tests evaluated were conducted within or near the Lusaka City boundaries. In most cases a step test was carried out prior to the aquifer test. The number of aquifer tests and step tests considered totals 154 and 150, respectively. Most of the data recorded are of the single-well test type. Only in 10 cases, all located in the Lusaka City area, drawdown was also measured in adjacent observation wells.

A summary of the results of the analysis is given in Table 4 below. Examples for the analysis of a step test and an aquifer test are presented in **Annex 1** and **Annex 2**, respectively. Full analysis results are tabulated in **Annex 3** (step-tests) and **Annex 4** (aquifer tests).

The pumping test locations are shown in two maps of different scale provided in **Annex 5**.

In many cases it was difficult to fit measured data to analytical solutions without uncertainty. In a number of cases, the transmissivity could therefore not be determined from aquifer tests. This is expressed in a low rating applied to a number of tests. Only 14 aquifer tests and 10 step-tests were considered to provide “good” test results.

Some of the likely reasons for poor curve matching include:

- Complex hydrogeological situation; the hydraulic behaviour of fractured aquifers cannot be adequately described by simplified analytical approaches;
- Too little data; Piezometer readings were not available for the large majority of tests; hence more complex but potentially more adequate solutions for non-homogeneous aquifers could not be applied;
- Potentially unreliable data; in particular discharge measurements appeared suspicious in some of the step tests;
- High well losses; the aquifer drawdown was often “masked” by high non-linear well losses in the well making an analysis more difficult and less reliable.

Table 4 Results of pumping test evaluation

| WP-No. | Borehole | Longitude | Latitude | Type of test | Duration [h] | Date of test | SWL [m b.g.s.] | DWL [m b.g.s.] | RWL [m b.g.s.] | Q [L/s] | q [L/s/m] | T [$m^2/d$] | $Q_{rec}$ [L/s] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1010124 | Hon Grey Zulu | 28.24192 | -14.81439 | 1 | 6 | 22.02.2009 | 12.00 | 12.29 | 12.23 | 2 | 6.90 | 354 | 2 |
| 1010717 | Lubinga BH (K-1) | 28.075 | -14.62722 | 5 | 8 | 22.02.1995 | 6.01 | 12.15 | 6.13 | 0.57 | 0.093 | 11 | 0.6 |
| 1010804 | Kapopo V (K-19) | 27.82944 | -14.89167 | 5 | 8 | 19.02.1995 | 12.47 | 20.04 | 12.74 | 0.62 | 0.082 | 19 | 0.65 |
| 1010831 | Mingochi V (K-16) | 28.51917 | -14.56889 | 5 | 8 | 24.02.1995 | 8.22 | 33.28 | 8.25 | 0.135 | 0.005 | 0.39 | 0.1 |
| 1010832 | Mposa V (K-17) | 27.49917 | -14.58667 | 5 | 8 | 13.03.1995 | 16.75 | 17.67 | 16.79 | 1.45 | 1.58 | 142 | 1.5 |
| 1010840 | Musopelo V (K-18) | 27.7625 | -14.8875 | 5 | 8 | 16.02.1995 | 7.06 | 13.14 | 7.18 | 0.32 | 0.053 | 7.9 | 0.3 |
| 1010843 | Mutangama V (K-4) | 27.76028 | -14.89 | 5 | 8 | 18.02.1995 | 12.60 | 15.78 | 12.96 | 1.58 | 0.497 |  | 1.6 |
| 1010845 | Mwanje V (K-15) | 28.59306 | -14.53722 | 5 | 8 | 26.02.1995 | 11.77 | 29.52 | 11.97 | 0.135 | 0.008 | 0.3 | 0.12 |
| 1020051 | Kabwe (Mukobeko) K-6 | 28.40249 | -14.42593 | 5 | 80 | 30.11.2007 | 6.00 | 9.30 | 6.01 | 54.9 | 16.6 | 3032 | 50 |
| 1020052 | Kabwe (Mukobeko) K-1 | 28.4012 | -14.42691 | 5 | 24 | 25.10.2007 | 5.07 | 8.55 | 5.08 | 34.1 | 9.80 | 1400 | 40 |
| 1020053 | Kabwe (Mukobeko) K-2 | 28.40211 | -14.42398 | 5 | 83 | 11.11.2007 | 6.96 | 29.34 | 6.97 | 45.5 | 2.03 | 800 | 30 |
| 1020056 | Kabwe (Mukobeko) K-5 | 28.40102 | -14.42539 | 5 | 80 | 04.11.2007 | 5.50 | 7.79 | 5.19 | 58.4 | 25.5 | 2870 | 60 |
| 1020057 | Kabwe (Mukobeko) K-3 | 28.40598 | -14.42773 | 5 | 80 | 19.11.2007 | 5.18 | 5.98 | 5.19 | 65.5 | 81.9 | 3970 | 65 |
| 1020062 | Kabwe (Kalulu) K-7 | 28.37 | -14.41 | 5 | 75 | 27.12.2007 | 10.76 | 11.52 | 10.76 | 58.4 | 76.8 |  | 60 |
| 1020063 | Kabwe (Kalulu) K-8 | 28.37 | -14.41 | 5 | 75 | 29.12.2007 | 10.90 | 34.68 | 10.91 | 28 | 1.18 | 94 | 20 |
| 1020064 | Kabwe (Kalulu) K-9 | n/a | n/a | 5 | 72.7 | 22.12.2007 | 11.42 | 12.32 | 11.42 | 68.3 | 75.9 | 7792 | 70 |
| 1020065 | Kabwe (Kalulu) K-10 | n/a | n/a | 5 | 75 | 04.12.2007 | 11.70 | 12.80 | 11.70 | 62.7 | 57.0 | 7400 | 65 |
| 1020066 | Kabwe (Kalulu) K-11 | n/a | n/a | 5 | 74 | 29.11.2007 | 11.30 | 13.64 | 11.30 | 52.4 | 22.4 | 3656 | 52 |
| 1020067 | Kabwe (Kalulu) K-12 | n/a | n/a | 5 | 74 | 17.12.2007 | 11.13 | 12.50 | 11.13 | 60.1 | 43.9 | 3660 | 60 |
| 1020068 | Kabwe (Mukobeko) K-4 | 28.4 | -14.42 | 5 | 23.7 | 24.11.2007 | 5.88 | 13.68 | 5.89 | 62.7 | 8.04 | 1934 | 40 |
| 1030050 | Makafu P Sch (MK-7) | 28.74611 | -14.2125 | 5 | 8 | 14.05.1994 | 10.40 | 53.73 | 25.50 | 0.11 | 0.003 | 0.14 | 0.1 |
| 1030051 | St Paul Sch (MK-19) | 28.63333 | -14.36722 | 5 | 8 | 29.04.1993 | 4.82 | 11.40 | 5.08 | 1.07 | 0.163 | 8.6 | 1 |
| 1030529 | Mukonchi P Sch (MK-10B) | 28.81767 | -14.2695 | 5 | 8 | 17.05.1994 | 4.81 | 18.71 | 4.87 | 0.2 | 0.014 | 1 | 0.3 |
| 1040004 | Chilimo (MK-24) | 29.55972 | -14.50694 | 5 | 8 | 04.02.1994 | 9.80 | 18.32 | 9.85 | 0.31 | 0.036 | 1.9 | 0.3 |
| 1040025 | Old Mkushi Boma (MK-18) | 29.36528 | -14.36528 | 5 | 8 | 01.04.1994 | 10.62 | 34.30 | 15.57 | 0.13 | 0.005 | 0.21 | 0.1 |
| 1050001 | Chaam-Babulele (MB-11) | 27.42556 | -14.91556 | 5 | 8 | 13.05.1994 | 19.52 | 31.61 | 20.95 | 0.21 | 0.017 | 0.76 | 0.3 |
| 1050002 | Chibuluma V (MB-13) | 26.87556 | -15.14944 | 5 | 8 | 09.08.1994 | 15.89 | 25.53 | 16.81 | 2.05 | 0.213 | 23 | 1.6 |
| 1050003 | Chiwena RHC (MB-4) | 27.26722 | -14.99667 | 5 | 8 | 17.05.1994 | 31.86 | 33.21 | 33.21 | 0.47 | 0.348 | 10 | 0.8 |
| 1050004 | Chooba V (MB-8) | 27.27167 | -15.20056 | 5 | 8 | 15.04.1994 | 9.90 | 10.45 | 10.00 | 0.51 | 0.927 | 121 | 1.4 |
| 1050005 | Katala BH 2 (MB-3) | 27.04944 | -14.99889 | 5 | 7 | 26.04.1994 | 13.59 | 16.33 | 13.62 | 0.52 | 0.190 | 4.9 | 0.5 |
| 1050006 | Leya V (MB-16) | 27.22306 | -15.16833 | 5 | 8 | 24.09.1994 | 13.43 | 19.58 | 13.91 | 1.73 | 0.281 | 50 | 1.6 |
| 1050007 | Luili P Sch (MB-6) | 27.18917 | -15.16389 | 5 | 8 | 24.04.1994 | 46.95 | 48.75 | 46.87 | 0.31 | 0.172 | 4.3 | 0.25 |
| 1050008 | Lutale P Sch (MB-15) | 26.87789 | -15.0855 | 5 | 8 | 06.08.1994 | 12.81 | 29.39 | 12.89 | 0.18 | 0.011 |  | 0.18 |
| 1050009 | Malende V & Depot (MB-10) | 27.49028 | -15.15056 | 5 | 8 | 29.09.1994 | 18.54 | 20.13 | 18.94 | 1.54 | 0.969 | 86 | 1.4 |

Table 4 (continued)

| WP-No. | Borehole | Longitude | Latitude | Type of test | Duration [h] | Date of test | SWL [m b.g.s.] | DWL [m b.g.s.] | RWL [m b.g.s.] | Q [L/s] | q [L/s/m] | T [$m^2/d$] | $Q_{rec}$ [L/s] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1050010 | Mayuwa V (MB-12) | 27.15556 | -15.10306 | 5 | 8 | 13.08.1994 | 9.00 | 16.79 | 9.17 | 0.54 | 0.069 | 2.2 | 0.5 |
| 1050011 | Mukulaikwa V (MB-7) | 27.74608 | -15.28586 | 5 | 8 | 10.10.1994 | 8.30 | 9.33 | 8.38 | 1.4 | 1.36 | 85 | 1.1 |
| 1050013 | Mulungushi V (MB-9) | 27.19639 | -15.00639 | 5 | 9 | 10.02.1996 | 22.49 | 26.50 | 23.32 | 0.49 | 0.122 | | 0.5 |
| 1050016 | Nalusanga P Sch 1 (MB-1) | 26.71167 | -14.97111 | 5 | 8 | 09.04.1994 | 8.48 | 15.09 | 9.29 | 0.34 | 0.051 | 2.7 | 0.3 |
| 1050017 | Nambwa P Sch (MB-2) | 27.33167 | -14.97 | 5 | 8 | 19.05.1994 | 30.30 | 34.67 | 30.63 | 0.99 | 0.227 | 5.5 | 1 |
| 1050017 | Nambwa P Sch (MB-5) | 27.33167 | -14.97 | 5 | 8 | 15.05.1994 | 16.80 | 23.31 | 17.58 | 0.29 | 0.045 | 6 | 0.4 |
| 1050018 | Pamangoma V (MB-18) | 27.63556 | -15.38972 | 5 | 8 | 16.10.1994 | 19.00 | 20.97 | 19.19 | 0.93 | 0.472 | 60 | 2.5 |
| 1050019 | Shimbwanga V (MB-14) | 26.91211 | -15.119 | 5 | 8 | 11.08.1994 | 21.71 | 24.02 | 22.10 | 1.04 | 0.450 | 31 | 1 |
| 1050020 | Shindaile V (MB-19) | 27.35714 | -15.11097 | 5 | 8 | 26.09.1994 | 15.20 | 29.19 | 16.07 | 0.26 | 0.019 | 1 | 0.2 |
| 1050022 | Nalubanda Sch (MB-20) | 27.0762 | -15.4084 | 5 | 8 | 16.08.1994 | 17.81 | 28.48 | 17.96 | 1.15 | 0.108 | 16 | 1 |
| 1050027 | Mulela (MB-17) | 27.65167 | -15.22806 | 5 | 8 | 09.10.1994 | 9.06 | 17.29 | 10.01 | 0.4 | 0.049 | 3.2 | 0.52 |
| 5010027 | St. Luke's Hospital Mpanshya | 29.94222 | -15.04417 | 5 | 8 | 26.08.1993 | 10.13 | 13.68 | 10.15 | 1.11 | 0.313 | 7.2 | 1.5 |
| 5010052 | Rufunsa P Sch | 29.58278 | -15.12556 | 5 | 8 | 10.08.1993 | 11.18 | 22.80 | 11.72 | 0.24 | 0.021 | 1.7 | 0.2 |
| 5010057 | Chinkuli P Sch | 28.42111 | -15.32306 | 5 | 8 | 14.09.1983 | 3.14 | 21.64 | 6.05 | 0.15 | 0.008 | 0.24 | 0.14 |
| 5010063 | Chiwala V | 29.62333 | -15.14556 | 5 | 8 | 20.08.1993 | 10.99 | 22.15 | 12.20 | 0.62 | 0.056 | 3.2 | 0.5 |
| 5010085 | Mukunya V | 28.41222 | -15.38056 | 5 | 8 | 19.08.1993 | 3.08 | 22.04 | 3.41 | 0.27 | 0.014 | 0.57 | 0.22 |
| 5010086 | Mupwaya V | 29.66111 | -15.12278 | 5 | 8 | 14.08.1993 | 9.83 | 19.82 | 11.85 | 1.04 | 0.104 | 4.2 | 1.1 |
| 5010093 | Unda Unda Palace | 29.00056 | -15.31167 | 5 | 8 | 06.08.1993 | 4.80 | 16.82 | 6.86 | 0.7 | 0.058 | 4 | 0.9 |
| 5010098 | NRDC C13 | 28.37795 | -15.34047 | 4 | 8.0 | 25.07.2001 | 1.70 | 12.83 | | 6.0 | 0.539 | | 4 |
| 5010099 | NRDC 2 (B10/30N) | 28.3799 | -15.34258 | 5 | 72 | 19.04.2001 | 1.39 | 16.32 | 3.01 | 24 | 1.608 | 720 | 15 |
| 5010122 | Avondale 1 | 28.40944 | -15.37867 | 5 | 48 | 23.07.2001 | 1.32 | 8.04 | 3.20 | 27.8 | 4.14 | 341 | 26 |
| 5010123 | Avondale 2 F12-33W | 28.41161 | -15.37864 | 5 | 70 | 13.04.2001 | 1.64 | 11.56 | 1.70 | 22 | 2.22 | 172 | 22 |
| 5010124 | Avondale 3 F12-0/70 | 28.41138 | -15.37926 | 5 | 60 | 28.06.2001 | 2.61 | 17.61 | 2.70 | 6.1 | 0.407 | 192 | 6 |
| 5010127 | Marian Shrine | 28.40898 | -15.37332 | 5 | 68 | 25.02.2001 | 1.22 | 8.58 | 1.37 | 10 | 1.36 | 73 | 6 |
| 5010130 | NRDC 3 (C14-4/65) | 28.3774 | -15.34002 | 5 | 72 | 29.09.2001 | 4.85 | 29.65 | 6.26 | 14.5 | 0.585 | 161 | 14 |
| 5010131 | NRDC 4 D13/50W | 28.37802 | -15.33947 | 5 | 37 | 01.07.2001 | 1.97 | 21.97 | 2.41 | 13.9 | 0.695 | 81 | 16 |
| 5010164 | Mr.C.Holmes | 28.49162 | -15.32385 | 1 | 6.3 | 18.06.2009 | 8.00 | 12.80 | 8.00 | 3.5 | 0.729 | 17 | 3.5 |
| 5010168 | NRDC Ranch B6-4 | 28.38381 | -15.34489 | 5 | 48 | 22.09.2001 | 1.97 | 24.16 | 1.97 | 15.3 | 0.689 | 133 | 5 |
| 5010176 | Luangwa Bridge | 30.1875 | -14.96528 | 5 | 8 | 25.11.1993 | 25.16 | 38.67 | 31.70 | 0.15 | 0.011 | 3.4 | 0.15 |
| 5010177 | Soweto | 30.175 | -14.95833 | 5 | 8 | 26.11.1993 | 31.90 | 38.32 | 33.29 | 0.77 | 0.120 | 18 | 1.5 |
| 5010179 | Hon Namugala | 28.36129 | -15.18008 | 1 | 5 | 22.04.2008 | 9.38 | 46.40 | 9.39 | 1.5 | 0.041 | | 1.5 |
| 5020210 | MFEZ BH-J1 | 28.40875 | -15.52153 | 5 | 21.2 | 04.07.2008 | 12.64 | 16.72 | 12.81 | 3.92 | 0.961 | 38 | 4 |
| 5020211 | MFEZ BH-J2 | 28.42853 | -15.50908 | 5 | 21.5 | 04.07.2008 | 20.51 | 31.53 | 20.61 | 2.5 | 0.227 | 19.9 | 2 |
| 5020212 | MFEZ BH-J3 | 28.3945 | -15.54139 | 5 | 21.2 | 24.07.2008 | 4.10 | 6.53 | 4.11 | 10.3 | 4.24 | 316 | 10 |

Table 4 (continued)

| WP-No. | Borehole | Longitude | Latitude | Type of test | Duration [h] | Date of test | SWL [m b.g.s.] | DWL [m b.g.s.] | RWL [m b.g.s.] | Q [L/s] | q [L/s/m] | T [$m^2$/d] | $Q_{rec}$ [L/s] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5020213 | MFEZ BH-J4 | 28.37932 | -15.51232 | 5 | 21.2 | 18.07.2008 | 19.00 | 21.69 | 19.08 | 8.5 | 3.16 | 208 | 10 |
| 5020214 | MFEZ BH-J5 | 28.43592 | -15.53169 | 5 | 21.5 | 08.07.2008 | 6.98 | 13.75 | 6.99 | 8.5 | 1.26 | 60 | 8 |
| 5020216 | Chanyanya Harbour 2 | 28.008 | -15.6847 | 5 | 6 | 11.01.1995 | 3.60 | 12.50 | 5.56 | 1.84 | 0.207 | 23 | 1.8 |
| 5020218 | Chanyanya Harbour 1 | 28.00806 | -15.68472 | 5 | 6 | 10.01.1995 | 4.30 | 8.48 | 4.66 | 0.86 | 0.206 | 34 | 0.9 |
| 5020219 | Chapanga Village | 29.08694 | -15.83806 | 5 | 6 | 12.01.1995 | 22.85 | 31.09 | 23.00 | 1.23 | 0.149 | 5.5 | 1.2 |
| 5020220 | Chibwalu Village | 28.3525 | -15.56972 | 5 | 8 | 13.12.1994 | 13.25 | 16.29 | 13.32 | 0.93 | 0.306 | 152 | 0.9 |
| 5020223 | Chikupi P Sch | 28.09806 | -15.64111 | 5 | 8 | 07.01.1995 | 5.90 | 16.17 | 9.77 | 1.63 | 0.159 | 56 | 1 |
| 5020224 | Chilimanga Village (LR-46) | 29.03083 | -15.9075 | 5 | 7.7 | 01.02.1995 | 13.99 | 36.08 | 14.18 | 2.53 | 0.115 |  | 2.5 |
| 5020225 | Chimbwe Village | 28.13111 | -15.6775 | 5 | 8 | 23.12.1994 | 2.92 | 6.72 | 2.94 | 1.31 | 0.345 | 465 | 1.5 |
| 5020226 | Chimusambo Village | 29.12139 | -15.82278 | 5 | 7.8 | 17.12.1994 | 23.80 | 35.18 | 24.33 | 1.45 | 0.127 | 13 | 1.4 |
| 5020227 | Chimusebo Village | 28.11889 | -15.72444 | 5 | 8 | 20.01.1995 | 11.49 | 18.66 | 11.75 | 0.57 | 0.080 | 8.4 | 0.5 |
| 5020232 | Chisompolo Village | 28.37111 | -15.55611 | 5 | 8 | 08.12.1994 | 5.39 | 9.57 | 5.40 | 0.49 | 0.117 | 7.2 | 0.5 |
| 5020236 | Chombe Village | 28.13417 | -15.70917 | 5 | 8 | 17.12.1994 | 9.00 | 15.01 | 9.03 | 1.19 | 0.198 | 8.1 | 1 |
| 5020237 | Gota-Gota Village | 28.82611 | -15.94222 | 5 | 8 | 12.12.1994 | 11.60 | 15.11 | 12.30 | 2.1 | 0.598 | 112 | 2.1 |
| 5020238 | Gunduza Village | 29.00278 | -15.90833 | 5 | 8 | 22.01.1995 | 19.23 | 22.45 | 19.53 | 0.65 | 0.202 | 59 | 0.6 |
| 5020239 | Kabwadu Village | 28.99222 | -15.91528 | 5 | 10 | 26.01.1995 | 19.60 | 28.01 | 20.10 | 0.56 | 0.067 | 7.5 | 0.6 |
| 5020241 | Kabweza P Sch | 28.16611 | -15.665 | 5 | 8 | 08.01.1995 | 9.71 | 10.70 | 9.77 | 1.63 | 1.65 | 285 | 1.5 |
| 5020242 | Kakote Village | 28.40389 | -15.56139 | 5 | 8 | 01.12.1994 | 5.87 | 11.63 | 5.87 | 2.52 | 0.438 | 138 | 2.5 |
| 5020243 | Kalimina Village | 28.28722 | -15.63528 | 5 | 8 | 30.01.1995 | 28.28 | 31.02 | 29.16 | 0.34 | 0.124 | 5.9 | 0.3 |
| 5020244 | Kalundu B Sch | 28.01722 | -15.39833 | 5 | 8 | 01.07.1993 | 3.56 | 4.96 | 3.65 | 3.5 | 2.50 | 417 | 2.5 |
| 5020246 | Kandoko Village | 29.05611 | -15.85722 | 5 | 8 | 19.01.1995 | 18.72 | 26.01 | 19.50 | 0.34 | 0.047 | 2.6 | 0.4 |
| 5020253 | Kusemwa V | 29.0775 | -15.84361 | 5 | 8 | 14.01.1995 | 24.68 | 31.22 | 24.91 | 1.04 | 0.159 | 3.4 | 1 |
| 5020255 | Makanya Village | 28.93944 | -15.93944 | 5 | 8 | 28.01.1995 | 7.52 | 16.54 | 7.95 | 2.85 | 0.316 | 49 | 2.8 |
| 5020257 | Maunda V | 29.05194 | -15.87056 | 5 | 8 | 19.01.1995 | 14.14 | 26.62 | 15.76 | 0.7 | 0.056 | 4.2 | 0.7 |
| 5020258 | Muchingamire Village | 29.04472 | -15.88583 | 5 | 6 | 20.01.1995 | 15.98 | 19.18 | 15.98 | 2.89 | 0.903 |  | 2.8 |
| 5020259 | Mudzama Village | 28.9922 | -15.91526 | 5 | 8 | 24.01.1995 | 20.32 | 27.37 | 20.77 | 0.82 | 0.116 | 11 | 0.8 |
| 5020260 | Mugurameno Village | 29.11139 | -15.83111 | 5 | 7 | 19.12.1994 | 17.01 | 32.91 | 17.75 | 1 | 0.063 | 6 | 1 |
| 5020266 | Mushongentende Village | 29.12861 | -15.82194 | 5 | 7.7 | 15.12.1999 | 31.50 | 40.40 | 32.50 | 0.27 |  | 3.5 | 0.09 |
| 5020268 | Mwembeshi P Sch | 27.81722 | -15.37 | 5 | 8 | 19.06.1993 | 1.83 | 31.95 | 1.89 | 0.42 |  | 1.3 | 0.2 |
| 5020274 | Kafue Nutrition Center | 28.24861 | -15.81722 | 5 | 8 | 22.01.1995 | 5.60 | 22.04 | 6.00 | 0.74 | 0.045 | 1.6 | 0.7 |
| 5020277 | Shachinyama Village | 28.10306 | -15.72889 | 5 | 8 | 16.01.1995 | 4.65 | 20.45 | 5.31 | 0.38 | 0.024 | 2.6 | 0.4 |
| 5020279 | Shampule Village B | 27.98917 | -15.42361 | 5 | 8 | 30.01.1995 | 14.95 | 15.99 | 15.25 | 2.05 | 1.971 | 94 | 2 |
| 5020280 | Shamunyemba Village | 28.1025 | -15.71806 | 5 | 8 | 18.01.1995 | 9.14 | 18.37 | 9.61 | 0.18 | 0.019 | 1.2 | 0.15 |
| 5020285 | Shibeleka Village | 28.36861 | -15.56778 | 5 | 8 | 10.12.1994 | 7.39 | 7.75 | 7.43 | 2.65 | 7.36 | 563 | 3 |

Table 4 (continued)

| WP-No. | Borehole | Longitude | Latitude | Type of test | Duration [h] | Date of test | SWL [m b.g.s.] | DWL [m b.g.s.] | RWL [m b.g.s.] | Q [L/s] | q [L/s/m] | T [$m^2$/d] | $Q_{rec}$ [L/s] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5020286 | Shikabeta Village | 28.35861 | -15.575 | 5 | 8 | 11.12.1994 | 18.08 | 20.97 | 18.59 | 1.59 | 0.550 | 98 | 2.5 |
| 5020288 | Shimabala Village | 28.24333 | -15.67472 | 5 | 8 | 25.01.1995 | 8.91 | 22.78 | 9.04 | 0.34 | 0.025 | 0.6 | 0.3 |
| 5020291 | Tandeo Village | 28.25667 | -15.64278 | 5 | 8 | 26.01.1995 | 10.62 | 28.20 | 10.69 | 0.15 | 0.009 | 0.5 | 0.15 |
| 5020318 | U-4 | 28.18591 | -15.45468 | 5 | 72 | 28.04.1999 | 1.34 | 9.98 | 1.48 | 36 | 4.17 | 620 | 40 |
| 5020319 | U-5 | 28.14362 | -15.4265 | 4 | 3.3 | 01.11.1998 | 8.24 | 17.90 |  | 21.2 | 2.20 |  | 12 |
| 5020321 | U-7 | 28.15072 | -15.36842 | 4 | 2.5 | 13.11.1998 | 7.18 | 29.44 |  | 17.8 | 0.800 |  | 12 |
| 5020325 | U-8D | 28.19247 | -15.51796 | 5 | 48 | 18.05.1999 | 1.19 | 4.18 | 1.22 | 46 | 15.4 | 3283 | 46 |
| 5020328 | U-11B | 28.03605 | -15.38182 | 4 | 4.0 | 08.10.1998 | 32.35 | 37.55 |  | 26.9 | 5.17 |  | 10 |
| 5020330 | U-13 | 27.97709 | -15.36866 | 4 | 4.7 | 18.10.1998 | 8.48 | 10.83 |  | 28.3 | 12.0 |  | 20 |
| 5020331 | U-14 | 28.02082 | -15.3532 | 4 | 2.0 | 16.10.1998 | 9.50 | 11.45 |  | 11.2 | 5.74 |  | 10 |
| 5020334 | U-15C | 28.0376 | -15.36221 | 4 | 3.3 | 15.10.1998 | 5.97 | 7.19 |  | 11.8 | 9.67 |  | 12 |
| 5020350 | U-20F | 28.14848 | -15.39832 | 5 | 66.3 | 18.12.1998 | 2.66 | 12.28 | 2.82 | 28.1 | 2.92 | 2000 | 25 |
| 5020352 | U-21B | 28.12061 | -15.3878 | 5 | 72 | 20.06.1999 | 1.52 | 3.59 | 1.61 | 53 | 25.6 | 1758 | 50 |
| 5020733 | Mr Kimena | 28.22448 | -15.51596 | 1 | 6 | 30.04.2009 | 3.84 | 4.13 | 3.84 | 4 | 13.8 |  | 4 |
| 5020777 | Mugurameno School | 29.10944 | -15.83139 | 5 | 6.7 | 21.12.1994 | 19.02 | 30.59 | 19.30 | 1.07 | 0.092 | 4.3 | 1 |
| 5020778 | Mr Chuunga (Chilanga) | 28.20168 | -15.38945 | 1 | 4.3 | 26.02.2009 | 6.10 | 42.16 | 36.75 | 0.5 | 0.014 |  | 0.5 |
| 5020779 | Mrs. Mutanga Dorothy | 28.31634 | -15.51551 | 1 | 3 | 16.01.2010 | 17.30 | 17.70 | 17.30 | 2.5 | 6.25 | 156 | 3 |
| 5020782 | Disciple's Int. Church | 28.16496 | -15.73878 | 1 | 5.3 | 16.09.2009 | 3.80 | 17.45 | 3.80 | 2 | 0.147 | 5.8 | 2 |
| 5020809 | Mpamba P Sch | 27.7972 | -15.316 | 5 | 8 | 25.06.1993 | 10.66 | 18.43 | 11.51 | 1.94 | 0.250 | 17.3 | 2 |
| 5030001 | Balakusau | 30.18278 | -15.08194 | 5 | 6 | 26.09.1993 | 5.63 | 17.02 | 5.71 | 0.34 | 0.030 | 1.5 | 0.35 |
| 5030003 | Chilimanga (LG-10) | 30.18278 | -15.16528 | 5 | 7 | 14.11.1993 | 9.77 | 12.03 | 9.97 | 1.73 | 0.766 | 100 | 1.7 |
| 5030004 | Chirukusya V | 30.24278 | -15.24722 | 5 | 8 | 16.11.1993 | 5.84 | 14.62 | 6.45 | 0.32 | 0.036 | 4.2 | 0.3 |
| 5030005 | Chiwera | 30.19417 | -15.08222 | 5 | 8 | 21.11.1993 | 6.89 | 9.44 | 6.94 | 1.31 | 0.514 | 84 | 1.5 |
| 5030009 | Kasakazya | 30.30167 | -15.29361 | 5 | 8 | 19.11.1993 | 14.85 | 21.35 | 16.00 | 1.45 | 0.223 | 8.9 | 1.2 |
| 5030010 | Katondowe Mission Hospital | 30.23611 | -15.24583 | 5 | 8 | 17.11.1993 | 6.69 | 7.43 | 6.72 | 2.83 | 3.82 | 875 | 3 |
| 5030011 | Kaunga School Kanabenti | 30.17639 | -15.1 | 5 | 1.5 | 21.09.1993 | 7.41 | 29.84 | 7.50 | 1.23 | 0.055 | 144 | 1.2 |
| 5030015 | Manuelle | 30.225 | -15.03333 | 1 | 8 | 23.11.1993 | 7.32 | 26.37 | 7.69 | 0.27 | 0.014 |  | 0.2 |
| 5030016 | Mkando | 30.17083 | -15.08056 | 5 | 7.5 | 09.11.1993 | 5.25 | 18.37 | 5.27 | 0.17 | 0.013 |  | 0.15 |
| 5030018 | Mpona | 30.18611 | -15.08472 | 5 | 8 | 12.11.1993 | 6.78 | 11.86 | 6.89 | 0.8 | 0.158 |  | 1 |
| 5030020 | Shipopa | 30.16806 | -15.09722 | 5 | 8 | 14.11.1993 | 5.89 | 16.95 | 5.94 | 0.28 | 0.025 | 1.5 | 0.3 |
| 5040056 | UNZA-4 Lawn | 28.32794 | -15.38931 | 5 | 6 | 21.11.2007 | 4.49 | 18.96 | 4.75 | 1.25 | 0.086 | 3.4 | 1.2 |
| 5040165 | Mr Kawatu | 28.24047 | -15.48736 | 1 | 6 | 08.10.2009 | 4.70 | 9.84 | 4.70 | 2.5 | 0.486 |  | 2.5 |
| 5040165 | Mr Chuunga John | 28.24047 | -15.48736 | 1 | 8 | 28.03.2009 | 5.90 | 6.33 | 5.90 | 0.5 | 1.16 | 74 | 0.5 |
| 5040395 | Buckley 2 | 28.23284 | -15.53538 | 5 | 24 | 28.08.2001 | 15.65 | 15.65 | 16.06 | 4 |  | 57 | 4 |

Table 4 (continued)

| WP-No. | Borehole | Longitude | Latitude | Type of test | Duration [h] | Date of test | SWL [m b.g.s.] | DWL [m b.g.s.] | RWL [m b.g.s.] | Q [L/s] | q [L/s/m] | T [$m^2$/d] | $Q_{rec}$ [L/s] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5040426 | Lumumba Rd 4A | 28.26719 | -15.40586 | 5 | 89 | 01.03.1999 | 1.03 | 10.58 | 1.39 | 39 | 4.08 | 435 | 35 |
| 5040433 | Mass Media 4 (C5 gs) | 28.32938 | -15.41217 | 5 | 72 | 16.10.1998 | 14.95 | 20.39 | 15.00 | 19.9 | 3.66 | 579 | 20 |
| 5040434 | Mass Media 5 (F1/25W) | 28.33218 | -15.40885 | 5 | 72 | 07.09.1998 | 10.73 | 16.30 | 10.85 | 17.8 | 3.20 | 460 | 18 |
| 5040435 | Mass Media 6 | 28.32588 | -15.40321 | 5 | 72 | 04.12.1998 | 9.19 | 28.35 | 9.11 | 14.9 | 0.778 | 387 | 14 |
| 5040451 | Quarries 3 (QA4) | 28.27553 | -15.44304 | 5 | 71 | 18.11.2001 | 4.20 | 4.62 | 4.31 | 41.1 | 97.9 | 8930 | 42 |
| 5040452 | Mumbwa Rd (Roadside 1) | 28.24595 | -15.42089 | 5 | 50 | 21.01.1999 | 5.49 | 6.43 | 5.60 | 51 | 54.3 | 3040 | 50 |
| 5040453 | Mumbwa Rd (Roadside 2) | 28.24582 | -15.42086 | 5 | 62 | 30.01.1999 | 5.43 | 6.32 | 4.85 | 51 | 57.3 | 3653 | 50 |
| 5040454 | Mumbwa Rd (Roadside 4) | 28.246 | -15.42082 | 5 | 48 | 11.06.1999 | 6.00 | 8.47 | 5.98 | 52 | 21.1 | 2111 | 50 |
| 5040455 | Mumbwa Rd (Roadside 5) | 28.24847 | -15.42215 | 5 | 48.2 | 19.05.1999 | 2.37 | 2.87 | 2.03 | 29.4 | 58.8 | 7238 | 29 |
| 5040456 | Mumbwa Rd (Roadside 6) | 28.24587 | -15.4204 | 5 | 56 | 02.02.1999 | 3.09 | 4.02 | 3.15 | 51 | 54.8 | 2583 | 50 |
| 5040935 | Kamwala South B16 | 28.30356 | -15.44933 | 5 | 68 | 31.08.2002 | 11.48 | 22.50 | 11.57 | 30 | 2.72 | 26 | 30 |
| 5041025 | Plant Agrichem | 28.27097 | -15.45056 | 1 | 6 | 28.05.2009 | 2.03 | 9.22 | 2.03 | 3.5 | 0.487 | 14 | 3.5 |
| 5041026 | Mrs Zyambo | 28.30201 | -15.44833 | 1 | 4.5 | 04.04.2009 | 3.00 | 14.13 | 3.00 | 5 | 0.449 | | 5 |
| 5041028 | Mrs Moyo | 28.32936 | -15.46806 | 1 | 2 | 01.03.2008 | 11.00 | 12.16 | 11.00 | 3 | 2.59 | | 3 |
| 5041045 | Waterworks 3 | 28.31828 | -15.45381 | 5 | 48 | 05.01.2008 | 11.50 | 42.80 | 11.60 | 25 | 0.799 | 111 | 15 |
| 5041059 | Ministry of Education 2 | 28.31231 | -15.41725 | 1 | 6.8 | 09.05.2009 | 4.80 | 32.78 | 6.76 | 2 | 0.072 | 3.2 | 2 |
| 5041062 | Mrs Mushipe Belemu | 28.36827 | -15.41067 | 1 | 6.4 | 11.06.2009 | 12.60 | 47.19 | 14.80 | 1 | 0.029 | 0.32 | 1 |
| 5041064 | Mr Mbewe | 28.41285 | -15.41285 | 1 | 3 | 04.05.2009 | 0.83 | 3.56 | 0.83 | 5 | 1.83 | | 5 |
| 5041082 | DEBS Office | 28.27802 | -15.42743 | 1 | 6 | 26.07.2010 | 4.00 | 6.00 | 4.00 | 5 | 2.50 | | 5 |
| 5041083 | Kamwala Basic School | 28.29219 | -15.4358 | 1 | 6 | 01.07.2010 | 4.00 | 4.26 | 4.00 | 3.5 | 13.5 | 348 | 3.5 |
| 5041084 | Lusakasa Basic School | 28.31638 | -15.44195 | 1 | 7 | 03.07.2010 | 4.80 | 6.00 | 4.80 | 3.5 | 2.92 | 60 | 3.5 |
| 5041085 | Mukandawire B Sch | 28.32245 | -15.4421 | 1 | 6 | 09.07.2010 | 6.20 | 7.14 | 6.20 | 3.5 | 3.72 | | 3.5 |
| 5041130 | Mass Media 1 D12/50N | 28.3198 | -15.40595 | 5 | 67 | 18.11.1998 | 14.74 | 19.28 | 14.94 | 14 | 3.08 | 322 | 14 |
| 5041142 | Avondale 1NEW | 28.40373 | -15.38094 | 5 | 48 | 01.11.2005 | 2.93 | 25.87 | 3.02 | 30 | 1.31 | 142 | 30 |

Notes:

Type of test: 1 = Aquifer (CD-) test, 4 = Step test, 5 = Step & consecutive aquifer test

SWL = Static water level prior to test, DWL = Dynamic water level before pump is switched off, RWL = Residual water level at the end of test,

Q = Pumping rate, q = Specific capacity, T = Transmissivity, $Q_{rec}$ = Recommended yield of well

m b.g.s. = meters below ground surface

### 5.1.1. Specific capacity and transmissivity

Various authors (e.g. in Fetter 2001, Huntley et al. 1992) have established an empirical relationship between the transmissivity $T$ and the specific capacity $q$ of the form:

$$T = C \cdot q^a$$

where $C$ and $a$ are constants that are empirically determined from available data sets of $T$ and $q$. If such a non-linear empirical relationship can be established it may be used as a rough estimate of $T$ when full aquifer test analysis for a well is not available.

From this study, 132 pairs of $T$ and $q$ are available. The best-fit regression line for the data set reads:

$$T = 89.9 \cdot q^{1.054},$$

if $T$ is given in $m^2/d$ and $q$ in $Ls^{-1}m^{-1}$.

The squared correlation coefficient $R^2$ is 0.90 (Figure 3).

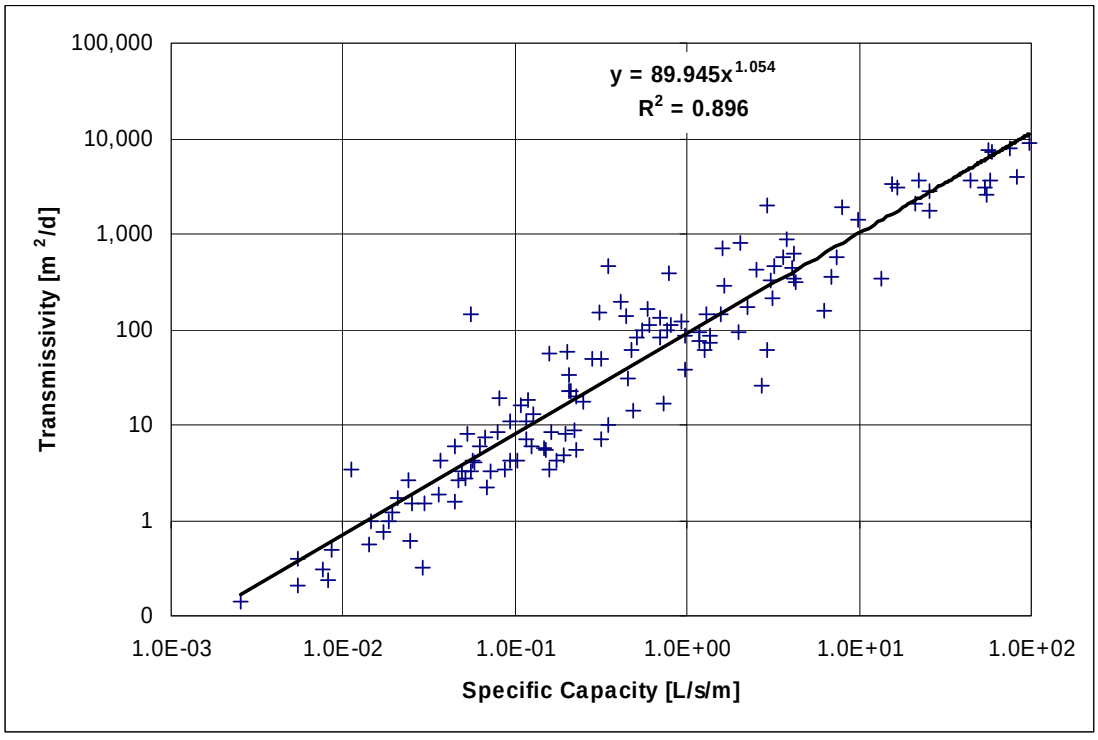


Figure 3 Empirical relationship between transmissivity and specific capacity.

A similar relationship was determined for aquifers in Southern Province from a set of 436 pairs of $T$ and $q$ (Bäumle et al. 2007) given as

$$T = 82.5 \cdot q^{1.1293}$$

Nkhuwa (1996) used pumping test results given by Chenov (1978) to obtain the following linear relationship of the form:

$$T = 101.5 \cdot q$$

In the National Water Master Plan (YEC 1995) it was suggested that the approximate relationship between $T$ and $q$ for rock formations in Zambia is

$T = 86.4 \cdot q$,

i.e. that specific capacity equals transmissivity if expressed in the same units.

The different $T$ vs. $q$ relationships according to these studies are graphically shown in Figure 4.

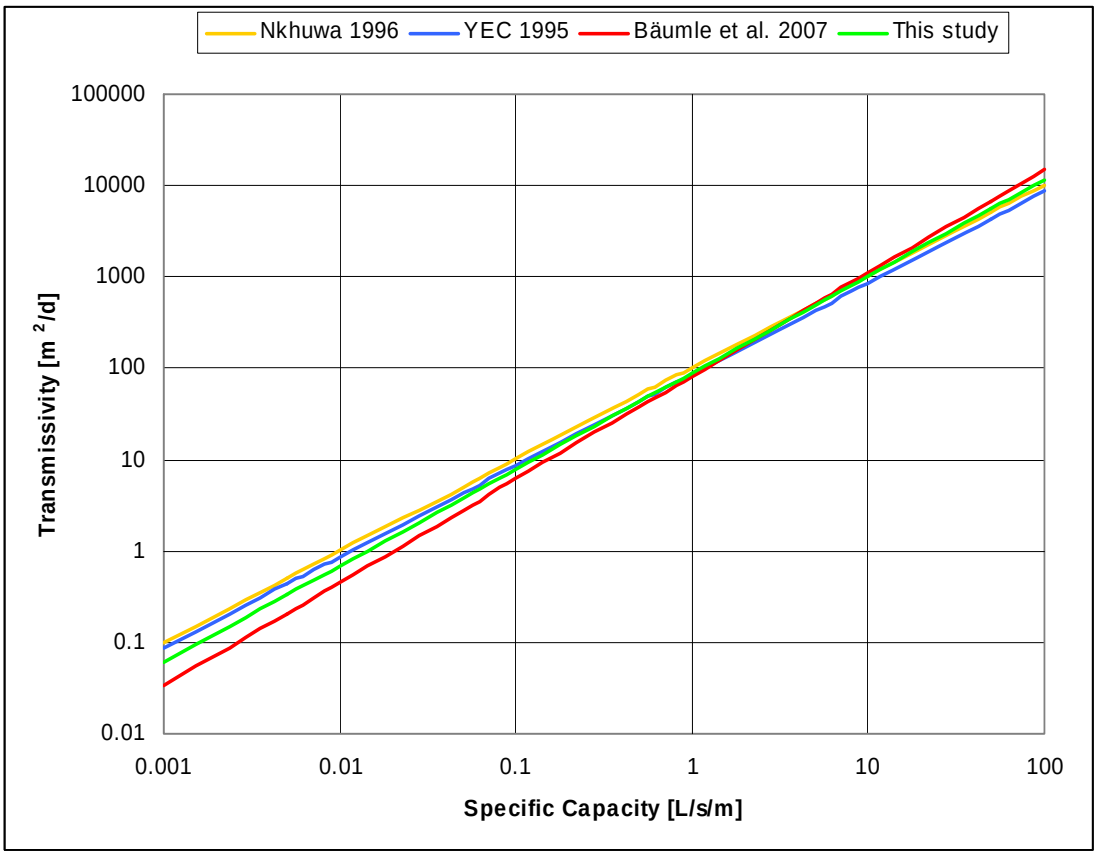


Figure 4 Empirical relationship between specific capacity and transmissivity for aquifers in Zambia according to various studies

Figure 5 shows the specific capacity and the pumped yield of the boreholes included in this study in relationship to the main aquifer lithology. Despite the high variability of values within each aquifer category, the graph shows that boreholes connected to carbonate rock aquifers on the one hand are characterised by high values of specific capacity (often >10 $Ls^{-1}m^{-1}$) and high yields (often >1 L/s). Igneous rock and gneiss on the other hand are characterised by overall low specific capacity and yield.

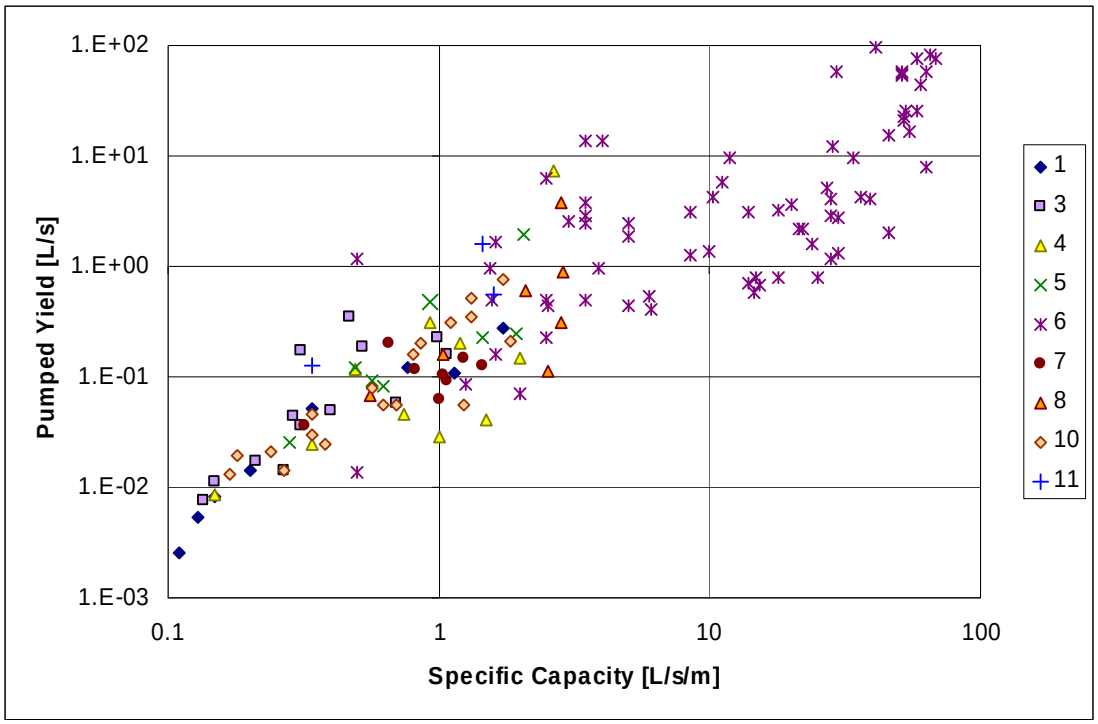


Figure 5 Specific capacity and pumped yield for boreholes tested in relationship to aquifer lithology encountered. Refer to Table 2 for an explanation of the aquifer category numbers given in the legend.

### 5.1.2. Storage coefficients

Only very few reliable storage coefficients could be determined from this study. According to the results given in Table 5 storage coefficients in the marbles around Lusaka may vary between 0.05 and 0.16. The results were generally of low quality because of interferences from pumping in adjacent wells or small drawdown observed in the observation wells. Refer to Annex 4 for individual results.

Table 5 Storage coefficients determined from piezometer (observation well) measurements for marbles of the Lusaka groundwater systems.

| WP-No. | Pumped Borehole | Observation Borehole | Date of Test | Duration [h] | Q [L/s] | SWL [m b.g.s.] | DWL [m b.g.s.] | RWL [m b.g.s.] | Analysis Method | T [$m^2$/d] | S [-] | Rating | Comment |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5040435 | Mass Media 6 | C3/50W VES | 04.12.1998 | 72 | 14.9 | 9.66 | 1.46 | 0.03 | Theis | 342 | 0.13 | 1 | |
| 5010168 | NRDC Ranch B6-4 | NRDC1 B6-3 | 22.09.2001 | 48 | 15.3 | 1.97 | 1.66 | -- | Theis | 132.5 | 0.018 | 2 | Pumping rate dropped from 15.3 L/s to 12.5 L/s during test, no recovery measured |
| 5040435 | Mass Media 6 | C3/50W VES | 01.08.2001 | 69 | 15 | 4.99 | 0.79 | 0.29 | Jacob | 345 | 0.11 | 2 | |
| 5010130 | NRDC 3 (C14-4/65) | NRDC C13 | 29.09.2001 | 72 | 14.5 | | 0.50 | | Jacob | 161 | 0.05 | 2-3 | Drawdown in pumped well not stable |
| 5020318 | U-4 | Unknown borehole | 28.04.1999 | 72 | 36 | 1.24 | 1.47 | 0.14 | Theis | 649 | 1.4E-02 | 2-3 | Questionable result |
| 5020325 | U-8D | Unknown borehole | 18.05.1999 | 48 | 46 | 1.97 | 0.45 | 0.03 | Theis | 3595 | 0.16 | 2-3 | Questionable result |
| 5020352 | U-21B | Unknown borehole | 20.06.1999 | 72 | 53 | 1.77 | 0.34 | 0.10 | Jacob | 2100 | 0.1 | 3 | Poor Fit |
| 5040056 | UNZA-4 Lawn | UNZA 1 Education | 21.11.2007 | 6 | 1.25 | 5.57 | | | Jacob | 92 | 2.00E-04 | 3 | Poor Fit |
| 5040454 | Mumbwa Rd (Roadside 4) | Unknown borehole | 11.06.1999 | 48 | 52 | 6.56 | | | Jacob | 3585 | 0.027 | 3 | Poor Fit, drawdown influenced by pumping in adjacent well 6 hrs after start |
| 5041130 | Mass Media 1 D12/50N | International School 6D | 18.11.1998 | 67 | 14 | 15.67 | | | Theis | 324 | 0.045 | 3 | Poor fit, Observation well was pumped after 260 min. at 38 L/s |
| 5040451 | Quarries 3 (QA4) | Quarries 2 (QA5) | 18.11.2001 | 71 | 41.1 | 4.35 | 0.05 | 0.01 | n/a | -- | -- | 4 | Drawdown too small |

Notes: SWL = Static water level in observation well, DWL = Dynamic water level in observation well before pump is switched off, RWL = Residual water level in observation well at the end of test, m b.g.s. = meters below ground surface Q = Pumping rate, T = Transmissivity, S = Storage coefficient

## 5.2. HYDRAULIC TEST STATISTICS

Pump-tested boreholes were sorted according to lithological properties. The descriptive hydraulic test statistics are shown in Table 6. A sufficient number of values (i.e. population size) for a statistical analysis is only available for the carbonate rocks (category 6) and to a lesser extent for gneiss and undifferentiated metamorphic rock (category 3), schist (category 4) and unconsolidated rock (category 10). The hydraulic properties of igneous rock (category 1) that is mainly formed by granitic rock and gneiss appear to be comparable (Figure 5). Similarly, schist and quartzite (category 5) show similar hydraulic characteristics and are often associated with each other. For the sake of an improved statistical analysis, two **aquifer groups** were formed combining gneiss and igneous rock as “basement rock aquifers” on the one hand and schist and quartzite aquifers on the other hand.

A one-way analysis of variance (ANOVA) was employed for the values of specific capacity to test whether or not the four aquifers (carbonate rock, unconsolidated rock, basement, schist/quartzite) have the same mean. ANOVA assumes that the sample data sets have been drawn from populations that follow a normal distribution with constant variance. As specific capacity often follows a lognormal distribution values of the logarithm of specific capacity *ln(q)* were calculated for the ANOVA. The analysis showed that at the 0.05 significance level, the four population means of *ln(q)* are significantly different. It can be concluded from this stochastic analysis that the hydraulic characteristics of carbonate rock, unconsolidated rock, basement and schist/quartzite differ significantly from each other in the study area. However, further data to produce larger population sizes may be required to validate this result.

Due to the fact that the quantities of hydraulic parameters in fractured and heterogeneous rocks do usually not follow a normal distribution, but instead are often strongly skewed to the right, the arithmetic mean is barely a useful parameter to describe the hydraulic characteristics of a rock formation. As can be seen from the values given in Table 6 the arithmetic mean is much larger than the respective median and cannot be considered a representative measure for the respective

aquifer. The median in combination with the 25$^{th}$ and 75$^{th}$ percentiles provides a much better description of typical hydraulic properties for each aquifer. Figure 6 depicts box charts showing the median and the characteristic percentiles for the four identified major aquifer categories. By definition, 50% of all values observed fall within the boundaries of the 25$^{th}$ and 75$^{th}$ percentile represented by the dimensions of the "box".

Carbonate rocks are characterised by much larger specific capacity (median of 2.9 $Ls^{-1}m^{-1}$), transmissivity (median of 332 $m^2/d$) and yield (median of 12 L/s) compared to the other aquifers. Quartzite and schist show moderate but maybe slightly higher than expected median values for *q* of 0.12 $Ls^{-1}m^{-1}$, *T* of 10 $m^2/d$ and *Q* of 1.0 L/s. The variability of parameters within each aquifer is generally high. The coefficients of variation of specific capacity - a normalised measure of dispersion defined as the ratio of the standard deviation to the mean - varies between 1.1 and 2.5 with the highest variation observed for the schist/quartzite and the lowest for Basement aquifers.

Very little data is available on the hydraulic characteristic of sandstones of Karoo (category 8) and pre-Karoo age (category 11, e.g. Kawena Formation). Values for specific capacity between 0.07 and 3.8 $Ls^{-1}m^{-1}$ indicate a higher potential compared to the adjacent metamorphic basement rock.

Table 6 Descriptive statistics of aquifer characteristics – specific capacity, transmissivity, hydraulic conductivity and recommended yield – for various aquifer categories

**Specific Capacity [L/s/m}**

| Category | n | Min | Max | Median | Mean | Stdev |
|---|---|---|---|---|---|---|
| 1 | 8 | 0.003 | 0.281 | | | |
| 3 | 13 | 0.008 | 0.348 | 0.049 | 0.103 | 0.107 |
| 4 | 19 | 0.005 | 7.361 | 0.117 | 0.634 | 1.670 |
| 5 | 8 | 0.025 | 1.971 | | | |
| 6 | 71 | 0.014 | 97.857 | 2.9 | 13.3 | 23.0 |
| 7 | 8 | 0.036 | 0.202 | | | |
| 8 | 7 | 0.067 | 3.824 | | | |
| 10 | 18 | 0.013 | 0.766 | 0.056 | 0.162 | 0.206 |
| 11 | 3 | 0.124 | 1.576 | | | |
| 1,3 | 21 | 0.003 | 0.348 | 0.049 | 0.092 | 0.101 |
| 4,5 | 27 | 0.005 | 7.361 | 0.122 | 0.566 | 1.434 |

**Transmissivity [$m^2$/d]**

| Category | n | Min | Max | Median | Mean | Stdev |
|---|---|---|---|---|---|---|
| 1 | 8 | 0.140 | 50 | | | |
| 3 | 13 | 0.300 | 10 | 4.0 | 4.1 | 3.0 |
| 4 | 17 | 0.320 | 563 | 7.9 | 60 | 137 |
| 5 | 7 | 1.500 | 94 | | | |
| 6 | 56 | 1.300 | 8930 | 332 | 1402 | 2167 |
| 7 | 9 | 3.500 | 59 | | | |
| 8 | 5 | 3.400 | 875 | | | |
| 10 | 15 | 1.200 | 465 | 7.2 | 59 | 121 |
| 11 | 3 | 5.900 | 142 | | | |
| 1,3 | 21 | 0.140 | 50 | 3.4 | 6.7 | 11.1 |
| 4,5 | 24 | 0.320 | 563 | 10.0 | 52 | 117 |

**K-value [m/d]**

| Category | n | Min | Max | Median | Mean | Stdev |
|---|---|---|---|---|---|---|
| 1 | 8 | 0.009 | 4.17 | | | |
| 3 | 13 | 0.010 | 0.86 | 0.33 | 0.35 | 0.27 |
| 4 | 17 | 0.018 | 46.92 | 0.66 | 5.0 | 11.5 |
| 5 | 7 | 0.125 | 11.75 | | | |
| 6 | 54 | 0.108 | 1488.33 | 18.4 | 67 | 204 |
| 7 | 9 | 0.292 | 3.69 | | | |
| 8 | 5 | 0.283 | 54.69 | | | |
| 10 | 15 | 0.075 | 29.06 | 0.60 | 3.7 | 7.5 |
| 11 | 3 | 0.492 | 8.88 | | | |
| 1,3 | 21 | 0.009 | 4.17 | 0.27 | 0.56 | 0.93 |
| 4,5 | 24 | 0.018 | 46.92 | 0.83 | 4.4 | 9.8 |

**Recommended Yield [L/s}**

| Category | n | Min | Max | Median | Mean | Stdev |
|---|---|---|---|---|---|---|
| 1 | 8 | 0.100 | 1.60 | | | |
| 3 | 13 | 0.120 | 1.00 | 0.40 | 0.50 | 0.32 |
| 4 | 19 | 0.100 | 3.50 | 1.00 | 1.08 | 0.95 |
| 5 | 8 | 0.300 | 2.50 | | | |
| 6 | 73 | 0.200 | 70.00 | 12.0 | 20.6 | 20.5 |
| 7 | 9 | 0.090 | 1.40 | | | |
| 8 | 7 | 0.600 | 3.00 | | | |
| 10 | 18 | 0.150 | 1.80 | 0.60 | 0.81 | 0.58 |
| 11 | 3 | 0.300 | 2.50 | | | |
| 1,3 | 21 | 0.100 | 1.60 | 0.30 | 0.55 | 0.46 |
| 4,5 | 27 | 0.100 | 3.50 | 1.00 | 1.12 | 0.90 |

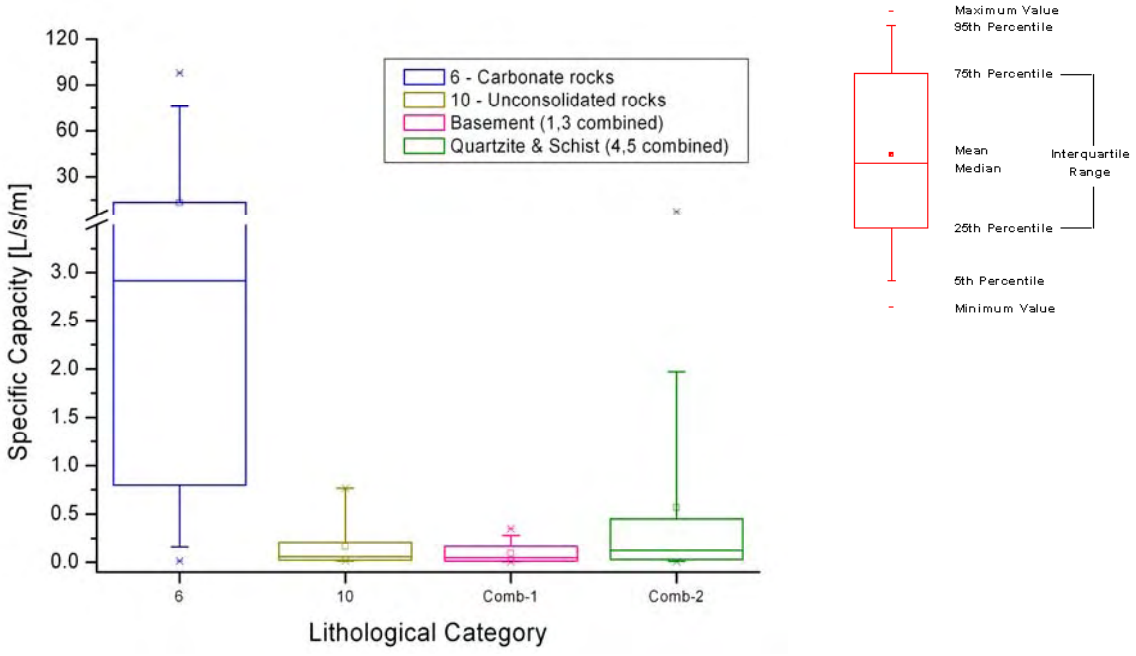


Figure 6 Box Charts of specific capacity *q* for individual categories and combined aquifer systems. Values of minimum, maximum, mean and median are given in Table 6

## 5.3. AQUIFER CLASSIFICATION

The classification of aquifers according to the classification scheme described in chapter 4.3 was applied. Based on pump testing evaluation results, histograms of observed frequency of specific capacity, transmissivity and recommended yield for the four major aquifers identified were compiled as displayed in Figure 7. The histograms show that the majority of values observed for carbonate rocks correspond to category C with high groundwater potential. Values for boreholes in schist or quartzite peak between categories E (limited potential) and D (moderate potential) whereas the majority of examined boreholes that were drilled in unconsolidated or basement rock show only limited potential.

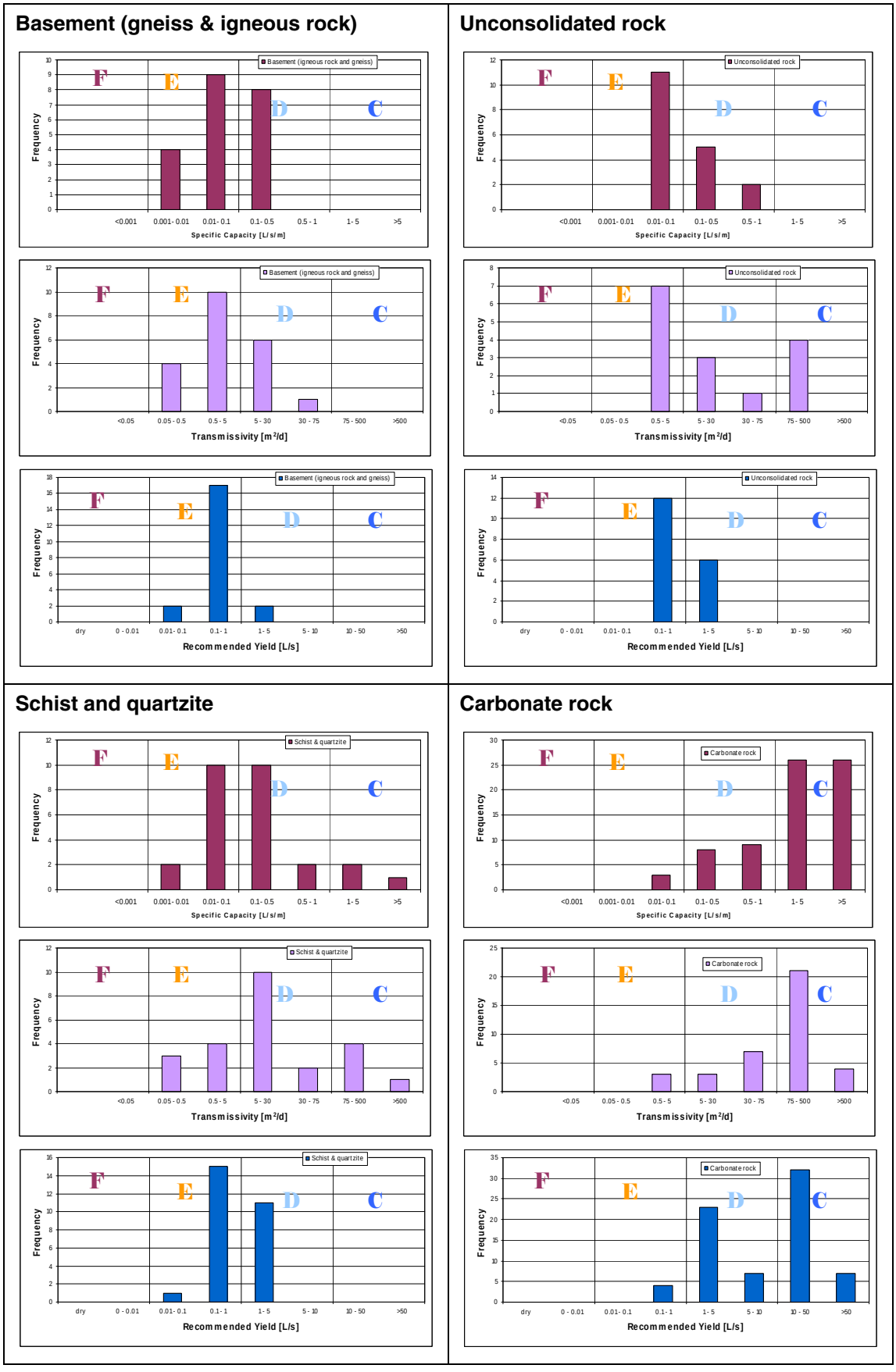


Figure 7 Histograms of observed frequency of specific capacity, transmissivity and recommended yield for the four major identified aquifers based on pump testing evaluation results of this study

## 5.4. COMPARISON OF RESULTS WITH PREVIOUS STUDIES

### 5.4.1. BGR study

Von Hoyer et al. (1978) analysed data of pumping tests from archives of the Department of Water Affairs. The raw data of the tests dates back to the period before 1978 and are not available any more. The specific capacity was calculated for 78 boreholes in schist and 102 boreholes in dolomite.

The frequency distribution of specific capacity is displayed in Figure 8. According to this previous study the specific capacity in the schists of the Cheta and Chunga formations ranges from 0.03 to 0.08 $Ls^{-1}m^{-1}$ for 41% of the examined boreholes, and for 91% of all boreholes the specific capacity is between 0.008 to 0.8 $Ls^{-1}m^{-1}$. For the Lusaka Dolomite formation, 88% of all boreholes have a specific capacity between 0.08 and 30 $Ls^{-1}m^{-1}$.

The results are similar to this study in terms of overall classification of schists into group E or D and of carbonate rocks in category C. The median value of *q* for schists, however, is roughly only half as big compared to the value of 0.12 $Ls^{-1}m^{-1}$ determined in this study. Similarly, the median for carbonate rocks estimated at about 0.6 $Ls^{-1}m^{-1}$ is considerably below 2.9 $Ls^{-1}m^{-1}$ as determined from the tests investigated in this study.

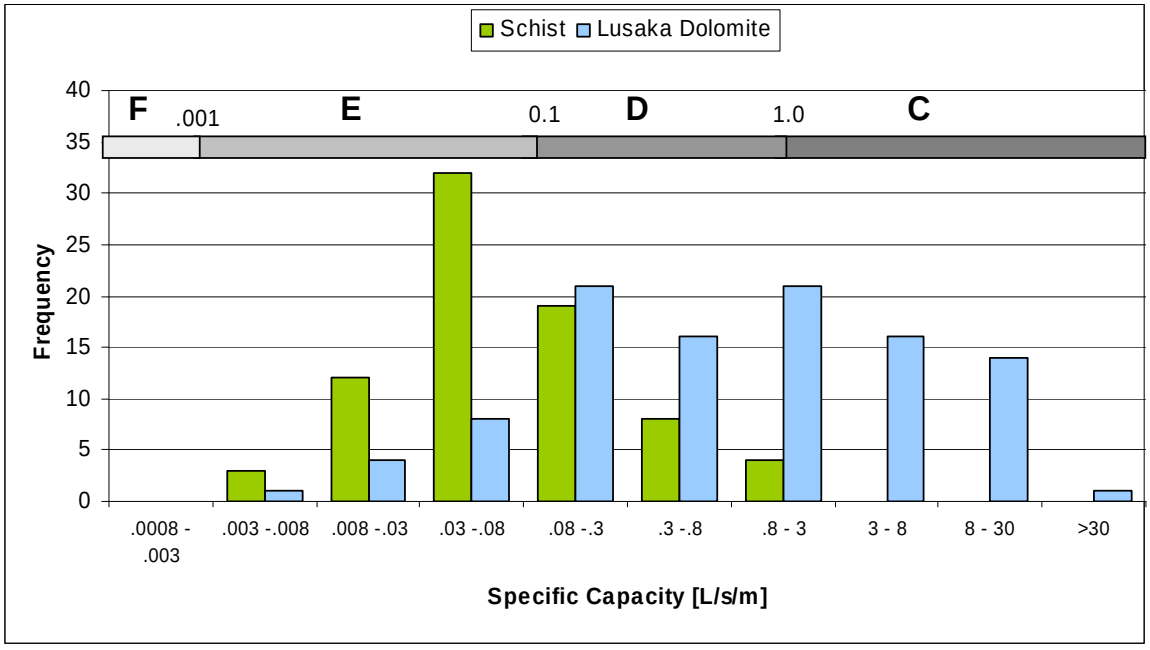


Figure 8 Frequency distribution of specific capacity for 78 boreholes drilled in schist (in green) and 102 boreholes in the Lusaka Dolomite formation (reproduced from figures 5 and 7 in von Hoyer 1978). Grey bar on top of diagram shows boundaries of aquifer classes applied in this study.

### 5.4.2. Study by Chenov

Chenov (1978) described the Katanga (Upper Roan) limestones and dolomites as a "highly productive aquifer" with yields varying between 1 and 70 L/s. The Katanga

(Lower Roan) quartz-muscovite schists and quartzites host “locally productive aquifers” with yields varying from 0.1 L/s to 10 L/s.

In total, his report includes hydraulic information for 205 boreholes in the areas of interest within Lusaka and Central Provinces. Sufficient data for a statistical analysis is only available for carbonate rocks and schist/quartzite with almost 50 and over 90 individual values, respectively. Like for the BGR study, the information was probably obtained from archives of the Department of Water Affairs. Original pumping test data and analysis as well as reliable information on the exact position of these boreholes are not available any more.

The descriptive statistics of the parameters reported by Chenov are given in Table 7 together with the respective median values from this study for comparison. Histograms of observed frequency of specific capacity, transmissivity and recommended yield for schist/quartzite and carbonate rock aquifers based on Chenov’s values are depicted in Figure 9. Chenov also provided values of specific yield (Table 8). Although the specific yields appear reasonable they should be handled with caution because they were most likely obtained from single-well tests.

Comparing the historical data by Chenov with this study’s results it can be observed that median values for specific capacity, transmissivity and yield are about 50% smaller for both schist/quartzite and carbonate rock aquifers except for the yields in schist/quartzite that are higher in Chenov’s study.

Table 7 Descriptive statistics of aquifer characteristics – specific capacity, transmissivity, hydraulic conductivity and recommended yield – for various aquifers in Lusaka and Central Provinces according to Chenov (1978)

**Specific Capacity [L/s/m]**

| Category | n | Min | Max | Median | Mean | Stdev | Median (this study) |
|---|---|---|---|---|---|---|---|
| 1 | 3 | 0.0170 | 0.11 | | | | |
| 4 | 38 | 0.0008 | 5.25 | 0.055 | 0.350 | 0.902 | 0.12 |
| 5 | 9 | 0.0190 | 4.96 | | | | |
| 6 | 48 | 0.0008 | 75.00 | 1.41 | 5.38 | 12.46 | 2.92 |
| 10 | 6 | 0.0060 | 1.66 | | | | |
| 1,3 | 6 | 0.0060 | 0.13 | | | | 0.049 |
| 4,5 | 95 | 0.0008 | 75.00 | 0.063 | 1.565 | 8.017 | 0.12 |

**Transmissivity [$m^2$/d]**

| Category | n | Min | Max | Median | Mean | Stdev | Median (this study) |
|---|---|---|---|---|---|---|---|
| 1 | 3 | 1.80 | 14.4 | | | | |
| 4 | 37 | 0.10 | 544.3 | 5.9 | 32.7 | 92.0 | 7.9 |
| 5 | 9 | 1.60 | 20.7 | | | | |
| 6 | 48 | 0.10 | 7776.0 | 146 | 518.4 | 1278.2 | 332 |
| 10 | 6 | 0.60 | 172.8 | | | | |
| 1,3 | 6 | 0.70 | 14.4 | | | | 3.4 |
| 4,5 | 94 | 0.10 | 7776.0 | 6.2 | 157 | 842 | 10.0 |

**K-Value [m/d]**

| Category | n | Min | Max | Median | Mean | Stdev | Median (this study) |
|---|---|---|---|---|---|---|---|
| 1 | 1 | 0.06 | 0.06 | | | | |
| 4 | 35 | 0.01 | 11.11 | 0.11 | 0.82 | 2.08 | 0.66 |
| 5 | 9 | 0.03 | 0.45 | | | | |
| 6 | 47 | 0.01 | 156.14 | 3.03 | 12.90 | 31.16 | 18.4 |
| 10 | 6 | 0.01 | 3.46 | | | | |
| 1,3 | 4 | 0.01 | 0.26 | | | | 0.27 |
| 4,5 | 90 | 0.01 | 217.33 | 0.14 | 4.21 | 23.65 | 0.83 |

**Recommended Yield [L/s]**

| Category | n | Min | Max | Median | Mean | Stdev | Median (this study) |
|---|---|---|---|---|---|---|---|
| 1 | 2 | 0.00 | 1.5 | | | | |
| 4 | 38 | 0.06 | 10.5 | 1.5 | 2.4 | 2.3 | 1 |
| 5 | 9 | 0.50 | 9.5 | | | | |
| 6 | 48 | 0.05 | 15 | 6.1 | 6.7 | 4.0 | 12.0 |
| 10 | 6 | 0.25 | 5.0 | | | | |
| 1,3 | 5 | 0.00 | 2.5 | | | | 0.3 |
| 4,5 | 94 | 0.00 | 15 | 1.6 | 2.8 | 3.3 | 1.0 |

Table 8 Specific yield for various aquifers in Lusaka and Central Provinces according to Chenov (1978)

| **Specific Yield [-]** | | | | | | |
|---|---|---|---|---|---|---|
| Category | n | Min | Max | Median | Mean | Stdev |
| 1 | 3 | 0.062 | 0.120 | | | |
| 4 | 38 | 0.032 | 0.150 | 0.069 | 0.071 | 0.025 |
| 5 | 9 | 0.058 | 0.129 | | | |
| 6 | 48 | 0.010 | 0.190 | 0.110 | 0.103 | 0.040 |
| 10 | 6 | 0.050 | 0.111 | | | |
| 1,3 | 6 | 0.048 | 0.120 | | | |
| 4,5 | 93 | 0.013 | 0.200 | 0.070 | 0.076 | 0.030 |

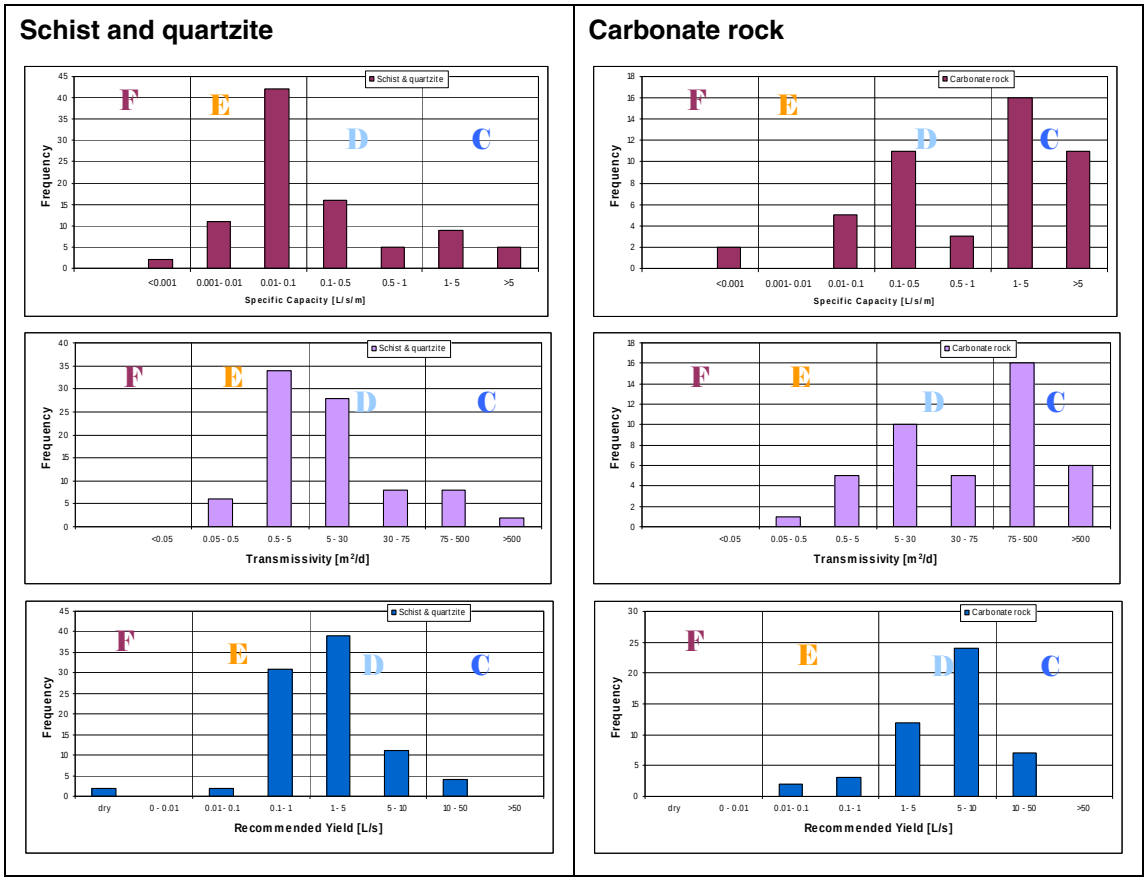


Figure 9 Histograms of observed frequency of specific capacity, transmissivity and recommended yield for schist/quartzite and carbonate rock aquifers based on values reported by Chenov (1978)

### 5.4.3. Data recorded under GReSP

The groundwater database at the Department of Water Affairs developed under the Project *Groundwater Resources for Southern Province and Lusaka* (GReSP) combines hydraulic results from various sources provided the location of the water point is available and can be verified. Besides the results from this study (Table 3) the database contains additional information from completion reports of boreholes that were almost exclusively drilled under the DWA. The hydraulic information –

specific capacity and yield – is usually determined from airlift tests. Additional values for transmissivity and hydraulic conductivity could not be determined from these tests.

Table 9 contains the descriptive statistical information on aquifer characteristics of boreholes from the database. The number of boreholes in the database with hydraulic information amounts to 251 compared to 174 with pump testing data investigated in this study, i.e. it includes 77 additional boreholes for the statistical analysis. Figure 10 shows histograms for distribution of specific capacity and recommended yield.

Table 9 Descriptive statistics of aquifer characteristics – specific capacity and recommended yield – for various aquifers in Lusaka and Central Provinces according to data obtained from the groundwater database at the DWA (status: February 2011)

**Specific Capacity [L/s/m}**

| Category | n | Min | Max | Median | Mean | Stdev | Median (this study) |
|---|---|---|---|---|---|---|---|
| 1 | 10 | 0.00020 | 0.281 | 0.095 | 0.110 | 0.108 | |
| 3 | 25 | 0.00170 | 0.348 | 0.023 | 0.058 | 0.081 | 0.049 |
| 4 | 42 | 0.00560 | 7.778 | 0.073 | 0.496 | 1.613 | 0.117 |
| 5 | 14 | 0.00540 | 1.971 | 0.089 | 0.259 | 0.513 | |
| 6 | 117 | 0.01340 | 159.375 | 1.46 | 11.0 | 24.8 | 2.92 |
| 7 | 6 | 0.06290 | 1.359 | | | | |
| 8 | 8 | 0.04050 | 3.824 | | | | |
| 10 | 22 | 0.01300 | 0.766 | 0.092 | 0.159 | 0.187 | 0.056 |
| 11 | 4 | 0.12410 | 1.576 | | | | |
| 1,3 | 35 | 0.00020 | 0.348 | 0.033 | 0.073 | 0.091 | 0.049 |
| 4,5 | 56 | 0.00540 | 7.778 | 0.081 | 0.44 | 1.42 | 0.122 |

**Recommended Yield [L/s]**

| Category | n | Min | Max | Median | Mean | Stdev | Median (this study) |
|---|---|---|---|---|---|---|---|
| 1 | 10 | 0.000 | 6.0 | 0.5 | 1.1 | 1.8 | |
| 3 | 25 | 0.100 | 1.0 | 0.3 | 0.4 | 0.2 | 0.4 |
| 4 | 42 | 0.100 | 4.0 | 1.0 | 1.4 | 1.3 | 1.0 |
| 5 | 14 | 0.100 | 3.0 | 0.7 | 1.2 | 1.0 | |
| 6 | 117 | 0.200 | 70.0 | 5.0 | 15.2 | 19.0 | 12.0 |
| 7 | 6 | 0.600 | 2.1 | | | | |
| 8 | 8 | 0.600 | 30.0 | | | | |
| 10 | 22 | 0.200 | 2.0 | 0.9 | 0.9 | 0.6 | 0.6 |
| 11 | 4 | 0.300 | 7.0 | | | | |
| 1,3 | 35 | 0.000 | 6.0 | 0.3 | 0.6 | 1.0 | 0.3 |
| 4,5 | 56 | 0.100 | 4.0 | 1.0 | 1.3 | 1.2 | 1.0 |

The distribution of values for basement, unconsolidated rocks and schist/quartzite are overall similar to the results of this study presented above. The median values of specific capacity and yield for basement and schist/quartzite are somewhat reduced whereas the unconsolidated rocks show increased values. The histogram for carbonate rocks show a bimodal pattern with an additional peak within aquifer class D with characteristic values of specific capacity between 0.1 $Ls^{-1}m^{-1}$ and 0.5 $Ls^{-1}m^{-1}$ and of yield between 1 L/s and 5 L/s. As a consequence the median values are also reduced by over 50%. There is no straightforward explanation for this

observations but it should be recognised that the airlift method cannot produce results with similar accuracy than pump testing. Low specific capacity and low yields can also be a result of poor well design (e.g. caused by use of angular gravel material, unfavourable slotting of casing, poor well development).

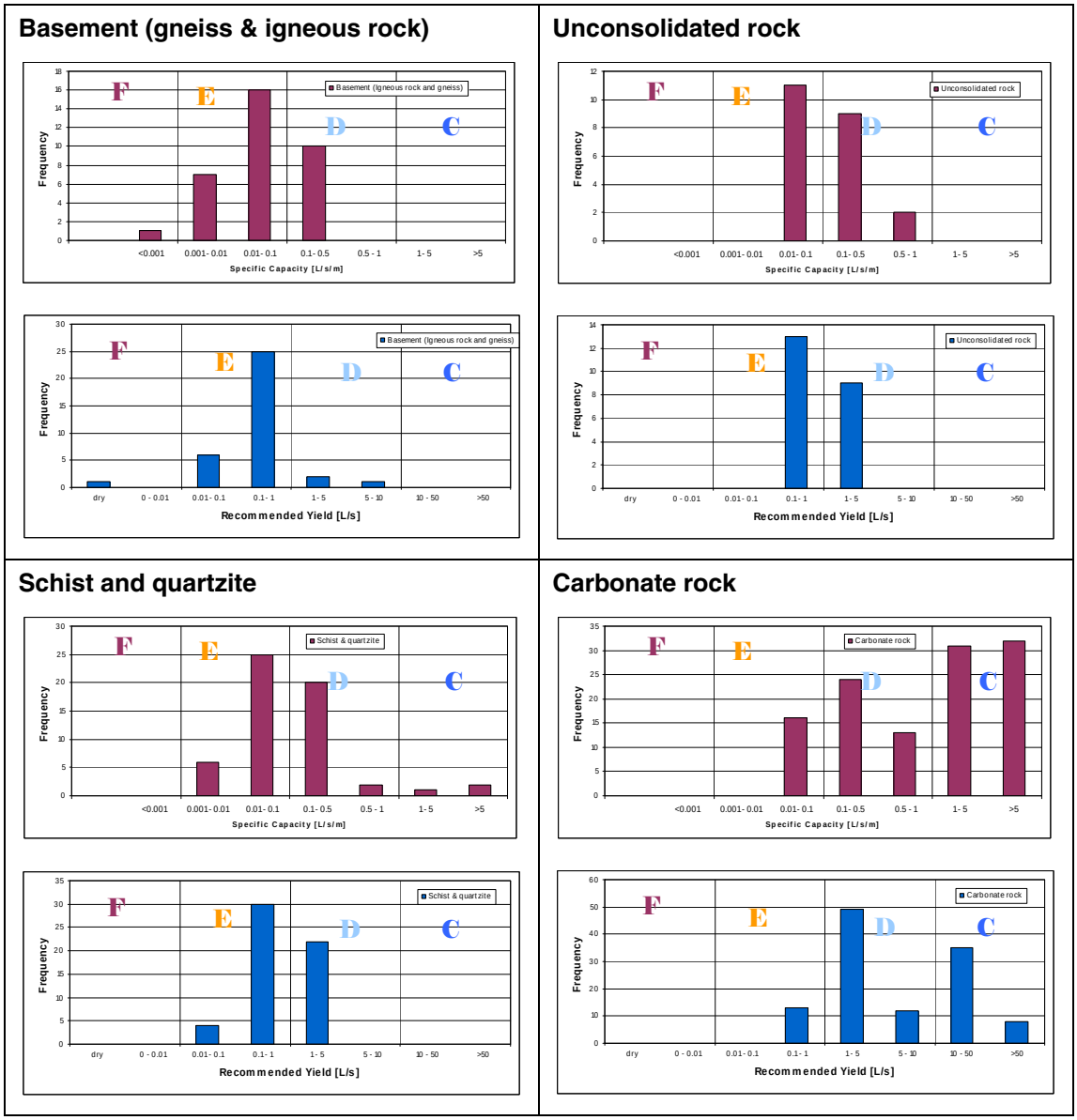


Figure 10 Histograms for distribution of specific capacity and recommended yield based on the groundwater database at DWA, February 2011

### 5.4.4. Southern Province

An equivalent statistical analysis of hydraulic parameters for aquifers in Southern Province was conducted in 2007 (Bäumle et al. 2007). Figure 11 contains box charts comparing the statistical parameters of specific capacity for rocks in Southern and the study areas in Lusaka and Central Provinces. From this comparison it may be concluded that the hydraulic properties of basement rock (mainly gneiss and granite) and of unconsolidated rock (mainly alluvial sediments) are very similar in both areas.

Schist and quartzites however show a somewhat higher potential in Lusaka and Central Provinces. This applies in particular to the schist of the Chunga and Cheta formations encountered around Lusaka. The carbonate rocks of Lusaka and Central Provinces have a much higher potential compared to corresponding rock formations in Southern Province. This can be explained by a lower content in silicates and other impurities and a high degree of karstification.

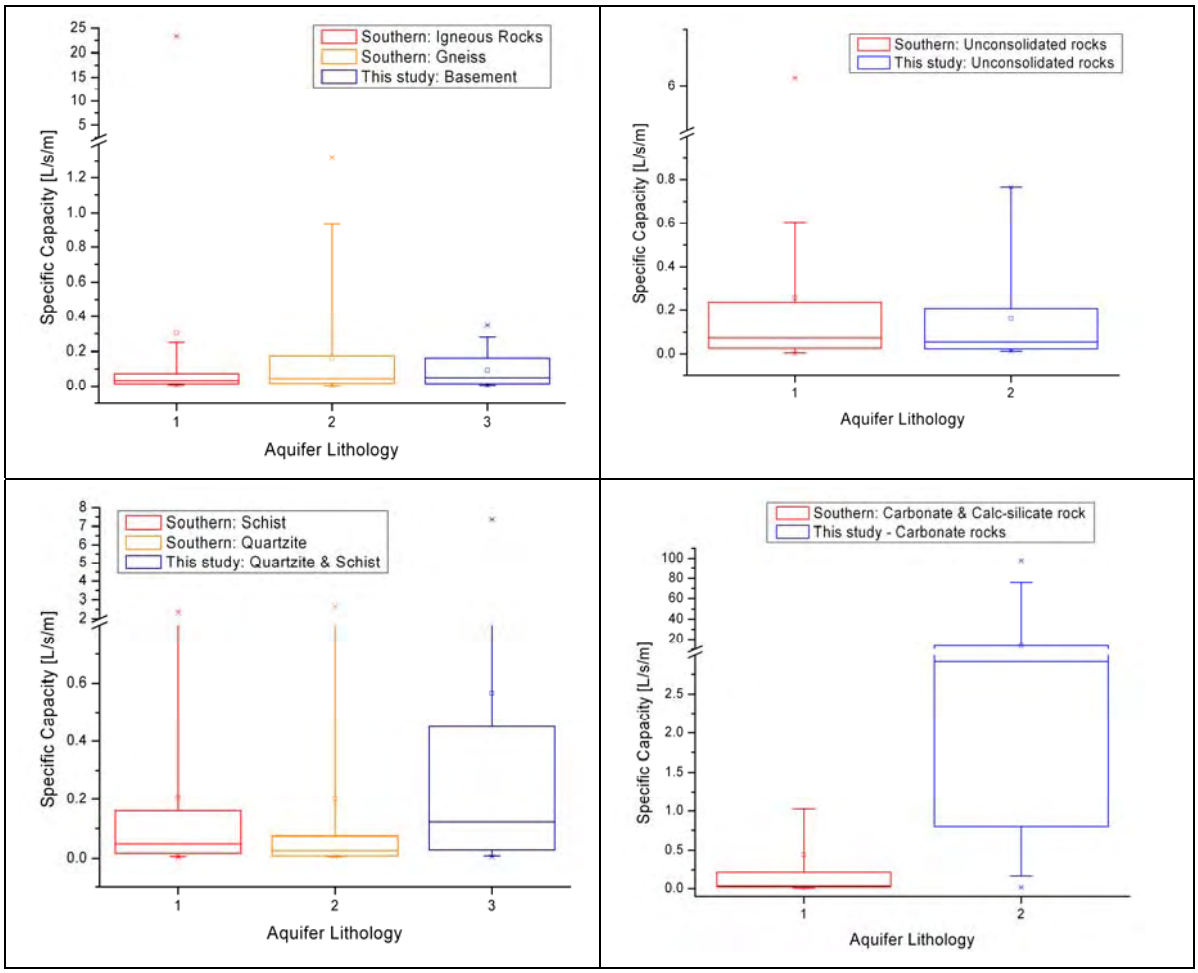


Figure 11 Box charts comparing specific capacity in rocks of similar lithology in Southern Province and of investigated areas in Lusaka and Central Provinces

## 5.5. REGIONAL DISTRIBUTION

The regional distribution pattern of hydraulic characteristics is shown in the two maps included in Annex 5. The map displays values of the specific capacity obtained from the pumping test evaluation conducted as well as values that are stored in the groundwater database for Lusaka and Central Provinces and were analysed in chapter 5.4.3. Furthermore, the maps include the simplified lithology as well as catchment and administrative boundaries.

It can be observed that the available results form local clusters. Hence, there is considerable insecurity about the regional distribution of hydraulic characteristics of rocks in Lusaka and in particular Central Province. Comprehensive hydraulic test

results are only available for the metasedimentary rocks (marbles, schist) of the Lusaka groundwater systems located in Lusaka and Kafue districts.

The Lusaka Dolomite Formation proves to have a high potential despite considerable heterogeneity. It is not clear from these results whether the carbonate rocks of the Cheta, Nyama and Luimba formations are equally productive throughout their area of occurrence. Relative high specific capacities within the Cheta limestones are encountered in the Mass Media, Avondale, Chelston and NRDC Ranch areas, but no data is available for the occurrences of Cheta limestones in Chibombo District and to the south of Lusaka in Kafue District. Areas covered by schist show locally higher than average specific capacities especially in areas southeast of Lusaka. This may be due to a higher carbonate content of schists or interbedded layers of marbles or argillaceous limestone.

Specific capacities observed within unconsolidated sediments in the north-eastern parts of the Kafue Flats are typically between 0.1 – 0.5 $Ls^{-1}m^{-1}$ indicating moderate groundwater potential.

# 6. RESULTS AND RECOMMENDATIONS

Based on this study it is recommended to classify the aquifers in the investigated areas of Lusaka and Central Provinces as follows:

- The marbles of the Lusaka Dolomite Formation are aquifers of high groundwater potential, i.e. aquifer category C.
- Other carbonate rocks including the Cheta limestones near Lusaka, carbonate rocks of the Nyama Formation in the Chisamba area and limestone in the Luimba area are to be classified as aquifers of moderate to high potential, i.e. aquifer category D-C.
- Sandstones of Karoo age and Pre-Karoo age (Kawena Formation) are considered to be of moderate potential, i.e. aquifer category D; this classification is currently based on very few data but can be confirmed for the Karoo sandstones from investigations in Southern Province.
- Unconsolidated rocks are largely of limited potential (category E) but may locally reach higher potential depending on the content of sand and gravel. The potential of the sediments of the Kafue Flats are rated “limited to moderate” (category E-D) based on the results of this study and from Southern Province.
- All other rocks including basement, igneous rock and schist are aquifers of limited potential, i.e. aquifer category E, except for schists of the Cheta and Chunga formations that locally may be considered to be of limited to moderate potential, i.e. aquifer category E-D.

It is furthermore recommended to continuously collect and evaluate additional pumping tests especially in areas where little results are available up to now. In this regard, the areas covered by the Cheta limestones in Chibombo and Kafue districts are of specific interest as such results could greatly contribute to an improved assessment of the potential of aquifers in the Lusaka City area and its surroundings.

For the planned development of a groundwater model for the Lusaka area the availability of more information on specific yield and storage characteristics of the aquifers is considered crucial. It is therefore recommended to carry out multi-well (piezometer) pumping tests at selected areas.

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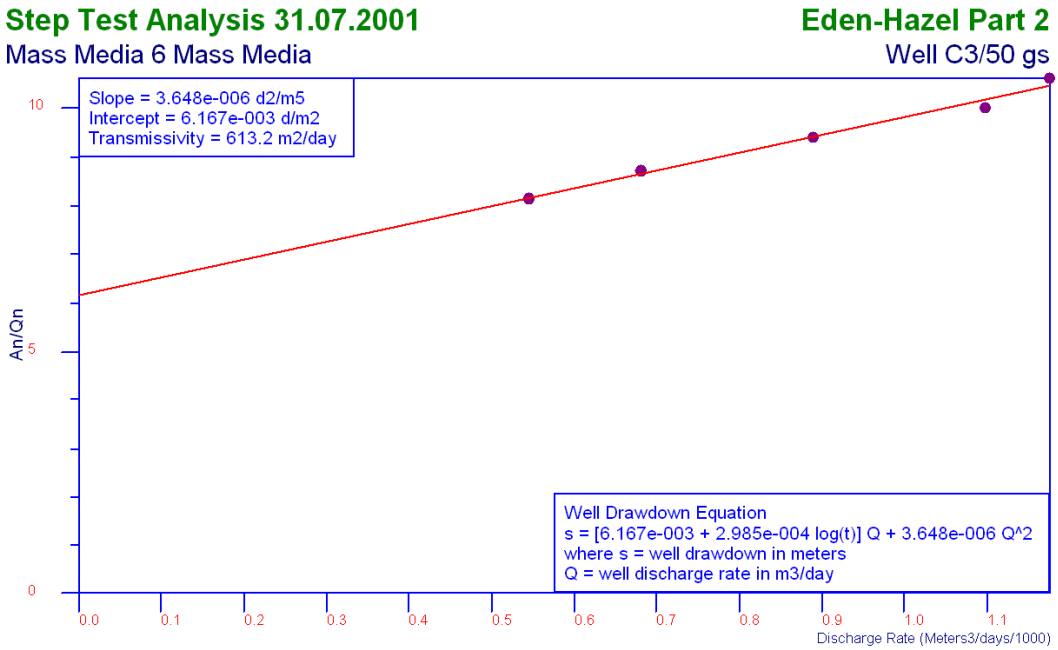
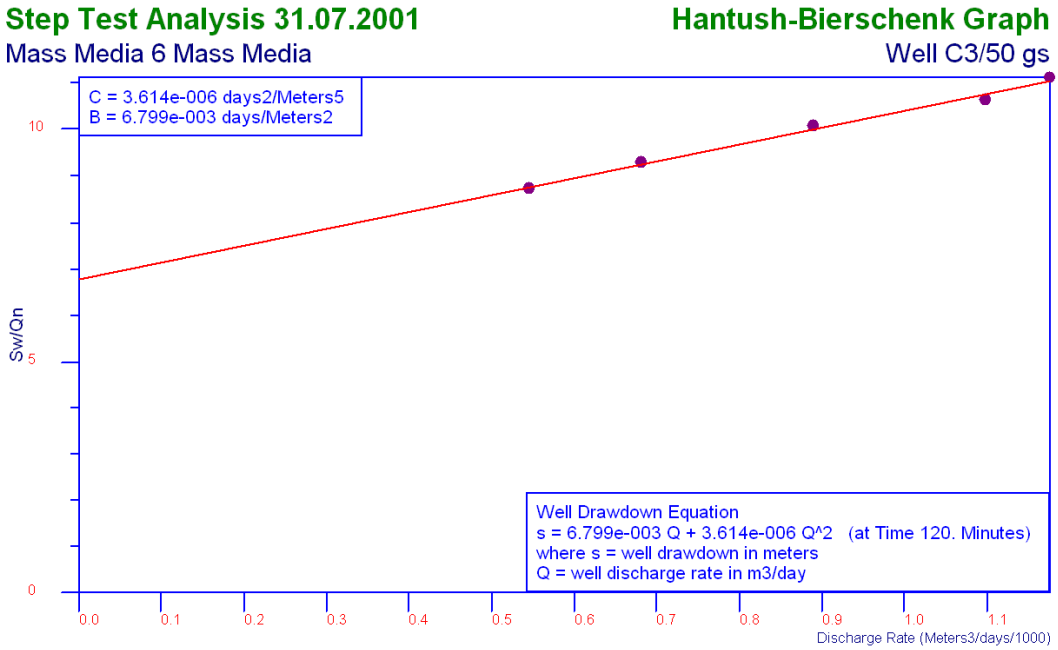
# Annex 1

# Sample step test evaluation

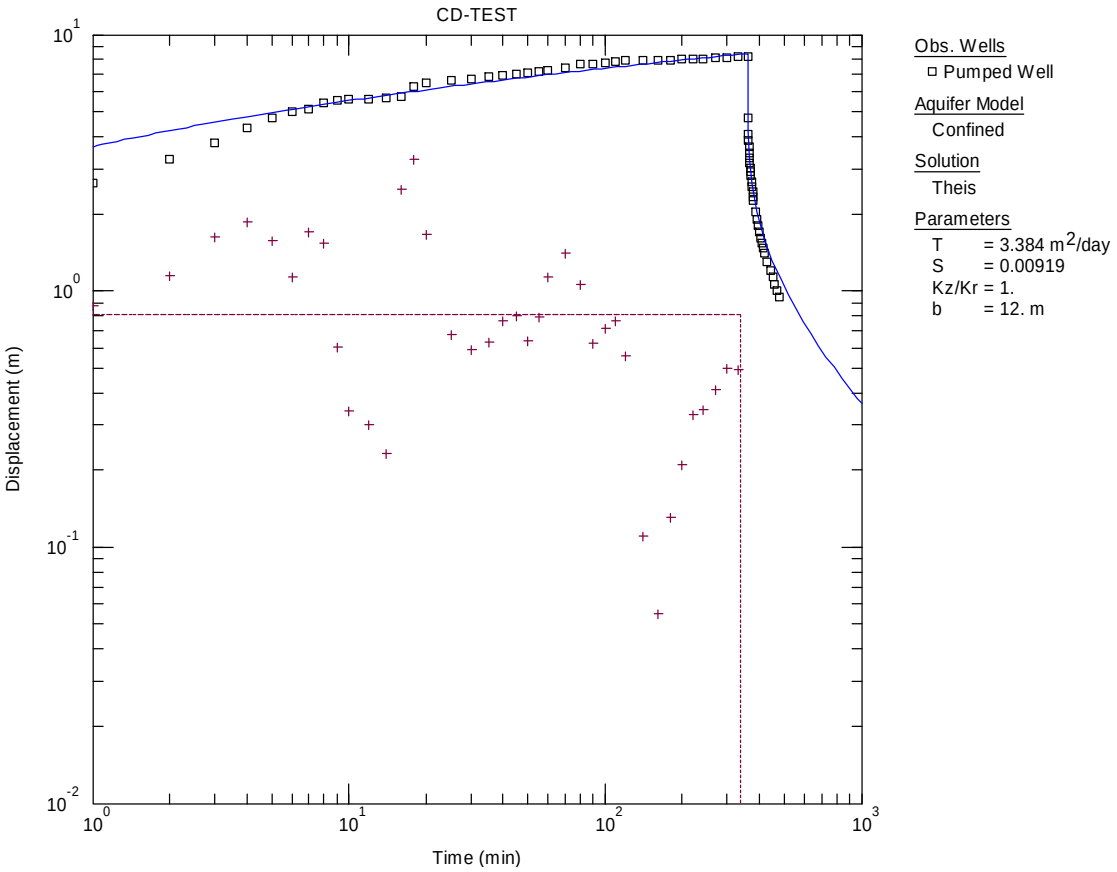


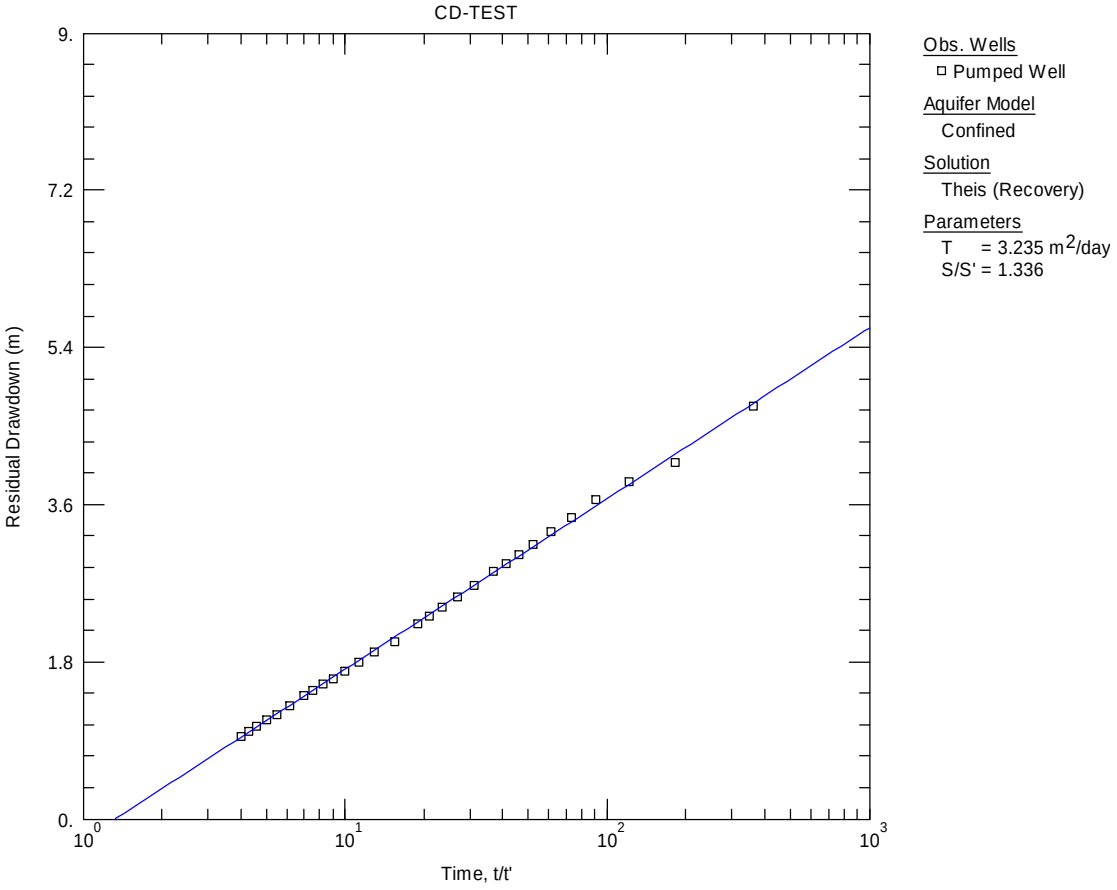




Step test evaluation at well Mass Media 6, Lusaka Province (WP-No. 5040435)

# Annex 2

# Sample aquifer test evaluation




Single-well aquifer test evaluation at Mulela Village MB-17, Central Province (WP-No. 1050027)

# Annex 3

# Analysis Results of Step Tests

## Abbreviations

| | |
|---|---|
| $Q_{MIN}$ | Smallest pumping rate, usually applied during first step |
| $Q_{Max}$ | Highest pumping rate, usually applied during last step |
| $DWL_{MIN}$ | Smallest observed dynamic water level, usually observed at the end of the first step |
| $DWL_{MAX}$ | Maximum observed dynamic water level, usually observed at the end of the last step |
| $q_{MIN}$ | Specific capacity calculated from $Q_{MIN}$ and $DWL_{MIN}$ |
| $q_{MAX}$ | Specific capacity calculated from $Q_{MAX}$ and $DWL_{MAX}$ |
| B, C | Coefficients of Hantush-Bierschenk equation |
| a, b, C | Coefficients of Eden-Hazel equation |
| T | Transmissivity |
| $Q_{70\%}$ | Pumping rate at 70% efficiency |
| $Q_{rec}$ | Recommended pumping rate |
| E | Efficiency |
| T | Transmissivity (determined using Eden-Hazel method) |

Evaluation Method Applied:

| | |
|---|---|
| HB | Hantush-Bierschenk |
| EH | Eden-Hazel |

Rating of Analysis Result:

| | |
|---|---|
| 1 | Good |
| 2 | Fair |
| 2-3 | Questionable |
| 3 | Poor |
| 4 | Unreliable |

Aquifer Category:

| | |
|---|---|
| 1 | Acid to intermediate igneous rock |
| 2 | Batoka Basalt & other basic igneous rock |
| 3 | Gneiss & undifferentiated metamorphic rock |
| 4 | Schist, shale & slate |
| 5 | Quartzite |
| 6 | Carbonate & calc-silicate rock |
| 7 | Mudstone (Karoo) |
| 8 | Pre-Kalahari sand- and siltstone (mostly Karoo) |
| 9 | Kalahari sandstone |
| 10 | Unconsolidated clastic sediments |
| 11 | Precambrian sedimentary and metasedimentary clastic rocks |
| 12 | Unclassified |

## Central Province

| Sort | WP-No. | Borehole | Data Source | Radius [m] | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | No. of steps | $Q_{Min}$ [L/s] | $Q_{max}$ [L/s] | SWL [m bgs] | $DWL_{MIN}$ [m bgs] | $DWL_{Max}$ [m bgs] | $q_{Max}$ [$m^2$/d] | $q_{Min}$ [$m^2$/d] | Analysis Method | a [$d/m^2$] | b [$1/m^2$] | B [$d/m^2$] | C [$d^2/m^5$] | T [$m^2$/d] | $Q_{70\%}$ [L/s] | $Q_{rec}$ [L/s] | E for $Q_{rec}$ [%] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1010717-1 | 1010717 | Lubinga BH (K-1) | Japan Techno | 0.05 | Quartzite, quartz-diori | Basement | 5 | 12 | 21.02.1995 | 8 | 4 | 0.24 | 0.86 | 6.01 | 2.2 | 12.34 | 9.4 | 6.0 | HB | -- | -- | 7.85E-02 | 1.02E-03 | -- | 0.38 | 0.6 | 60% | 2 |
| 1010717-2 | | | | | | | | | | | | | | | | | | | EH | 3.98E-02 | 2.06E-02 | -- | 9.25E-04 | 8.9 | 0.44 | | | 2 |
| 1010804-1 | 1010804 | Kapopo V (K-19) | Japan Techno | 0.05 | Quartzite | Katanga | 5 | 13 | 18.02.1995 | 8 | 4 | 0.1 | 0.62 | 12.47 | 1.09 | 7.73 | 7.9 | 6.9 | HB | -- | -- | 1.25E-01 | 2.58E-04 | -- | 2.4 | 0.65 | 90% | 2 |
| 1010804-2 | | | | | | | | | | | | | | | | | | | EH | 1.11E-01 | 7.12E-03 | -- | 2.41E-04 | 26 | 2.6 | | | 2 |
| 1010831-1 | 1010831 | Mingochi V (K-16) | Japan Techno | 0.05 | Schist | Katanga | 4 | 12 | 23.02.1995 | 7.2 | 4 | 0.09 | 0.32 | 8.22 | 9.1 | 25.23 | 0.85 | 1.1 | n/a | | | | | | | 0.1 | | 4 |
| 1010832-1 | 1010832 | Mposa V (K-17) | Japan Techno | 0.05 | Mudstone | Katanga | 11 | 16 | 12.02.1995 | 7.2 | 4 | 0.7 | 1.45 | 16.75 | 0.35 | 0.89 | 172.8 | 140.8 | n/a | | | | | | | 1.5 | | 4 |
| 1010840-1 | 1010840 | Musopelo V (K-18) | Japan Techno | 0.05 | Phyllite | Katanga | 4 | 12 | 15.02.1995 | 8 | 4 | 0.08 | 0.49 | 7.06 | 1.49 | 8.59 | 4.6 | 4.9 | HB | -- | -- | 2.10E-01 | -9.75E-04 | -- | | 0.3 | | 4 |
| 1010840-2 | | | | | | | | | | | | | | | | | | | EH | 1.54E-01 | 2.94E-02 | -- | -1.06E-03 | 6.2 | | | | 4 |
| 1010843-1 | 1010843 | Mutangama V (K-4) | Japan Techno | 0.05 | Dolomite, phyllite | Katanga | 6 | 12 | 18.02.1995 | | 4 | 0.6 | 1.58 | 12.60 | 0.74 | 2.89 | 70.1 | 47.2 | n/a | | | | | | | 1.6 | | 4 |
| 1010845-1 | 1010845 | Mwanje V (K-15) | Japan Techno | 0.05 | Amphibolite, granite | Basement | 3 | 29 | 25.02.1995 | 8 | 4 | 0.1 | 0.18 | 11.77 | 10.37 | 25.19 | 0.83 | 0.62 | HB | -- | -- | 6.78E-01 | 5.20E-02 | -- | 0.06 | 0.12 | 56% | 2 |
| 1010845-2 | | | | | | | | | | | | | | | | | | | EH | 4.77E-04 | 4.20E-01 | -- | 3.58E-02 | 0.38 | 0.12 | | | 3 |
| 1020051-1 | 1020051 | Kabwe (Mukobeko) K-6 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 36 | 29.11.2007 | 9.4 | 4 | 13.1 | 54.9 | 6.00 | 0.23 | 3.25 | 4921.0 | 1459.5 | HB | -- | -- | 7.01E-05 | 1.27E-07 | -- | 2.7 | 50 | 11% | 3 |
| 1020051-2 | | | | | | | | | | | | | | | | | | | EH | -1.72E-04 | 1.66E-04 | -- | 9.00E-08 | 1100 | 9.5 | | | 4 |
| 1020052-1 | 1020052 | Kabwe (Mukobeko) K-1 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 43 | 24.10.2007 | 15.5 | 4 | 17.1 | 68 | 5.07 | 0.73 | 6.46 | 2023.9 | 909.5 | HB | -- | -- | 4.09E-04 | 1.13E-07 | -- | 18.0 | 40 | 51% | 3 |
| 1020052-2 | | | | | | | | | | | | | | | | | | | EH | 1.08E-04 | 1.46E-04 | -- | 1.05E-07 | 1251 | 19.4 | | | 3 |
| 1020053-1 | 1020053 | Kabwe (Mukobeko) K-2 | JBG Gauff | 0.15 | Limestone, quartzite | Katanga | 6 | 42 | 10.11.2007 | 15 | 4 | 11.4 | 45.5 | 6.96 | 2.14 | 22.34 | 460.3 | 176.0 | HB | -- | -- | | | -- | | 30 | | 4 |
| 1020053-2 | | | | | | | | | | | | | | | | | | | EH | -8.44E-09 | 2.73E-04 | -- | 1.52E-06 | 672 | 1.9 | | | 3 |
| 1020056-1 | 1020056 | Kabwe (Mukobeko) K-5 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 40 | 03.11.2007 | 10.5 | 4 | 14.6 | 58.4 | 5.50 | 0.54 | 2.22 | 2336.0 | 2272.9 | HB | -- | -- | 3.10E-04 | 1.71E-08 | -- | 90 | 60 | 78% | 2-3 |
| 1020056-2 | | | | | | | | | | | | | | | | | | | EH | 1.13E-04 | 9.10E-05 | -- | 2.00E-08 | 2025 | 75 | | | 2 |
| 1020057-1 | 1020057 | Kabwe (Mukobeko) K-3 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 42 | 18.11.2007 | 12.3 | 4 | 16.3 | 65.5 | 5.18 | 0.13 | 0.7 | 10833.2 | 8084.6 | HB | -- | -- | 8.10E-05 | 7.34E-09 | -- | 55 | 65 | 66% | 3 |
| 1020057-2 | | | | | | | | | | | | | | | | | | | EH | 3.35E-05 | 2.16E-05 | -- | 6.35E-09 | 8464 | 61 | | | 2-3 |
| 1020062-1 | 1020062 | Kabwe (Kalulu) K-7 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 36 | 26.12.2007 | 11.5 | 4 | 14.6 | 58.4 | 10.76 | 0.1 | 0.76 | 12614.4 | 6639.2 | HB | -- | -- | 7.58E-05 | 1.21E-08 | -- | 31 | 60 | 55% | 2 |
| 1020062-2 | | | | | | | | | | | | | | | | | | | EH | -5.41E-07 | 3.81E-05 | -- | 1.00E-08 | 4809 | 39 | | | 2 |
| 1020063-1 | 1020063 | Kabwe (Kalulu) K-8 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 42 | 28.12.2007 | 14.2 | 4 | 7.0 | 28.0 | 10.90 | 1.02 | 23.84 | 592.9 | 101.5 | HB | -- | -- | -1.16E-03 | 4.19E-06 | -- | | 20 | | 3 |
| 1020063-2 | | | | | | | | | | | | | | | | | | | EH | -2.14E-03 | 5.11E-04 | -- | 4.09E-06 | 358 | | | | 2-3 |
| 1020064-1 | 1020064 | Kabwe (Kalulu) K-9 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 48 | 21.12.2007 | 12 | 4 | 17.1 | 68.3 | 11.42 | 0.16 | 0.84 | 9234.0 | 7025.1 | HB | -- | -- | 1.03E-04 | 5.36E-09 | -- | 95 | 70 | 76% | 2 |
| 1020064-2 | | | | | | | | | | | | | | | | | | | EH | 4.70E-05 | 2.90E-05 | -- | 3.34E-09 | 6305 | 159 | | | 1 |
| 1020065-1 | 1020065 | Kabwe (Kalulu) K-10 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 36 | 03.12.2007 | 16.2 | 4 | 15.7 | 62.7 | 11.70 | 0.16 | 1.2 | 8478.0 | 4514.4 | HB | -- | -- | 9.78E-05 | 2.07E-08 | -- | 23 | 65 | 46% | 2 |
| 1020065-2 | | | | | | | | | | | | | | | | | | | EH | 1.51E-05 | 3.25E-05 | -- | 2.26E-08 | 5631 | 18 | | | 1 |
| 1020066-1 | 1020066 | Kabwe (Kalulu) K-11 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 48 | 28.11.2007 | 15.2 | 4 | 13.1 | 52.4 | 11.30 | 0.24 | 2.72 | 4716.0 | 1664.5 | HB | -- | -- | 9.35E-05 | 1.07E-07 | -- | 4.3 | 52 | 16% | 2-3 |
| 1020066-2 | | | | | | | | | | | | | | | | | | | EH | -1.15E-04 | 1.24E-04 | -- | 8.30E-08 | 1481 | 8.5 | | | 3 |
| 1020067-1 | 1020067 | Kabwe (Kalulu) K-12 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 42 | 16.12.2007 | 10.5 | 4 | 15 | 60.1 | 11.13 | 0.19 | 1.47 | 6821 | 3532 | HB | -- | -- | 1.30E-04 | 2.73E-08 | -- | 24 | 60 | 48% | 2 |
| 1020067-2 | | | | | | | | | | | | | | | | | | | EH | 1.87E-05 | 6.21E-05 | -- | 1.98E-08 | 2948 | 37 | | | 1 |
| 1020068-1 | 1020068 | Kabwe (Mukobeko) K-4 | JBG Gauff | 0.15 | Limestone | Katanga | 6 | 42 | 23.11.2007 | 15 | 4 | 15.6 | 62.7 | 5.88 | 1.22 | 8 | 1104.8 | 677.2 | HB | -- | -- | 8.40E-04 | 1.11E-07 | -- | 38 | 40 | 69% | 2 |
| 1020068-2 | | | | | | | | | | | | | | | | | | | EH | 3.49E-04 | 2.36E-04 | -- | 9.50E-08 | 777 | 44 | | | 2 |
| 1030050-1 | 1030050 | Makafu P Sch (MK-7) | Japan Techno | 0.05 | Gneissic granite | Basement | 1 | 16 | 13.05.1994 | 7 | 4 | 0.09 | 0.24 | 5.84 | 19.89 | 64.96 | 0.39 | 0.32 | HB | -- | -- | 2.59E+00 | 1.03E-02 | -- | 1.2 | 0.1 | | 4 |
| 1030050-2 | | | | | | | | | | | | | | | | | | | EH | -1.00E-01 | 1.05E+00 | -- | 4.56E-02 | 0.18 | 0.23 | | | 3 |
| 1030051-1 | 1030051 | St Paul Sch (MK-19) | Japan Techno | 0.05 | Amphibolite | Basement | 3 | 10 | 24.04.1993 | 7.5 | 5 | 0.2 | 1.89 | 4.82 | 0.41 | 19.08 | 42.2 | 8.6 | HB | -- | -- | 4.72E-01 | -2.37E-03 | -- | | 1.0 | | 4 |
| 1030051-2 | | | | | | | | | | | | | | | | | | | EH | -2.10E-02 | 1.86E-02 | -- | 5.26E-04 | 9.8 | 0.17 | | | 2-3 |
| 1030529-1 | 1030529 | Mukonchi P Sch (MK-10B) | Japan Techno | 0.05 | Granite | Basement | 1 | 16 | 16.05.1994 | 6.7 | 4 | 0.15 | 0.32 | 5.60 | 13.05 | 32.04 | 1.0 | 0.86 | HB | -- | -- | 9.37E-01 | 3.43E-03 | -- | 1.4 | 0.3 | 91% | 3 |
| 1030529-2 | | | | | | | | | | | | | | | | | | | EH | 3.51E-01 | 2.70E-01 | -- | 5.15E-03 | 0.7 | 0.88 | | | 3 |
| 1040004-1 | 1040004 | Chilimo (MK-24) | Japan Techno | 0.05 | Gneiss & gneissic gra | Basement | 3 | 12 | 03.02.1994 | 7.3 | 5 | 0.13 | 0.57 | 9.70 | 4.57 | 24.13 | 2.5 | 2.04 | HB | -- | -- | 2.00E-01 | 5.42E-03 | -- | 0.18 | 0.3 | 59% | 2 |
| 1040004-2 | | | | | | | | | | | | | | | | | | | EH | 1.50E-01 | 3.37E-02 | -- | 5.11E-03 | 5.4 | 0.21 | | | 2 |
| 1040025-1 | 1040025 | Old Mkushi Boma (MK-18) | Japan Techno | 0.05 | Hornblendite | Basement | 1 | 16 | 01.04.1994 | 3.5 | 4 | 0.1 | 0.18 | 10.62 | 14.38 | 34.7 | 0.60 | 0.45 | HB | -- | -- | 8.40E-01 | 8.66E-02 | -- | 0.05 | 0.1 | 53% | 2-3 |
| 1040025-2 | | | | | | | | | | | | | | | | | | | EH | | | | | | | | | 4 |
| 1050001-1 | 1050001 | Chaam-Babulele (MB-11) | Japan Techno | 0.05 | Gneiss | Basement | 3 | 12 | 12.05.1994 | 6 | 4 | 0.1 | 0.27 | 19.52 | 4.04 | 20.37 | 2.1 | 1.2 | HB | -- | -- | 4.40E-01 | 7.93E-03 | -- | 0.28 | 0.3 | 68% | 2-3 |
| 1050001-2 | | | | | | | | | | | | | | | | | | | EH | -8.73E-02 | 2.30E-01 | -- | 1.43E-02 | 0.8 | 0.14 | | | 3 |
| 1050002-1 | 1050002 | Chibuluma V (MB-13) | Japan Techno | 0.05 | n/a {probably schist} | Katanga | 4 | 12 | 08.08.1994 | 9.7 | 6 | 0.27 | 2.52 | 15.89 | 0.49 | 14.22 | 47.6 | 15.3 | HB | -- | -- | 2.25E-02 | 1.55E-04 | -- | 0.72 | 1.6 | 51% | 1 |
| 1050002-2 | | | | | | | | | | | | | | | | | | | EH | 9.10E-03 | 6.67E-03 | -- | 1.58E-04 | 27.0 | 0.7 | | | 1 |
| 1050003-1 | 1050003 | Chiwena RHC (MB-4) | Japan Techno | 0.05 | Gneiss | Basement | 3 | 12 | 16.05.1994 | 4 | 4 | 0.16 | 0.8 | 31.86 | 0.41 | 2.28 | 33.7 | 30.3 | HB | -- | -- | 2.87E-02 | 2.78E-05 | -- | 5.12 | 0.8 | 94% | 2-3 |
| 1050003-2 | | | | | | | | | | | | | | | | | | | EH | 1.59E-02 | 7.96E-03 | -- | 2.64E-06 | 23 | 60.97 | | | 2-3 |
| 1050004-1 | 1050004 | Chooba V (MB-8) | Japan Techno | 0.05 | Phyllite | Katanga | 4 | 12 | 14.04.1994 | 5.8 | 3 | 0.3 | 3.2 | 9.95 | 0.1 | 4.03 | 259.2 | 68.6 | HB | -- | -- | 4.46E-03 | 3.62E-05 | -- | 0.61 | 1.4 | 50% | 2-3 |
| 1050004-2 | | | | | | | | | | | | | | | | | | | EH | 1.74E-03 | 1.13E-03 | -- | 3.88E-05 | 162 | 0.52 | | | 2-3 |
| 1050005-1 | 1050005 | Katala BH 2 (MB-3) | Japan Techno | 0.05 | Gneiss | Basement | 3 | 12 | 25.04.1994 | 5 | 4 | 0.23 | 0.7 | 13.61 | 0.98 | 4.53 | 20.3 | 13.4 | HB | -- | -- | 3.78E-02 | 5.80E-04 | -- | 0.32 | 0.5 | 60% | 2 |
| 1050005-2 | | | | | | | | | | | | | | | | | | | EH | 2.98E-02 | 5.90E-03 | -- | 5.09E-04 | 31 | 0.41 | | | 2 |
| 1050006-1 | 1050006 | Leya V (MB-16) | Japan Techno | 0.05 | Granite | Basement | 1 | 12 | 23.09.1994 | 5.5 | 4 | 0.34 | 2.72 | 13.43 | 0.67 | 9.86 | 43.8 | 23.8 | HB | -- | -- | 2.37E-02 | 7.39E-05 | -- | 1.6 | 1.6 | 70% | 2-3 |
| 1050006-2 | | | | | | | | | | | | | | | | | | | EH | 1.61E-02 | 4.58E-03 | -- | 6.40E-05 | 40.0 | 2.0 | | | 2 |

| Sort | WP-No. | Borehole | Data Source | Radius [m] | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | No. of steps | $Q_{Min}$ [L/s] | $Q_{max}$ [L/s] | SWL [m bgs] | $DWL_{MIN}$ [m bgs] | $DWL_{Max}$ [m bgs] | $q_{Max}$ [$m^2$/d] | $q_{Min}$ [$m^2$/d] | Analysis Method | a [$d/m^2$] | b [$1/m^2$] | B [$d/m^2$] | C [$d^2/m^5$] | T [$m^2$/d] | $Q_{70\%}$ [L/s] | $Q_{rec}$ [L/s] | E for $Q_{rec}$ [%] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1050007-1 | 1050007 | Luili P Sch (MB-6) | Japan Techno | 0.05 | Amphibolite | Basement | 3 | 12 | 23.04.1994 | 4.3 | 4 | 0.1 | 0.45 | 46.95 | 0.37 | 3.32 | 23.4 | 11.7 | **HB** | -- | -- | 3.05E-02 | 1.37E-03 | -- | 0.11 | 0.25 | 51% | 2 |
| 1050007-2 | | | | | | | | | | | | | | | | | | | **EH** | -6.72E-03 | 2.21E-02 | -- | 1.24E-03 | 8.3 | 0.16 | | | 2 |
| 1050008-1 | 1050008 | Lutale P Sch (MB-15) | Japan Techno | 0.05 | n/a {probably schist} | Katanga | 4 | 12 | 05.08.1994 | 8 | 4 | 0.13 | 0.23 | 12.81 | 7.85 | 25.5 | 1.4 | 0.8 | **HB** | -- | -- | 1.06E-01 | 5.50E-02 | -- | 0.010 | 0.18 | 11% | 2 |
| 1050008-2 | | | | | | | | | | | | | | | | | | | **EH** | -2.60E-01 | 1.70E-01 | -- | 5.52E-02 | 1.1 | 0.008 | | | 3 |
| 1050009-1 | 1050009 | Malende V & Depot (MB-10) | Japan Techno | 0.05 | Marble | Katanga | 6 | 12 | 28.09.1994 | 6 | 5 | 0.45 | 2.4 | 18.54 | 0.17 | 2.55 | 228.7 | 81.3 | **HB** | -- | -- | 3.95E-03 | 3.17E-05 | -- | 0.62 | 1.4 | 51% | 2 |
| 1050009-2 | | | | | | | | | | | | | | | | | | | **EH** | 2.34E-04 | 1.81E-03 | -- | 3.17E-05 | 101 | 0.6 | | | 1 |
| 1050010-1 | 1050010 | Mayuwa V (MB-12) | Japan Techno | 0.05 | Rhyolite (?) | | | 11.5 | 12.08.1994 | 4.7 | 4 | 0.24 | 0.7 | 9.00 | 1.51 | 15.08 | 13.7 | 4.0 | **HB** | -- | -- | 6.57E-03 | 3.56E-03 | -- | 0.01 | 0.5 | 4% | 2-3 |
| 1050010-2 | | | | | | | | | | | | | | | | | | | **EH** | -7.75E-02 | 4.49E-02 | -- | 3.53E-03 | 4.0 | 0.02 | | | 2-3 |
| 1050011-1 | 1050011 | Mukulaikwa V (MB-7) | Japan Techno | 0.05 | Mudstone (or schist?) | Katanga | 4 | 12 | 12.10.1994 | 4.7 | 4 | 0.38 | 2.92 | 8.30 | 0.14 | 1.15 | 234.5 | 219.4 | **HB** | -- | -- | 3.79E-03 | 3.92E-05 | -- | 0.48 | 1.1 | 50% | 3 |
| 1050011-2 | | | | | | | | | | | | | | | | | | | **EH** | -2.65E-03 | 2.90E-03 | -- | 9.08E-05 | 63 | 0.18 | | | 3 |
| 1050013-1 | 1050013 | Mulungushi V (MB-9) | Japan Techno | 0.05 | Quartzite, minor siltst | Katanga | 5 | 22 | 09.02.1995 | 10 | 5 | 0.08 | 0.49 | 22.49 | 0.57 | 3.65 | 12.1 | 11.6 | **HB** | -- | -- | 9.02E-02 | -6.35E-06 | -- | | 0.5 | | 4 |
| 1050016-1 | 1050016 | Nalusanga P Sch 1 (MB-1) | Japan Techno | 0.05 | Phyllite (probably grar | Hook Complex | 1 | 12 | 09.04.1994 | 8.8 | 5 | 0.11 | 0.49 | 8.05 | 1.31 | 14.13 | 7.3 | 3.0 | **HB** | -- | -- | 1.30E-01 | 2.22E-03 | -- | 0.29 | 0.3 | 69% | 3 |
| 1050016-2 | | | | | | | | | | | | | | | | | | | **EH** | 2.73E-02 | 6.49E-02 | -- | 4.67E-04 | 2.8 | 1.72 | | | 4 |
| 1990180-1 | 1990180 | Mumba Palace (MB-2) | Japan Techno | 0.05 | Gneiss | Basement | 3 | 12 | 16.05.1994 | 3.8 | 4 | 0.16 | 0.8 | 30.30 | 0.41 | 2.28 | 33.7 | 30.3 | **HB** | -- | -- | 2.88E-02 | 2.50E-05 | -- | 5.71 | 1 | 93% | 2 |
| 1050017-1 | 1050017 | Nambwa P Sch (MB-5) | Japan Techno | 0.05 | Gneiss | Basement | 3 | 12 | 14.05.1994 | 6.8 | 4 | 0.15 | 0.45 | 16.80 | 2.04 | 9.93 | 6.4 | 3.9 | **HB** | -- | -- | 1.50E-01 | 1.90E-03 | -- | 0.39 | 0.4 | 70% | 2 |
| 1050017-2 | | | | | | | | | | | | | | | | | | | **EH** | 1.67E-02 | 6.93E-03 | -- | 2.69E-05 | 26 | 5.74 | | | 2 |
| 1050017-2 | | | | | | | | | | | | | | | | | | | **EH** | -4.47E-03 | 6.78E-02 | -- | 2.35E-03 | 2.7 | 0.29 | | | 2 |
| 1050018-1 | 1050018 | Pamangoma V (MB-18) | Japan Techno | 0.05 | Quartzite | Katanga | 5 | 12 | 15.10.1994 | 4.4 | 4 | 0.38 | 2.52 | 19.00 | 0.69 | 6.41 | 47.6 | 34.0 | **HB** | -- | -- | 2.10E-02 | 2.63E-05 | -- | 4.0 | 2.5 | 79% | 2-3 |
| 1050018-2 | | | | | | | | | | | | | | | | | | | **EH** | 1.21E-02 | 5.50E-03 | -- | 2.24E-05 | 33.0 | 5.2 | | | 2 |
| 1050019-1 | 1050019 | Shimbwanga V (MB-14) | Japan Techno | 0.05 | n/a {probably slate} | Katanga | 4 | 12 | 10.08.1994 | 4.5 | 4 | 0.34 | 1.02 | 21.71 | 0.7 | 6.18 | 42.0 | 14.3 | **HB** | -- | -- | 7.98E-03 | 5.72E-04 | -- | 0.07 | 1.0 | 14% | 3 |
| 1050019-2 | | | | | | | | | | | | | | | | | | | **EH** | -1.30E-02 | 1.10E-02 | -- | 6.30E-04 | 14.0 | 0.08 | | | 2-3 |
| 1050020-1 | 1050020 | Shindaile V (MB-19) | Japan Techno | 0.05 | Phyllite, slate | Katanga | 4 | 12 | 25.09.1994 | 7.2 | 4 | 0.13 | 0.32 | 15.20 | 2.93 | 18.5 | 3.8 | 1.5 | **HB** | -- | -- | 1.93E-01 | 8.30E-03 | -- | 0.12 | 0.2 | 57% | 2-3 |
| 1050022-1 | 1050022 | Nalubanda Sch (MB-20) | Japan Techno | 0.05 | Pyroxenite | Katanga ? | 1 | 12 | 15.08.1994 | 6.3 | 5 | 0.26 | 1.45 | 17.81 | 1.33 | 16.15 | 16.9 | 7.8 | **HB** | -- | -- | | | -- | | 1.0 | | 4 |
| 1050022-2 | | | | | | | | | | | | | | | | | | | **EH** | 2.85E-02 | 1.34E-02 | -- | 4.86E-04 | 14.0 | 0.6 | | | 2 |
| 1050027-1 | 1050027 | Mulela (MB-17) | Japan Techno | 0.05 | Granite-gneiss | Basement | 3 | 12 | 08.10.1994 | 4.5 | 4 | 0.21 | 0.7 | 9.06 | 3.97 | 19.52 | 4.6 | 3.1 | **HB** | -- | -- | 1.86E-01 | 1.76E-03 | -- | 0.52 | 0.52 | 70% | 2-3 |
| 1050027-2 | | | | | | | | | | | | | | | | | | | **EH** | 1.02E-01 | 5.15E-02 | -- | 1.51E-03 | 3.6 | 0.69 | | | 2-3 |

# Lusaka Province

| Sort | WP-No. | Borehole | Data Source | Radius [m] | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | No. of steps | $Q_{Min}$ [L/s] | $Q_{max}$ [L/s] | SWL [m bgs] | $DWL_{MIN}$ [m] | $DWL_{Max}$ [m] | $q_{Max}$ [$m^2$/d] | $q_{Min}$ [$m^2$/d] | Analysis Method | a [$d/m^2$] | b [$1/m^2$] | B [$d/m^2$] | C [$d^2/m^5$] | T [$m^2$/d] | $Q_{70\%}$ [L/s] | $Q_{rec}$ [L/s] | E for $Q_{rec}$ [%] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5010027-1 | 5010027 | St. Luke's Hospital Mpanshya | Japan Techno Co. Ltd | 0.05 | Gravel with clay | Recent | 10 | 12 | 25.08.1993 | 2.7 | 6 | 0.32 | 3.28 | 10.13 | 1.02 | 9.91 | 27.1 | 28.6 | EH | 3.56E-02 | 7.08E-04 | -- | -7.31E-06 | 259 | | 1.5 | | 4 |
| 5010052-1 | 5010052 | Rufunsa P Sch | Japan Techno Co. Ltd | 0.05 | Sand and clay | Recent | 10 | 12 | 08.08.1993 | 8.0 | 4 | 0.15 | 0.34 | 11.18 | 6.27 | 20.05 | 2.1 | 1.5 | HB | -- | -- | 3.90E-01 | 8.44E-03 | -- | 0.23 | 0.2 | 73% | 2-3 |
| 5010052-2 | | | | | | | | | | | | | | | | | | | EH | 2.20E-01 | 8.23E-02 | -- | 8.30E-03 | 8.9 | 0.2 | | | 2-3 |
| 5010057-1 | 5010057 | Chinkuli P Sch | Japan Techno Co. Ltd | 0.05 | Granite | Basement | 1 | 20 | 14.08.1993 | 8.0 | 4 | 0.1 | 0.16 | 3.14 | 10.33 | 27.04 | 0.8 | 0.5 | HB | -- | -- | 0.89 | 3.21E-02 | -- | 0.14 | 0.14 | 70% | 2 |
| 5010057-2 | | | | | | | | | | | | | | | | | | | EH | 0.42 | 0.21 | -- | 3.47E-02 | 0 | 0.12 | | | 3 |
| 5010063-1 | 5010063 | Chiwala V | Japan Techno Co. Ltd | 0.05 | Gravel with sand | Recent | 10 | 12 | 20.08.1993 | 7.0 | 4 | 0.1 | 0.7 | 10.99 | 2.01 | 13.73 | 4.3 | 4.4 | HB | -- | -- | 8.35E-02 | 1.69E-03 | -- | 0.25 | 0.5 | 53% | 3 |
| 5010063-2 | | | | | | | | | | | | | | | | | | | EH | -2.33E-03 | 4.52E-02 | -- | 1.39E-03 | 4 | 0.33 | | | 3 |
| 5010085-1 | 5010085 | Mukunya V | Japan Techno Co. Ltd | 0.05 | Gneiss | Katanga | 3 | 12 | 18.08.1993 | 8.3 | 5 | 0.13 | 0.42 | 3.08 | 5.06 | 32.62 | 2.2 | 1.1 | HB | -- | -- | 0.286 | 1.53E-02 | -- | 0.1 | 0.22 | 50% | 2 |
| 5010086-1 | 5010086 | Mupwaya V | Japan Techno Co. Ltd | 0.05 | Clay with sand, mudstone | Karoo (?) | 7 | 12 | 13.08.1993 | 8.0 | 4 | 0.24 | 0.45 | 9.83 | 2.26 | 16.97 | 9.2 | 2.3 | HB | -- | -- | 1.00E-01 | 2.84E-04 | -- | 1.7 | 1.1 | 79% | 2-3 |
| 5010086-2 | | | | | | | | | | | | | | | | | | | EH | 1.19E-02 | 4.48E-02 | -- | 2.93E-04 | 4 | 1.8 | | | 2-3 |
| 5010093-1 | 5010093 | Unda Unda Palace | Japan Techno Co. Ltd | 0.05 | Granite/Gneiss | Basement | 3 | 12 | 05.08.1993 | 10.5 | 6 | 0.18 | 1.44 | 4.80 | 1.93 | 29.35 | 8.1 | 4.2 | HB | -- | -- | 1.10E-01 | 5.87E-04 | -- | 0.9 | 0.9 | 71% | 3 |
| 5010093-2 | | | | | | | | | | | | | | | | | | | EH | 3.87E-02 | 3.25E-02 | -- | 8.24E-04 | 5.6 | 0.6 | | | 1 |
| 5010098-1 | 5010098 | NRDC C13 | GIBB Africa | 0.125 | Limestone | Katanga | 6 | 12 | 25.07.2001 | 8.0 | 4 | 3 | 6 | 1.70 | 4.49 | 11.13 | 57.7 | 46.6 | HB | -- | -- | 1.36E-02 | 1.05E-05 | -- | 6.4 | 4 | 79% | 2-3 |
| 5010098-2 | | | | | | | | | | | | | | | | | | | TR | | | | | 78 | | | | 2 |
| 5010099-1 | 5010099 | NRDC 2 (B10/30N) | GIBB Africa | 0.125 | Limestone | Katanga | 6 | 12 | 19.04.2001 | 8.0 | 4 | 8 | 32 | 1.39 | 2.91 | 27.13 | 237.5 | 101.9 | HB | -- | -- | 7.34E-03 | 2.54E-06 | -- | 14.3 | 15 | 69% | 2-3 |
| 5010122-1 | 5010122 | Avondale 1 | GIBB Africa | 0.1 | Limestone | Katanga | 6 | 30 | 20.07.2001 | 10.0 | 5 | 14.7 | 36.4 | 1.05 | 1.22 | 4.62 | 1041.1 | 680.7 | HB | -- | -- | 7.69E-04 | 1.46E-07 | -- | 26.1 | 26 | 70% | 1 |
| 5010122-2 | | | | | | | | | | | | | | | | | | | EH | 2.47E-04 | 3.16E-04 | -- | 7.59E-08 | 579 | 59.1 | | | 2 |
| 5010123-1 | 5010123 | Avondale 2 F12-33W | GIBB Africa | 0.05 | Limestone | Katanga | 6 | 12 | 11.04.2001 | 8.0 | 4 | 2.7 | 22 | 1.64 | 2.04 | 38.00 | 114.4 | 50.0 | HB | -- | -- | -1.58E-03 | 1.07E-05 | -- | | 22 | | 4 |
| 5010124-1 | 5010124 | Avondale 3 F12-0/70 | GIBB Africa | 0.08 | Limestone | Katanga | 6 | 9 | 28.06.2001 | 8.0 | 4 | 2.6 | 8 | 2.61 | 6.09 | 22.50 | 36.9 | 30.7 | HB | -- | -- | 6.78E-03 | 3.87E-05 | -- | 0.9 | 6 | 25% | 3 |
| 5010124-2 | | | | | | | | | | | | | | | | | | | EH | 6.31E-03 | 1.97E-03 | -- | 3.07E-05 | 0 | 1.7 | | | 4 |
| 5010127-1 | 5010127 | Marian Shrine | GIBB Africa | 0.05 | Limestone/Schist | Katanga | 6 | 9 | 22.05.2001 | 8.0 | 4 | 4 | 14 | 1.13 | 1.38 | 10.37 | 250.4 | 116.6 | HB | -- | -- | 2.16E-03 | 4.45E-06 | -- | 2.4 | 6 | 48% | 1 |
| 5010127-2 | | | | | | | | | | | | | | | | | | | EH | | | | | | | | | 4 |
| 5010130-1 | 5010130 | NRDC 3 (C14-4/65) | GIBB Africa | 0.075 | Limestone | Katanga | 6 | 15 | 15.09.2001 | 9.2 | 5 | 14.2 | 34.8 | 3.13 | 4.43 | 21.82 | 277.0 | 137.8 | HB | -- | -- | 1.85E-03 | 1.39E-06 | -- | 6.6 | 14 | 52% | 2-3 |
| 5010131-1 | 5010131 | NRDC 4 D13/50W | GIBB Africa | 0.075 | Limestone | Katanga | 6 | 9 | 16.06.2001 | 8.0 | 4 | 2 | 16 | 1.60 | 1.75 | 19.09 | 98.7 | 72.4 | HB | -- | -- | 8.45E-03 | 2.26E-06 | -- | 18.5 | 16 | 73% | 2-3 |
| 5010131-2 | | | | | | | | | | | | | | | | | | | EH | 6.98E-03 | 1.15E-03 | -- | 5.10E-07 | 159 | 91.1 | | | 4 |
| 5010168-1 | 5010168 | NRDC Ranch B6-4 | GIBB Africa | 0.1 | Limestone | Katanga | 6 | 15 | 20.09.2001 | 7.0 | 4 | 10 | 24.8 | 1.77 | 1.73 | 24.76 | 499.4 | 86.5 | HB | -- | -- | 6.51E-04 | 1.50E-06 | -- | 2.2 | 5 | 50% | 2 |
| 5010176-1 | 5010176 | Luangwa Bridge | Japan Techno Co. Ltd | 0.05 | Gneiss | Basement | 3 | 16 | 24.11.1993 | 4.0 | 2 | 0.11 | 0.16 | 25.16 | 6.11 | 16.14 | 1.6 | 0.9 | | | | | | | -- | 0.15 | | 4 |
| 5010177-1 | 5010177 | Soweto | Japan Techno Co. Ltd | 0.05 | Granite | Basement | 1 | 12 | 26.11.1993 | 5.5 | 4 | 0.21 | 1.31 | 31.90 | 1.81 | 12.50 | 10.0 | 9.1 | HB | -- | -- | 9.13E-02 | 7.89E-05 | -- | 5.7 | 1.5 | 90% | 2 |
| 5010177-2 | | | | | | | | | | | | | | | | | | | EH | 7.62E-02 | 7.44E-03 | -- | 8.90E-05 | 24.6 | 5.1 | | | 2 |
| 5020210-1 | 5020210 | MFEZ BH-J1 | Oriental Cons, GReSP | 0.075 | Limestone | Katanga | 6 | 18 | 03.07.2008 | 10.0 | 4 | 2.22 | 3.33 | 12.64 | 2.36 | 6.94 | 81.3 | 41.5 | HB | -- | -- | 4.46E-04 | 5.65E-05 | -- | 0.0 | 4 | 2% | 2 |
| 5020210-2 | | | | | | | | | | | | | | | | | | | EH | 6.21E-04 | 3.99E-03 | -- | 2.14E-05 | 46 | 2.1 | | | 3 |
| 5020211-1 | 5020211 | MFEZ BH-J2 | Oriental Cons, GReSP | 0.075 | Limestone | Katanga | 6 | 24 | 03.07.2008 | 11.5 | 4 | 0.08 | 2.55 | 20.51 | 3.32 | 15.41 | 2.1 | 14.3 | HB | -- | -- | 1.90E-01 | -6.06E-04 | -- | | 2 | | 4 |
| 5020211-2 | | | | | | | | | | | | | | | | | | | EH | 1.80E-01 | 7.11E-03 | -- | -6.10E-04 | 26 | | | | 4 |
| 5020212-1 | 5020212 | MFEZ BH-J3 | Oriental Cons, GReSP | 0.075 | Limestone | Katanga | 6 | 24 | 24.07.2008 | 7.5 | 3 | 5.61 | 10.28 | 4.10 | 0.94 | 2.98 | 515.6 | 298.1 | HB | -- | -- | 4.38E-04 | 3.55E-06 | -- | 0.6 | 10 | 12% | 3 |
| 5020213-1 | 5020213 | MFEZ BH-J4 | Oriental Cons, GReSP | 0.075 | Limestone | Katanga | 6 | 25 | 17.07.2008 | 10.0 | 4 | 2.8 | 8.53 | 19.00 | 0.95 | 2.09 | 254.7 | 352.6 | HB | -- | -- | 4.50E-03 | -2.66E-06 | -- | -8.4 | 10 | | 4 |
| 5020214-1 | 5020214 | MFEZ BH-J5 | Oriental Cons, GReSP | 0.075 | Limestone | Katanga | 6 | 24 | 07.07.2008 | 11.0 | 3 | 0.45 | 8.5 | 6.98 | 0.72 | 7.14 | 54.0 | 102.9 | HB | -- | -- | 1.26E-02 | -4.46E-06 | -- | | 8 | | 4 |
| 5020214-2 | | | | | | | | | | | | | | | | | | | EH | 9.96E-03 | 1.47E-03 | -- | -5.93E-06 | 124 | | | | 4 |
| 5020216-1 | 5020216 | Chanyanya Harbour 2 | Japan Techno Co. Ltd | 0.05 | Sand, siltstone | Recent | 10 | 12 | 11.01.1995 | 6.3 | 4 | 0.31 | 1.84 | 3.60 | 1.11 | 7.82 | 24.1 | 20.3 | HB | -- | -- | 4.37E-02 | 8.50E-06 | -- | 25.5 | 1.8 | 97% | 3 |
| 5020216-2 | | | | | | | | | | | | | | | | | | | EH | 2.90E-02 | 8.82E-03 | -- | -2.30E-05 | 21 | | | | 4 |
| 5020218-1 | 5020218 | Chanyanya Harbour 1 | Japan Techno Co. Ltd | 0.05 | Unconsolidated clastic sediments | Recent | 10 | 12 | 10.01.1995 | 5.2 | 4 | 0.2 | 1.68 | 4.30 | 0.40 | 8.05 | 43.2 | 18.0 | HB | -- | -- | 2.06E-02 | 2.34E-04 | -- | 0.44 | 0.9 | 53% | 2 |
| 5020218-2 | | | | | | | | | | | | | | | | | | | EH | 1.23E-02 | 5.68E-03 | -- | 2.20E-04 | 32 | 0.5 | | | 2 |
| 5020219-1 | 5020219 | Chapanga Village | Japan Techno Co. Ltd | 0.05 | Shale (Mudstone) | Karoo | 7 | 12 | 11.01.1995 | 10.7 | 6 | 0.13 | 1.45 | 22.85 | 1.30 | 8.53 | 8.6 | 14.7 | HB | -- | -- | 0.116 | -4.58E-04 | -- | | 1.2 | | 4 |
| 5020219-2 | | | | | | | | | | | | | | | | | | | EH | 0.1 | 6.74E-03 | -- | -4.12E-04 | 0 | | | | 4 |
| 5020220-1 | 5020220 | Chibwalu Village | Japan Techno Co. Ltd | 0.05 | Shale | Katanga | 4 | 12 | 12.12.1994 | 6.5 | 4 | 0.36 | 2.52 | 13.25 | 0.81 | 12.90 | 38.4 | 16.9 | HB | -- | -- | 1.91E-02 | 1.70E-04 | -- | 0.56 | 0.9 | 59% | 2 |
| 5020220-2 | | | | | | | | | | | | | | | | | | | EH | 6.45E-03 | 7.32E-03 | -- | 1.53E-04 | 25 | 0.7 | | | 3 |
| 5020223-1 | 5020223 | Chikupi P Sch | Japan Techno Co. Ltd | 0.05 | Limestone/Shale | Katanga | 6 | 12 | 06.01.1995 | 5.8 | 4 | 0.2 | 0.64 | 5.90 | 5.06 | 19.20 | 3.4 | 2.9 | HB | -- | -- | 0.27 | 1.27E-03 | -- | 1.1 | 1 | 71% | 2 |
| 5020223-2 | | | | | | | | | | | | | | | | | | | EH | 0.23 | 2.47E-02 | -- | 1.06E-03 | 7.4 | 1.3 | | | 2 |
| 5020224-1 | 5020224 | Chilimanga Village (LR-46) | Japan Techno Co. Ltd | 0.05 | Sandstone | Karoo | 8 | 12 | 31.01.1995 | 6.3 | 4 | 1.19 | 3.34 | 13.99 | 10.28 | 31.52 | 10.0 | 9.2 | HB | -- | -- | 0.104 | 8.00E-06 | -- | 64.5 | 2.5 | 98% | 3 |
| 5020225-1 | 5020225 | Chimbwe Village | Japan Techno Co. Ltd | 0.05 | Gravel | Recent | 10 | 16 | 22.12.1994 | 4.3 | 4 | 0.38 | 1.73 | 2.92 | 1.01 | 6.31 | 32.5 | 23.7 | HB | -- | -- | 2.78E-02 | 6.19E-05 | -- | 2.2 | 1.5 | 78% | 3 |
| 5020225-2 | | | | | | | | | | | | | | | | | | | EH | 1.37E-02 | 7.18E-03 | -- | 7.73E-05 | 25 | 1.8 | | | 3 |
| 5020226-1 | 5020226 | Chimusambo Village | Japan Techno Co. Ltd | 0.05 | Mudstone | Karoo | 7 | 12 | 16.12.1994 | 9.3 | 6 | 0.33 | 1.63 | 23.80 | 2.03 | 11.02 | 14.1 | 12.8 | HB | -- | -- | 7.79E-02 | -3.37E-05 | -- | | 1.4 | | 4 |
| 5020226-2 | | | | | | | | | | | | | | | | | | | EH | 5.14E-03 | 1.11E-02 | -- | 8.78E-06 | 16 | 15.9 | | | 2 |
| 5020227-1 | 5020227 | Chimusebo Village | Japan Techno Co. Ltd | 0.05 | Unconsolidated clastic sediments | Recent | 10 | 12 | 19.01.1995 | 5.8 | 4 | 0.23 | 0.89 | 11.49 | 1.94 | 16.65 | 10.2 | 4.6 | HB | -- | -- | 7.69E-02 | 1.49E-03 | -- | 0.26 | 0.5 | 54% | 2 |
| 5020227-2 | | | | | | | | | | | | | | | | | | | EH | 1.19E-02 | 3.08E-02 | -- | 1.48E-03 | 5.9 | 0.3 | | | 2 |
| 5020232-1 | 5020232 | Chisompolo Village | Japan Techno Co. Ltd | 0.05 | Sand, conglomerate, shale | Katanga ? | 4 | 12 | 07.12.1994 | 5.8 | 4 | 0.21 | 1.15 | 5.39 | 0.71 | 23.59 | 25.6 | 4.2 | HB | -- | -- | 3.77E-02 | 3.17E-03 | -- | 0.06 | 0.5 | 22% | 3 |
| 5020232-2 | | | | | | | | | | | | | | | | | | | EH | -6.67E-02 | 1.46E-02 | -- | 3.16E-03 | 0 | | | | 3 |
| 5020236-1 | 5020236 | Chombe Village | Japan Techno Co. Ltd | 0.05 | Shale | Katanga ? | 4 | 12 | 16.12.1994 | 5.3 | 4 | 0.23 | 1.84 | 9.00 | 0.45 | 18.86 | 44.2 | 8.4 | HB | -- | -- | 1.58E-02 | 5.30E-04 | -- | 0.1 | 1 | 26% | 3 |
| 5020236-2 | | | | | | | | | | | | | | | | | | | EH | -1.33E-02 | 1.34E-02 | -- | 5.29E-04 | 14 | 0.1 | | | 3 |
| 5020237-1 | 5020237 | Gota-Gota Village | Japan Techno Co. Ltd | 0.05 | Sandstone | Karoo | 8 | 12 | 12.12.1994 | 3.0 | 5 | 1.53 | 3.51 | 11.60 | 0.43 | 1.67 | 307.4 | 181.6 | EH | 2.34E-04 | 1.47E-03 | -- | 7.62E-06 | 125 | 2.1 | 2.1 | | 2 |
| 5020238-1 | 5020238 | Gunduza Village | Japan Techno Co. Ltd | 0.05 | Clay, mudstone | Karoo | 7 | 16 | 21.05.1995 | 8.0 | 4 | 0.45 | 1.04 | 19.23 | 1.73 | 6.57 | 22.5 | 13.7 | HB | -- | -- | 2.71E-02 | 5.12E-04 | -- | 0.26 | 0.6 | 51% | 2 |
| 5020238-2 | | | | | | | | | | | | | | | | | | | EH | 1.56E-02 | 5.52E-03 | | 5.06E-04 | 33 | 0.27 | | | 2-3 |
| 5020239-1 | 5020239 | Kabwadu Village | Japan Techno Co. Ltd | 0.05 | Sandstone | Karoo | 8 | 12 | 25.01.1995 | 8.0 | 4 | 0.21 | 0.7 | 19.60 | 3.62 | 11.15 | 5.0 | 5.4 | HB | -- | -- | 0.2 | -5.49E-04 | -- | | 0.6 | | 4 |
| 5020239-2 | | | | | | | | | | | | | | | | | | | EH | 0.16 | 1.43E-02 | -- | -3.82E-04 | 0 | | | | 4 |
| 5020241-1 | 5020241 | Kabweza P Sch | Japan Techno Co. Ltd | 0.05 | Limestone | Katanga | 6 | 16 | 19.12.1994 | 3.2 | 4 | 0.7 | 1.78 | 9.71 | 0.16 | 0.59 | 378.0 | 260.7 | HB | -- | -- | 6.11E-02 | -4.37E-05 | -- | -6.9 | 1.5 | | 4 |
| 5020242-1 | 5020242 | Kakote Village | Japan Techno Co. Ltd | 0.05 | Limestone | Katanga | 6 | 12 | 01.12.1994 | 7.2 | 4 | 0.67 | 2.52 | 5.87 | 0.66 | 5.79 | 87.7 | 37.6 | EH | 3.49E-03 | 1.35E-03 | -- | 8.89E-03 | 136 | 0.0 | 2.5 | | 3 |
| 5020243-1 | 5020243 | Kalimina Village | Japan Techno Co. Ltd | 0.05 | Psammite, quartzite | Katanga | 11 | 12 | 29.01.1995 | 4.0 | 2 | 0.32 | 0.57 | 28.28 | 0.53 | 1.09 | 52.2 | 45.2 | | | | | | | -- | 0.3 | | 4 |
| 5020244-1 | 5020244 | Kalundu B Sch | Japan Techno Co. Ltd | 0.05 | Limestone | Katanga | 6 | 12 | 28.06.1993 | 2.0 | 4 | 0.96 | 3.5 | 3.56 | 0.19 | 1.29 | 436.6 | 234.4 | HB | -- | -- | 1.72E-03 | 7.99E-06 | -- | 1.1 | 2.5 | 50% | 1 |
| 5020244-2 | | | | | | | | | | | | | | | | | | | EH | 7.13E-04 | 9.73E-04 | -- | 5.69E-06 | 188 | 2.4 | | | 4 |

| Sort | WP-No. | Borehole | Data Source | Radius [m] | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | No. of steps | $Q_{Min}$ [L/s] | $Q_{max}$ [L/s] | SWL [m bgs] | $DWL_{MIN}$ [m] | $DWL_{Max}$ [m] | $q_{Max}$ [$m^2$/d] | $q_{Min}$ [$m^2$/d] | Analysis Method | a [$d/m^2$] | b [$1/m^2$] | B [$d/m^2$] | C [$d^2/m^5$] | T [$m^2$/d] | $Q_{70\%}$ [L/s] | $Q_{rec}$ [L/s] | E for $Q_{rec}$ [%] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5020246-1 | 5020246 | Kandoko Village | Japan Techno Co. Ltd | 0.05 | Unconsolidated clastic sediments and chalk (?) | Recent | 10 | 12 | 16.01.1995 | 8.0 | 4 | 0.23 | 0.47 | 18.72 | 5.48 | 12.70 | 3.6 | 3.2 | HB | -- | -- | 0.28 | 2.41E-05 | -- | 57.6 | 0.4 | 100% | 2 |
| 5020246-2 | | | | | | | | | | | | | | | | | | | EH | 0.13 | 6.45E-02 | -- | 9.39E-04 | 2.8 | 1.4 | | | 3 |
| 5020253-1 | 5020253 | Kusemwa V | Japan Techno Co. Ltd | 0.05 | Siltstone | Karoo | 8 | 12 | 13.01.1995 | 6.3 | 4 | 0.23 | 1.15 | 24.68 | 1.33 | 7.80 | 14.9 | 12.7 | HB | -- | -- | 6.75E-02 | 7.90E-06 | -- | 42.4 | 1 | 99% | 3 |
| 5020253-2 | | | | | | | | | | | | | | | | | | | EH | 5.09E-02 | 7.02E-03 | -- | 5.32E-05 | 26 | 6.1 | | | 2 |
| 5020255-1 | 5020255 | Makanya Village | Japan Techno Co. Ltd | 0.05 | Sandstone | Karoo | 8 | 12 | 28.01.1995 | 5.7 | 4 | 0.23 | 2.85 | 7.52 | 0.92 | 9.54 | 21.6 | 25.8 | HB | -- | -- | 5.29E-02 | -7.65E-05 | -- | | 2.8 | | 4 |
| 5020255-2 | | | | | | | | | | | | | | | | | | | EH | 4.43E-02 | 2.40E-03 | -- | -6.18E-05 | 76 | | | | 4 |
| 5020257-1 | 5020257 | Maunda V | Japan Techno Co. Ltd | 0.05 | Sand and gravel | Recent | 10 | 12 | 18.01.1995 | 8.0 | 4 | 0.14 | 0.34 | 14.14 | 3.48 | 13.65 | 3.5 | 2.2 | HB | -- | -- | 0.3 | -1.67E-03 | -- | | 0.7 | | 4 |
| 5020257-2 | | | | | | | | | | | | | | | | | | | EH | 0.26 | 1.49E-02 | -- | -1.32E-03 | 12 | | | | 4 |
| 5020258-1 | 5020258 | Muchingamire Village | Japan Techno Co. Ltd | 0.05 | Sandstone | Karoo | 8 | 12 | 20.01.1995 | 3.3 | 6 | 0.24 | 2.85 | 15.98 | 0.34 | 3.24 | 61.0 | 76.0 | EH | 1.58E-02 | 1.78E-04 | -- | -1.64E-05 | 1027 | | 2.8 | | 4 |
| 5020259-1 | 5020259 | Mudzama Village | Japan Techno Co. Ltd | 0.05 | Mudstone, shale | Karoo | 7 | 12 | 23.01.1995 | 8.0 | 4 | 0.18 | 0.82 | 20.32 | 1.48 | 6.98 | 10.5 | 10.2 | HB | -- | -- | 9.38E-02 | -7.33E-05 | -- | | 0.8 | | 4 |
| 5020259-2 | | | | | | | | | | | | | | | | | | | EH | 7.29E-02 | 9.30E-03 | -- | -3.45E-05 | 19.7 | | | | 4 |
| 5020260-1 | 5020260 | Mugurameno Village | Japan Techno Co. Ltd | 0.05 | Mudstone | Karoo | 7 | 12 | 18.12.1994 | 9.7 | 5 | 0.33 | 1.4 | 17.01 | 4.76 | 20.69 | 6.0 | 5.9 | HB | -- | -- | 1.80E-01 | -5.29E-05 | -- | | 1 | | 4 |
| 5020260-2 | | | | | | | | | | | | | | | | | | | EH | 1.40E-01 | 1.91E-02 | -- | -4.02E-05 | 31 | | | | 4 |
| 5020266-1 | 5020266 | Mushongentende Village | Japan Techno Co. Ltd | 0.05 | Slate (mudstone) | Karoo | 7 | 12 | 14.12.1994 | 6.8 | 4 | 0.11 | 0.4 | 31.50 | 0.97 | 11.74 | 9.8 | 2.9 | HB | -- | -- | 3.96E-02 | 5.19E-03 | -- | 0.0 | 0.09 | 50% | 2 |
| 5020266-2 | | | | | | | | | | | | | | | | | | | EH | 9.49E-04 | 2.42E-02 | -- | 4.27E-03 | 7.6 | 0.1 | | | 3 |
| 5020268-1 | 5020268 | Mwembeshi P Sch | Japan Techno Co. Ltd | 0.05 | Limestone | Katanga | 6 | 12 | 18.06.1993 | 6.5 | 4 | 0.19 | 0.65 | 1.83 | 1.82 | 43.89 | 9.0 | 1.3 | | | | | | | -- | 0.2 | | 4 |
| 5020274-1 | 5020274 | Kafue Nutrition Center | Japan Techno Co. Ltd | 0.05 | Schist | Katanga | 4 | 12 | 21.01.1995 | 6.0 | 4 | 0.34 | 0.86 | 5.60 | 3.83 | 23.32 | 7.7 | 3.2 | HB | -- | -- | 3.35E-02 | 3.51E-03 | -- | 0.0 | 0.7 | 14% | 2 |
| 5020274-2 | | | | | | | | | | | | | | | | | | | EH | 5.14E-03 | 2.05E-02 | -- | 3.38E-03 | 8.9 | 0.1 | | | 3 |
| 5020277-1 | 5020277 | Shachinyama Village | Japan Techno Co. Ltd | 0.05 | Unconsolidated clastic sediments | Recent | 10 | 16 | 15.01.1995 | 6.3 | 4 | 0.16 | 0.52 | 4.65 | 6.09 | 23.19 | 2.3 | 1.9 | HB | -- | -- | 4.40E-01 | 7.74E-04 | -- | 2.8 | 0.4 | 94% | 2 |
| 5020277-2 | | | | | | | | | | | | | | | | | | | EH | 3.00E-01 | 8.11E-02 | -- | 2.91E-07 | 2.3 | 7988 | | | 4 |
| 5020279-1 | 5020279 | Shampule Village B | Japan Techno Co. Ltd | 0.05 | Quartzite | Katanga | 5 | 8 | 23.10.1994 | 3.7 | 4 | 0.43 | 3.28 | 14.95 | 0.25 | 1.18 | 148.6 | 240.2 | HB | -- | -- | 7.04E-03 | -1.19E-05 | -- | -2.9 | 2 | | 4 |
| 5020280-1 | 5020280 | Shamunyemba Village | Japan Techno Co. Ltd | 0.05 | Clay with (coarse) sand | Recent | 10 | 12 | 18.01.1995 | 7.3 | 4 | 0.13 | 0.32 | 9.14 | 5.10 | 23.06 | 2.2 | 1.2 | HB | -- | -- | 2.40E-01 | 1.84E-02 | -- | 0.1 | 0.15 | 50% | 1 |
| 5020280-2 | | | | | | | | | | | | | | | | | | | EH | -6.32E-02 | 1.60E-01 | -- | 1.84E-02 | 1.2 | 0.1 | | | 2 |
| 5020285-1 | 5020285 | Shibeleka Village | Japan Techno Co. Ltd | 0.05 | Shale | Katanga | 4 | 12 | 09.12.1994 | 4.0 | 5 | 0.38 | 3.21 | 7.39 | 0.04 | 0.39 | 820.8 | 711.1 | EH | 9.54E-04 | 1.92E-04 | -- | 2.53E-08 | 942 | 265 | 3 | | 3 |
| 5020286-1 | 5020286 | Shikabeta Village | Japan Techno Co. Ltd | 0.05 | Limestone, chert | Katanga | 11 | 12 | 11.12.1994 | 3.7 | 4 | 0.49 | 2.72 | 18.08 | 0.77 | 4.80 | 55.0 | 49.0 | HB | -- | -- | 1.64E-02 | 5.76E-06 | -- | 14.1 | 2.5 | 93% | 3 |
| 5020286-2 | | | | | | | | | | | | | | | | | | | EH | 1.22E-02 | 2.25E-03 | -- | 7.33E-06 | 81 | 11.4 | | | 3 |
| 5020288-1 | 5020288 | Shimabala Village | Japan Techno Co. Ltd | 0.05 | Slate with sand | Katanga | 4 | 12 | 24.01.1995 | | 4 | 0.17 | 0.47 | 8.91 | 5.89 | 20.96 | 2.5 | 1.9 | | 0 | 0 | 0 | | 0 | -- | 0.3 | | 4 |
| 5020291-1 | 5020291 | Tandeo Village | Japan Techno Co. Ltd | 0.05 | Slate & sand | Katanga | 4 | 12 | 26.01.1995 | 4.0 | 2 | 0.13 | 0.16 | 10.62 | 13.14 | 21.00 | 0.9 | 0.7 | | | | | | | -- | 0.15 | | 4 |
| 5020318-1 | 5020318 | U-4 | BGR, GIBB Africa | 0.3 | Limestone | Katanga | 6 | 91 | 07.11.1998 | 6.7 | 4 | 4.7 | 28.6 | 6.28 | 1.53 | 6.81 | 265.4 | 362.9 | HB | -- | -- | 3.70E-03 | -5.45E-07 | -- | -33.7 | 40 | | 4 |
| 5020318-2 | | | | | | | | | | | | | | | | | | | EH | 3.01E-03 | 3.35E-04 | -- | -5.14E-07 | 546 | -35.8 | | | 4 |
| 5020318-3 | | | | | | | | | 30.04.1999 | 6.7 | 4 | 12.7 | 56 | 1.19 | 1.68 | 13.71 | 653.1 | 352.9 | HB | -- | -- | 1.14E-03 | 3.19E-07 | -- | 17.7 | | | 1 |
| 5020318-4 | | | | | | | | | | | | | | | | | | | EH | 6.41E-04 | 2.39E-05 | -- | 3.29E-07 | 767 | 10.4 | | | 2 |
| 5020319-1 | 5020319 | U-5 | BGR, GIBB Africa | 0.1 | Limestone, and schist | Katanga | 6 | 30 | 01.11.1998 | 3.3 | 2 | 12.21 | 21.2 | 8.24 | 3.48 | 9.66 | 303.1 | 189.6 | | | | | | | | 12 | | 4 |
| 5020321-1 | 5020321 | U-7 | BGR, GIBB Africa | 0.15 | Limestone, breccia | Katanga | 6 | 40 | 13.11.1998 | 2.5 | 2 | 12.1 | 17.8 | 7.18 | 3.18 | 22.26 | 328.8 | 69.1 | | | | | | | | 12 | | 4 |
| 5020325-1 | 5020325 | U-8D | BGR, GIBB Africa | 0.13 | Limestone | Katanga | 6 | 109 | 19.10.1998 | 4.0 | 4 | 5.5 | 27.7 | 3.30 | 0.18 | 1.30 | 2640.0 | 1841.0 | HB | -- | -- | 2.98E-04 | 1.01E-07 | -- | 14.6 | 46 | 43% | 2 |
| 5020325-2 | | | | | | | | | | | | | | | | | | | EH | 1.08E-04 | 9.65E-05 | -- | 8.80E-08 | 1897 | 17.4 | | | 2 |
| 5020325-3 | | | | | | | | | 17.05.1999 | 8.3 | 5 | 12.8 | 62.4 | 1.15 | 0.30 | 4.86 | 3686.4 | 1109.3 | HB | -- | -- | 1.21E-04 | 1.37E-07 | -- | 4.4 | | | 1 |
| 5020325-4 | | | | | | | | | | | | | | | | | | | EH | 1.78E-05 | 7.78E-05 | -- | 1.20E-07 | 2354 | 7.4 | | | 2 |
| 5020328-1 | 5020328 | U-11B | BGR, GIBB Africa | 0.2 | Limestone | Katanga | 6 | 46 | 08.10.1998 | 4.0 | 4 | 4.1 | 26.9 | 32.35 | 0.17 | 5.20 | 2083.8 | 447.0 | HB | -- | -- | -2.67E-04 | 1.69E-06 | -- | -0.8 | 10 | | 3 |
| 5020330-1 | 5020330 | U-13 | BGR, GIBB Africa | 0.3 | Dolomite | Katanga | 6 | 94 | 18.10.1998 | 4.7 | 4 | 5.1 | 28.3 | 8.48 | 0.21 | 2.35 | 2098.3 | 1040.5 | HB | -- | -- | 3.80E-04 | 1.75E-07 | -- | 10.8 | 20 | 56% | 2 |
| 5020331-1 | 5020331 | U-14 | BGR, GIBB Africa | 0.25 | Limestone | Katanga | 6 | 90 | 16.10.1998 | 2.0 | 2 | 5.2 | 11.2 | 9.50 | 0.50 | 1.95 | 898.6 | 496.3 | | | | | | | | 10 | | 4 |
| 5020334-1 | 5020334 | U-15C | BGR, GIBB Africa | 0.2 | Limestone | Katanga | 6 | 28 | 15.10.1998 | 3.3 | 2 | 5.4 | 11.8 | 5.97 | 0.34 | 1.22 | 1372.2 | 835.7 | | | | | | | | 12 | | 4 |
| 5020350-1 | 5020350 | U-20F | BGR, GIBB Africa | 0.3 | Limestone | Katanga | 6 | 95 | 20.10.1998 | 4.7 | 4 | 5.4 | 28.3 | 3.63 | 0.29 | 4.46 | 1608.8 | 548.2 | HB | -- | -- | 3.57E-04 | 4.70E-07 | -- | 3.8 | 25 | 26% | 1 |
| 5020350-2 | | | | | | | | | | | | | | | | | | | EH | 2.67E-04 | 1.12E-04 | -- | 3.40E-07 | 1583 | 7.3 | | | 2 |
| 5020350-3 | | | | | | | | | 17.12.1998 | 4.0 | 4 | 5.7 | 28.3 | 3.45 | 0.20 | 3.77 | 2462.4 | 648.6 | HB | -- | -- | 2.24E-04 | 4.97E-07 | -- | 2.2 | | | 1 |
| 5020350-4 | | | | | | | | | | | | | | | | | | | EH | -1.09E-05 | 1.67E-04 | -- | 4.57E-07 | 1099 | 3.7 | | | 2 |
| 5020352-1 | 5020352 | U-21B | BGR, GIBB Africa | 0.2 | Limestone | Katanga | 6 | 44 | 06.10.1998 | 6.0 | 3 | 5.1 | 29.2 | 5.19 | 1.36 | 8.28 | 324.0 | 304.7 | HB | -- | -- | 4.47E-03 | -1.35E-06 | -- | -16.4 | 50 | | 4 |
| 5020352-2 | | | | | | | | | | | | | | | | | | | EH | 3.30E-03 | 1.05E-04 | -- | 2.89E-08 | 1744 | 603.9 | | | 4 |
| 5020352-3 | | | | | | | | | 18.06.1999 | 4.8 | 5 | 13.1 | 64.4 | 1.52 | 0.22 | 2.24 | 5144.7 | 2484.0 | HB | -- | -- | 5.05E-05 | 1.15E-07 | -- | 2.2 | | | 3 |
| 5020352-4 | | | | | | | | | | | | | | | | | | | EH | -1.65E-05 | 8.62E-05 | -- | 2.87E-08 | 2123 | 28.1 | | | 2-3 |
| 5020777-1 | 5020777 | Mugurameno School | Japan Techno Co. Ltd | 0.05 | Mudstone | Karoo | 7 | 12 | 20.12.1994 | 8.5 | 5 | 0.26 | 1.45 | 19.02 | 3.34 | 16.33 | 6.7 | 7.7 | HB | -- | -- | 1.50E-01 | -1.10E-04 | -- | -6.8 | 1 | | 4 |
| 5020777-2 | | | | | | | | | | | | | | | | | | | EH | 1.30E-01 | 5.93E-03 | -- | -1.92E-04 | 31 | -3.7 | | | 4 |
| 5020809-1 | 5020809 | Mpamba P Sch | Japan Techno Co. Ltd | 0.05 | Quartzite | Katanga | 5 | 10 | 24.06.1993 | 8.3 | 8 | 0.17 | 3.06 | 10.66 | 0.50 | 11.49 | 29.4 | 23.0 | HB | -- | -- | 1.96E-01 | -6.14E-04 | -- | -1.6 | 2 | | 4 |
| 5020809-2 | | | | | | | | | | | | | | | | | | | EH | 2.54E-02 | 6.98E-03 | -- | 6.95E-06 | 26 | 28.5 | | | 2 |
| 5030001-1 | 5030001 | Balakusau | Japan Techno Co. Ltd | 0.05 | Gravel, Sand | Recent | 10 | 20 | 25.09.1993 | 7.0 | 4 | 0.13 | 0.65 | 5.63 | 1.82 | 14.37 | 6.2 | 3.9 | HB | -- | -- | 0.136 | 1.96E-03 | -- | 0.3 | 0.35 | 70% | 2 |
| 5030001-2 | | | | | | | | | | | | | | | | | | | EH | 9.25E-02 | 2.20E-02 | -- | 1.95E-03 | 8.3 | 0.4 | | | 2 |
| 5030003-1 | 5030003 | Chilimanga (LG-10) | Japan Techno Co. Ltd | 0.05 | Clay (with gravel) | Recent | 10 | 12 | 14.11.1993 | 4.7 | 5 | 0.89 | 2.72 | 9.77 | 1.11 | 11.68 | 69.3 | 20.1 | HB | -- | -- | -1.45E-03 | 1.56E-04 | -- | 0.0 | 1.7 | | 4 |
| 5030003-2 | | | | | | | | | | | | | | | | | | | EH | -5.13E-03 | 2.30E-03 | -- | 1.54E-04 | 80 | 0.0 | | | 4 |
| 5030004-1 | 5030004 | Chirukusya V | Japan Techno Co. Ltd | 0.05 | Mudstone/Clay | Karoo ? | 7 | 12 | 16.11.1993 | 6.0 | 4 | 0.14 | 0.47 | 5.84 | 3.26 | 18.30 | 3.7 | 2.2 | EH | 0.16 | 1.40E-02 | -- | 5.83E-03 | 12.8 | 0.2 | 0.3 | | 2 |
| 5030005-1 | 5030005 | Chiwera | Japan Techno Co. Ltd | 0.05 | Calcrete, gravel with clay | Recent | 10 | 16 | 21.11.1993 | 4.5 | 4 | 0.29 | 2.85 | 6.89 | 0.48 | 6.49 | 52.2 | 37.9 | HB | -- | -- | 1.77E-02 | 3.02E-05 | -- | 2.9 | 1.5 | 82% | 3 |
| 5030005-2 | | | | | | | | | | | | | | | | | | | EH | 8.85E-03 | 5.80E-03 | -- | 2.10E-05 | 0 | 4.9 | | | 2 |
| 5030009-1 | 5030009 | Kasakazya | Japan Techno Co. Ltd | 0.05 | Quartzite, clay | Basement | 5 | 12 | 19.11.1993 | 6.3 | 4 | 0.4 | 1.78 | 14.85 | 1.27 | 13.50 | 27.2 | 11.4 | HB | -- | -- | 2.03E-02 | 4.51E-04 | -- | 0.2 | 1.2 | 30% | 2 |
| 5030009-2 | | | | | | | | | | | | | | | | | | | EH | 1.36E-02 | 3.62E-03 | -- | 4.29E-04 | 51 | 0.2 | | | 2 |
| 5030010-1 | 5030010 | Katondowe Mission Hospital | Japan Techno Co. Ltd | 0.05 | Sandstone, conglomerate | Karoo ? | 8 | 16 | 17.11.1993 | 5.0 | 6 | 0.26 | 3.2 | 6.69 | 0.05 | 0.89 | 449.3 | 310.7 | HB | -- | -- | 2.35E-03 | 1.51E-06 | -- | 7.7 | 3 | 86% | 3 |
| 5030010-2 | | | | | | | | | | | | | | | | | | | EH | 1.89E-03 | 2.27E-04 | -- | 2.13E-06 | 807 | 5.5 | | | 2 |
| 5030011-1 | 5030011 | Kaunga School Kanabenti | Japan Techno Co. Ltd | 0.05 | Gravel with sand and clay | Recent | 10 | 24 | 21.09.1993 | 9.5 | 5 | 0.18 | 1.23 | 7.41 | 2.41 | 22.43 | 6.5 | 4.7 | HB | -- | -- | 0.11 | 6.78E-04 | -- | 0.8 | 1.2 | 61% | 2-3 |
| 5030011-2 | | | | | | | | | | | | | | | | | | | EH | 7.03E-02 | 2.10E-02 | -- | 5.23E-02 | 9 | 0.0 | | | 2-3 |

| Sort | WP-No. | Borehole | Data Source | Radius [m] | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | No. of steps | $Q_{Min}$ [L/s] | $Q_{max}$ [L/s] | SWL [m bgs] | $DWL_{MIN}$ [m] | $DWL_{Max}$ [m] | $q_{Max}$ [$m^2$/d] | $q_{Min}$ [$m^2$/d] | Analysis Method | a [$d/m^2$] | b [$1/m^2$] | B [$d/m^2$] | C [$d^2/m^5$] | T [$m^2$/d] | $Q_{70\%}$ [L/s] | E for $Q_{rec}$ $Q_{rec}$ [L/s] | [%] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5030016-1 | 5030016 | Mkando | Japan Techno Co. Ltd | 0.05 | Clay & fractured quartzite | Recent/ Basement | 10 | 12 | 10.11.1993 | 4.7 | 4 | 0.09 | 0.2 | 5.25 | 1.64 | 24.96 | 4.7 | 0.7 | HB | -- | -- | -8.20E-01 | 1.23E-01 | -- | | 0.15 | | 3 |
| 5030016-2 | | | | | | | | | | | | | | | | | | | EH | -1.00E+00 | 1.00E-01 | -- | 1.23E-01 | 1.8 | | | | 3 |
| 5030018-1 | 5030018 | Mpona | Japan Techno Co. Ltd | 0.05 | Gravel, sand with clay | Recent | 10 | 12 | 10.11.1993 | 4.8 | 4 | 0.2 | 0.96 | 6.78 | 1.16 | 6.16 | 14.9 | 13.5 | HB | -- | -- | 6.97E-02 | 4.60E-05 | -- | 7.5 | 1 | 95% | 2 |
| 5030018-2 | | | | | | | | | | | | | | | | | | | EH | 6.56E-02 | 1.13E-03 | -- | 7.58E-05 | 165 | 4.4 | | | 2 |
| 5030020-1 | 5030020 | Shipopa | Japan Techno Co. Ltd | 0.05 | Quartzite and biotite gneiss | Basement | 5 | 12 | 17.09.1993 | 6.0 | 4 | 0.08 | 0.52 | 5.89 | 4.18 | 32.04 | 1.7 | 1.4 | HB | -- | -- | 5.50E-01 | 2.85E-03 | -- | 1.0 | 0.3 | 88% | 3 |
| 5030020-2 | | | | | | | | | | | | | | | | | | | EH | 2.50E-01 | 1.30E-01 | -- | 3.65E-03 | 1.4 | 0.71 | | | 3 |
| 5040056-1 | 5040056 | UNZA-4 Lawn | GReSP | 0.08 | Limestone | Katanga | 6 | 18 | 20.11.2007 | 4.0 | 4 | 0.41 | 1.49 | 4.44 | 3.77 | 16.84 | 9.4 | 7.6 | HB | -- | -- | 9.90E-01 | 1.45E-04 | -- | 33.9 | 1.2 | 99% | 2 |
| 5040056-2 | | | | | | | | | | | | | | | | | | | EH | 5.04E-02 | 3.28E-02 | -- | 2.39E-05 | 5.6 | 24.6 | | | 3 |
| 5040395-1 | 5040395 | Buckley 2 | GIBB Africa | 0.08 | Limestone | Katanga | 6 | 27 | 25.08.2001 | 0.2 | 3 | 2.3 | 4 | 15.50 | 1.68 | 4.44 | 118.3 | 77.8 | HB | -- | -- | 8.72E-03 | 6.04E-06 | -- | 7.2 | 4 | 81% | 3 |
| 5040395-2 | | | | | | | | | | | | | | | | | | | EH | 2.27E-03 | 2.40E-03 | -- | 1.15E-05 | 76 | 3.1 | | | 4 |
| 5040426-1 | 5040426 | Lumumba Rd 4A | GIBB Africa | 0.1 | Dolomite | Katanga | 6 | 25 | 27.10.1998 | 6.7 | 4 | 5.8 | 28.6 | 12.27 | 0.46 | 5.02 | 1089.4 | 492.2 | HB | -- | -- | 6.43E-04 | 4.54E-07 | -- | 7.0 | 35 | 32% | 1 |
| 5040426-2 | | | | | | | | | 25.02.1999 | 6.7 | 4 | 11.5 | 53 | 0.90 | 1.17 | 13.31 | 849.2 | 344.0 | HB | -- | -- | 6.34E-04 | 4.89E-07 | -- | 6.4 | | | 1 |
| 5040426-3 | | | | | | | | | | | | | | | | | | | EH | 3.03E-04 | 3.69E-04 | -- | 3.36E-07 | 497 | 15.8 | | | 1 |
| 5040433-1 | 5040433 | Mass Media 4 (C5 gs) | GIBB Africa | 0.05 | Limestone | Katanga | 6 | 6.3 | 15.10.1998 | 8.0 | 4 | 10.11 | 22.24 | 15.21 | 1.48 | 5.71 | 590.2 | 336.5 | HB | -- | -- | 7.04E-04 | 1.05E-06 | -- | 3.3 | 20 | 28% | 1 |
| 5040433-2 | | | | | | | | | | | | | | | | | | | EH | 6.15E-04 | 3.00E-04 | -- | 5.90E-07 | 611 | 10.4 | | | 2 |
| 5040434-1 | 5040434 | Mass Media 5 (F1/25W) | GIBB Africa | 0.11 | Limestone | Katanga | 6 | 9.1 | 06.09.1998 | 8.0 | 4 | 8.5 | 19.31 | 10.70 | 1.88 | 16.75 | 390.6 | 99.6 | HB | -- | -- | 1.93E-03 | 8.28E-07 | -- | 11.6 | 18 | 60% | 1 |
| 5040434-2 | | | | | | | | | | | | | | | | | | | EH | 1.32E-03 | 3.94E-04 | -- | 7.68E-07 | 465 | 13.8 | | | 1 |
| 5040435-1 | 5040435 | Mass Media 6 | GIBB Africa | 0.05 | Argillaceous limestone | Katanga | 6 | 6.2 | 04.12.1998 | 8.0 | 4 | 8.58 | 14.89 | 8.96 | 8.21 | 19.40 | 90.3 | 66.3 | HB | -- | -- | 7.26E-03 | 5.27E-06 | -- | 6.8 | 14 | 53% | 2-3 |
| 5040435-4 | 5040435 | Mass Media 6 | GIBB Africa | 0.05 | Argillaceous limestone | Katanga | 6 | 6.2 | 31.07.2001 | 10.0 | 5 | 6.32 | 13.6 | 4.52 | 4.75 | 13.35 | 115.0 | 88.0 | HB | -- | -- | 6.80E-02 | 3.61E-06 | -- | 93.4 | 15 | 94% | 1 |
| 5040435-5 | | | | | | | | | | | | | | | | | | | EH | 6.17E-03 | 2.89E-04 | -- | 3.65E-06 | 613 | 9.2 | | | 1 |
| 5040451-1 | 5040451 | Quarries 3 (QA4) | GIBB Africa | 0.21 | Limestome | Katanga | 6 | 6 | 08.07.2001 | 8.0 | 4 | 13.5 | 37.3 | 2.27 | 0.04 | 0.19 | 80568 | 1032 | HB | -- | -- | -1.32E-03 | 1.26E-06 | -- | | 42 | | 4 |
| 5040452-1 | 5040452 | Mumbwa Rd (Roadside 1) | GIBB Africa | 0.15 | Limestone | Katanga | 6 | 57 | 04.11.1998 | 4.0 | 4 | 5.6 | 29 | 11.93 | 0.06 | 0.60 | 8064.0 | 4176.0 | HB | -- | -- | 1.05E-04 | 4.85E-08 | -- | 10.7 | 50 | 33% | 2-3 |
| 5040452-2 | | | | | | | | | | | | | | | | | | | EH | 1.47E-05 | 6.55E-05 | -- | 3.17E-08 | 2793 | 23.6 | | | 2-3 |
| 5040452-3 | | | | | | | | | 20.01.1999 | 6.7 | 4 | 10.6 | 53.2 | 5.89 | 0.09 | 0.83 | 10176.0 | 5537.9 | HB | -- | -- | 7.56E-05 | 2.03E-08 | -- | 18.5 | | | 2 |
| 5040452-4 | | | | | | | | | | | | | | | | | | | EH | -1.49E-05 | 5.20E-05 | -- | 1.56E-08 | 3522 | 29.6 | | | 2-3 |
| 5040453-1 | 5040453 | Mumbwa Rd (Roadside 2) | GIBB Africa | 0.1 | Limestone | Katanga | 6 | 40 | 11.11.1998 | 6.7 | 4 | 5 | 29.1 | 13.49 | 0.10 | 1.07 | 4320.0 | 2349.8 | HB | -- | -- | 2.14E-04 | 3.46E-08 | -- | 30.7 | 50 | 59% | 3 |
| 5040453-2 | | | | | | | | | 30.01.1999 | 6.7 | 4 | 11.9 | 51 | 5.28 | 0.15 | 0.89 | 6854.4 | 4951.0 | HB | -- | -- | 1.44E-04 | 4.11E-09 | -- | 173.8 | | | 3 |
| 5040454-1 | 5040454 | Mumbwa Rd (Roadside 4) | GIBB Africa | 0.125 | Limestone | Katanga | 6 | 60 | 19.11.1998 | 6.7 | 4 | 10.4 | 48 | 12.81 | 0.51 | 3.17 | 1761.9 | 1308.3 | HB | -- | -- | 4.83E-04 | 4.77E-08 | -- | 50.2 | 50 | 70% | 2 |
| 5040454-2 | | | | | | | | | | | | | | | | | | | EH | 1.64E-04 | 1.53E-04 | -- | 5.45E-08 | 1193 | 43.9 | | | 2 |
| 5040455-1 | 5040455 | Mumbwa Rd (Roadside 5) | GIBB Africa | 0.1 | Limestone | Katanga | 6 | 37 | 22.11.1998 | 6.7 | 4 | 5.8 | 29 | 10.86 | 0.30 | 1.87 | 1670.4 | 1339.9 | HB | -- | -- | 4.99E-04 | 2.05E-08 | -- | 120.7 | 29 | 91% | 2 |
| 5040456-1 | 5040456 | Mumbwa Rd (Roadside 6) | GIBB Africa | 0.125 | Limestone | Katanga | 6 | 12 | 16.11.1998 | 8.3 | 5 | 10.3 | 53 | 12.27 | 0.19 | 1.50 | 4683.8 | 3052.8 | HB | -- | -- | 2.04E-04 | 2.89E-08 | -- | 35.0 | 50 | 62% | 4 |
| 5040456-2 | | | | | | | | | 23.02.1999 | 8.3 | 5 | 9.8 | 52 | 3.18 | 0.12 | 0.77 | 7056.0 | 5834.8 | HB | -- | -- | 1.26E-04 | 2.09E-09 | -- | 299.0 | | | 2 |
| 5040456-3 | | | | | | | | | | | | | | | | | | | EH | 1.81E-05 | 5.28E-05 | -- | 5.47E-09 | 3467 | 116.0 | | | 2-3 |
| 5040935-1 | 5040935 | Kamwala South B16 | GIBB Africa | 0.13 | Dolomite | Katanga | 6 | 15 | 30.08.2002 | 8.0 | 4 | 15 | 30 | 11.48 | 3.5 | 11.84 | 741 | 84 | -- | | | | | | -- | 30 | | 4 |
| 5041045-1 | 5041045 | Waterworks 3 | GIBB Africa | 0.13 | Limestome | Katanga | 6 | 12 | 05.01.2008 | 10.0 | 5 | 5 | 25 | 11.5 | 1.35 | 22.52 | 1600.0 | 44.1 | HB | -- | -- | 1.44E-03 | 3.71E-06 | -- | 1.9 | 15 | | 2 |
| 5041045-2 | | | | | | | | | | | | | | | | | | | EH | -1.16E-04 | 1.17E-03 | -- | 3.12E-06 | 156 | 3.7 | | | 2 |
| 5041130-1 | 5041130 | Mass Media 1 D12/50N | GIBB Africa | 0.11 | Limestone | Katanga | 6 | 9.3 | 15.11.1998 | 10.0 | 5 | 9.5 | 21.2 | 14.96 | 1.94 | 8.54 | 423.1 | 214.5 | HB | -- | -- | 9.07E-04 | 1.64E-06 | -- | 2.7 | 14 | 31% | 1 |
| 5041142-1 | 5041142 | Avondale 4 (1-NEW) | LWSC | 0.1 | Limestone, & sandstone? | Katanga | 6 | 12 | 01.11.2005 | 8.0 | 4 | 9.4 | 36.2 | 3.97 | 5.04 | 19.90 | 161.1 | 157.2 | n/a | | | | | | -- | 30 | | 4 |

# Annex 4

# Analysis Results of Aquifer (CD-) Tests

## Abbreviations

| | |
|---|---|
| SWL | Static water level prior to test |
| DWL | Dynamic water level |
| RWL | Residual drawdown after test |
| Q | Pumping rate |
| q | Specific capacity |
| T | Transmissivity |
| S | Storage coefficient |

Borehole Type:

| | |
|---|---|
| PW | Pumped Well |
| OW | Observation Well |

Evaluation Method Applied:

| | |
|---|---|
| T | Theis |
| J | Jacob |
| H | Hantush (Leaky Aquifer) |
| TR | Theis Recovery |
| TWL | Theis with well loss |

Rating of Analysis Result:

| | |
|---|---|
| 1 | Good |
| 2 | Fair |
| 2-3 | Questionable |
| 3 | Poor |
| 4 | Unreliable |

Aquifer Category:

| | |
|---|---|
| 1 | Acid to intermediate igneous rock |
| 2 | Batoka Basalt & other basic igneous rock |
| 3 | Gneiss & undifferentiated metamorphic rock |
| 4 | Schist, shale & slate |
| 5 | Quartzite |
| 6 | Carbonate & calc-silicate rock |
| 7 | Mudstone (Karoo) |
| 8 | Pre-Kalahari sand- and siltstone (mostly Karoo) |
| 9 | Kalahari sandstone |
| 10 | Unconsolidated clastic sediments |
| 11 | Precambrian sedimentary and metasedimentary clastic rocks |
| 12 | Unclassified |

## Central Province

| Sort | WP-No. | Borehole | Data Source | Distance or radius [m] | B/h Type | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | Q [L/s] | SWL [m bgs] | DWL [m bgs] | RWL [m bgs] | q [$m^2$/d] | Analysis Method | T [$m^2$/d] | S [-] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1010124-1 | 1010124 | Hon Grey Zulu | DWA | 0.08 | PW | Dolomite or granitye gneiss? | ? | ? | 18 | 22.02.2009 | 6 | 2 | 12.00 | 0.29 | 0.23 | 596 | H | 354 | | 3 |
| 1010717-1 | 1010717 | Lubinga BH (K-1) | Japan Techno | 0.05 | PW | Quartzite, quartz-diorite | Basement | 5 | 12 | 22.02.1995 | 8 | 0.57 | 6.01 | 6.14 | 0.12 | 8.0 | J | 8.7 | 4.0E-04 | 2-3 |
| 1010717-2 | | | | | | | | | | | | | | | | | TR | 11 | | 1 |
| 1010804-1 | 1010804 | Kapopo V (K-19) | Japan Techno | 0.05 | PW | Quartzite | Katanga | 5 | 13 | 19.02.1995 | 8 | 0.62 | 12.47 | 7.57 | 0.27 | 7.1 | J | 21 | | 2 |
| 1010804-2 | | | | | | | | | | | | | | | | | TR | 17 | | 2 |
| 1010831-1 | 1010831 | Mingochi V (K-16) | Japan Techno | 0.05 | PW | Schist | Katanga | 4 | 12 | 24.02.1995 | 8 | 0.135 | 8.22 | 25.06 | 0.03 | 0.47 | T | 0.39 | 1.00E-04 | 2-3 |
| 1010832-1 | 1010832 | Mposa V (K-17) | Japan Techno | 0.05 | PW | Mudstone | Katanga | 11 | 16 | 13.03.1995 | 8 | 1.45 | 16.75 | 0.92 | 0.04 | 136.2 | J | 137 | 0.03 | 1 |
| 1010832-2 | | | | | | | | | | | | | | | | | TR | 146 | | 1 |
| 1010840-1 | 1010840 | Musopelo V (K-18) | Japan Techno | 0.05 | PW | Phyllite | Katanga | 4 | 12 | 16.02.1995 | 8 | 0.32 | 7.06 | 6.08 | 0.12 | 4.6 | T | 7.9 | 2.50E-07 | 2 |
| 1010840-2 | | | | | | | | | | | | | | | | | J | 8.9 | | 2-3 |
| 1010843-1 | 1010843 | Mutangama V (K-4) | Japan Techno | 0.05 | PW | Dolomite, phyllite | Katanga | 6 | 12 | 18.02.1995 | 8 | 1.58 | 12.60 | 3.18 | 0.36 | 42.9 | n/a | | | 4 |
| 1010845-1 | 1010845 | Mwanje V (K-15) | Japan Techno | 0.05 | PW | Amphibolite, granite | Basement | 3 | 29 | 26.02.1995 | 8 | 0.135 | 11.77 | 17.75 | 0.2 | 0.66 | T | 0.3 | 0.04 | 3 |
| 1020051-1 | 1020051 | Kabwe (Mukobeko) K-6 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 36 | 30.11.2007 | 80 | 54.9 | 6.00 | 3.3 | 0.01 | 1437 | T | 3032 | | 3 |
| 1020051-2 | | | | | | | | | | | | | | | | | TR | 14800 | | 3 |
| 1020052-1 | 1020052 | Kabwe (Mukobeko) K-1 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 43 | 25.10.2007 | 24 | 34.1 | 5.07 | 3.48 | 0.01 | 847 | H | 398 | | 3 |
| 1020052-2 | | | | | | | | | | | | | | | | | J | 1400 | | 3 |
| 1020053-1 | 1020053 | Kabwe (Mukobeko) K-2 | JBG Gauff | 0.15 | PW | Limestone, quartzite | Katanga | 6 | 42 | 11.11.2007 | 83 | 45.5 | 6.96 | 22.38 | 0.01 | 176 | TWL | 800 | | 3 |
| 1020053-2 | | | | | | | | | | | | | | | | | H | 306 | | 3 |
| 1020056-1 | 1020056 | Kabwe (Mukobeko) K-5 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 40 | 04.11.2007 | 80 | 58.4 | 5.50 | 2.29 | -0.31 | 2203 | J | 2370 | 0.09 | 3 |
| 1020056-2 | | | | | | | | | | | | | | | | | H | 2870 | 0.001 | 2 |
| 1020057-1 | 1020057 | Kabwe (Mukobeko) K-3 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 42 | 19.11.2007 | 80 | 65.5 | 5.18 | 0.8 | 0.01 | 7074 | T | 3970 | | 3 |
| 1020062-1 | 1020062 | Kabwe (Kalulu) K-7 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 36 | 27.12.2007 | 75 | 58.4 | 10.76 | 0.76 | 0 | 6639 | n/a | | | 4 |
| 1020063-1 | 1020063 | Kabwe (Kalulu) K-8 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 42 | 29.12.2007 | 75 | 28 | 10.90 | 23.78 | 0.01 | 102 | J | 88 | | 3 |
| 1020063-2 | | | | | | | | | | | | | | | | | H | 99 | | 3 |
| 1020064-1 | 1020064 | Kabwe (Kalulu) K-9 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 48 | 22.12.2007 | 72.7 | 68.3 | 11.42 | 0.9 | 0 | 6557 | J | 7792 | | 3 |
| 1020064-2 | | | | | | | | | | | | | | | | | H | 10900 | | 3 |
| 1020065-1 | 1020065 | Kabwe (Kalulu) K-10 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 36 | 04.12.2007 | 75 | 62.7 | 11.70 | 1.1 | 0 | 4925 | J | 7400 | | 2-3 |
| 1020065-2 | | | | | | | | | | | | | | | | | H | 8370 | | 3 |
| 1020066-1 | 1020066 | Kabwe (Kalulu) K-11 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 48 | 29.11.2007 | 74 | 52.4 | 11.30 | 2.34 | 0 | 1935 | T | 3609 | | 2-3 |
| 1020066-2 | | | | | | | | | | | | | | | | | H | 3656 | | 2 |
| 1020067-1 | 1020067 | Kabwe (Kalulu) K-12 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 42 | 17.12.2007 | 74 | 60.1 | 11.13 | 1.37 | 0 | 3790 | H | 3660 | | 2-3 |
| 1020068-1 | 1020068 | Kabwe (Mukobeko) K-4 | JBG Gauff | 0.15 | PW | Limestone | Katanga | 6 | 42 | 24.11.2007 | 23.7 | 62.7 | 5.88 | 7.8 | 0.01 | 694.5 | T | 1934 | | 2-3 |
| 1030050-1 | 1030050 | Makafu P Sch (MK-7) | Japan Techno | 0.05 | PW | Gneissic granite | Basement | 1 | 16 | 14.05.1994 | 8 | 0.11 | 10.40 | 43.33 | 15.1 | 0.22 | J | 0.14 | | 2-3 |
| 1030050-2 | | | | | | | | | | | | | | | | | TR | 0.14 | | 3 |
| 1030051-1 | 1030051 | St Paul Sch (MK-19) | Japan Techno | 0.05 | PW | Amphibolite | Basement | 3 | 10 | 29.04.1993 | 8 | 1.07 | 4.82 | 6.58 | 0.26 | 14.1 | J | 8.6 | | 2-3 |
| 1030529-1 | 1030529 | Mukonchi P Sch (MK-10B) | Japan Techno | 0.05 | PW | Granite | Basement | 1 | 16 | 17.05.1994 | 8 | 0.2 | 4.81 | 13.9 | 0.06 | 1.2 | T | 1.0 | | 3 |
| 1040004-1 | 1040004 | Chilimo (MK-24) | Japan Techno | 0.05 | PW | Gneiss & gneissic granite | Basement | 3 | 12 | 04.02.1994 | 8 | 0.31 | 9.80 | 8.52 | 0.05 | 3.1 | T | 1.8 | | 2-3 |
| 1040004-2 | | | | | | | | | | | | | | | | | J | 1.9 | | 2-3 |
| 1040025-1 | 1040025 | Old Mkushi Boma (MK-18) | Japan Techno | 0.05 | PW | Hornblendite | Basement | 1 | 16 | 01.04.1994 | 8 | 0.13 | 10.62 | 23.68 | 4.95 | 0.47 | T | 0.21 | | 2-3 |
| 1050001-1 | 1050001 | Chaam-Babulele (MB-11) | Japan Techno | 0.05 | PW | Gneiss | Basement | 3 | 12 | 13.05.1994 | 8 | 0.21 | 19.52 | 12.09 | 1.43 | 1.5 | J | 0.76 | 0.08 | 1 |
| 1050002-1 | 1050002 | Chibuluma V (MB-13) | Japan Techno | 0.05 | PW | n/a {probably schist} | Katanga | 4 | 12 | 09.08.1994 | 8 | 2.05 | 15.89 | 9.64 | 0.92 | 18.4 | J | 22.5 | 5.00E-04 | 2 |
| 1050002-2 | | | | | | | | | | | | | | | | | TR | 34 | | 2-3 |
| 1050003-1 | 1050003 | Chiwena RHC (MB-4) | Japan Techno | 0.05 | PW | Gneiss | Basement | 3 | 12 | 17.05.1994 | 8 | 0.47 | 31.86 | 1.35 | 1.35 | 30.1 | H | 9.9 | 0.29 | 2 |
| 1050003-2 | | | | | | | | | | | | | | | | | TR | 40 | | 3 |
| 1050004-1 | 1050004 | Chooba V (MB-8) | Japan Techno | 0.05 | PW | Phyllite | Katanga | 4 | 12 | 15.04.1994 | 8 | 0.51 | 9.90 | 0.55 | 0.1 | 80.1 | TR | 121 | | 1 |
| 1050004-2 | | | | | | | | | | | | | | | | | T | 174 | 1.00E-10 | 3 |
| 1050005-1 | 1050005 | Katala BH 2 (MB-3) | Japan Techno | 0.05 | PW | Gneiss | Basement | 3 | 12 | 26.04.1994 | 7 | 0.52 | 13.59 | 2.74 | 0.03 | 16.4 | H | 4.9 | 0.28 | 2 |
| 1050006-1 | 1050006 | Leya V (MB-16) | Japan Techno | 0.05 | PW | Granite | Basement | 1 | 12 | 24.09.1994 | 8 | 1.73 | 13.43 | 6.15 | 0.48 | 24.3 | T | 45 | 2.50E-07 | 2 |
| 1050006-2 | | | | | | | | | | | | | | | | | TR | 55 | | 2 |
| 1050007-1 | 1050007 | Luili P Sch (MB-6) | Japan Techno | 0.05 | PW | Amphibolite | Basement | 3 | 12 | 24.04.1994 | 8 | 0.31 | 46.95 | 1.8 | -0.08 | 14.9 | H | 4.3 | | 2-3 |
| 1050008-1 | 1050008 | Lutale P Sch (MB-15) | Japan Techno | 0.05 | PW | n/a {probably schist} | Katanga | 4 | 12 | 06.08.1994 | 8 | 0.18 | 12.81 | 16.58 | 0.08 | 0.94 | n/a | | | 4 |
| 1050009-1 | 1050009 | Malende V & Depot (MB-10) | Japan Techno | 0.05 | PW | Marble | Katanga | 6 | 12 | 29.09.1994 | 8 | 1.54 | 18.54 | 1.59 | 0.4 | 83.7 | J | 73 | 0.16 | 2-3 |
| 1050009-2 | | | | | | | | | | | | | | | | | TR | 99 | | 2-3 |
| 1050010-1 | 1050010 | Mayuwa V (MB-12) | Japan Techno | 0.05 | PW | Rhyolite (?) | | | 11.5 | 13.08.1994 | 8 | 0.54 | 9.00 | 7.79 | 0.17 | 6.0 | T | 2.7 | 0.1 | 3 |
| 1050010-2 | | | | | | | | | | | | | | | | | H | 2.2 | 0.2 | 2 |
| 1050011-1 | 1050011 | Mukulaikwa V (MB-7) | Japan Techno | 0.05 | PW | Mudstone (or schist?) | Katanga | 4 | 12 | 10.10.1994 | 8 | 1.4 | 8.30 | 1.03 | 0.08 | 117.4 | J | 87 | | 2 |
| 1050011-2 | | | | | | | | | | | | | | | | | TR | 83 | | 2 |

| Sort | WP-No. | Borehole | Data Source | Distance or radius [m] | B/h Type | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | Q [L/s] | SWL [m bgs] | DWL [m bgs] | RWL [m bgs] | q [$m^2$/d] | Analysis Method | T [$m^2$/d] | S [-] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1050013-1 | 1050013 | Mulungushi V (MB-9) | Japan Techno | 0.05 | PW | Quartzite, minor siltstone | Katanga | 5 | 22 | 10.02.1996 | 9 | 0.49 | 22.49 | 4.01 | 0.83 | 10.6 | **n/a** | 0.3 | | 4 |
| 1050016-1 | 1050016 | Nalusanga P Sch 1 (MB-1) | Japan Techno | 0.05 | PW | Phyllite (probably granite) | Hook Complex | 1 | 12 | 09.04.1994 | 8 | 0.34 | 8.48 | 6.61 | 0.81 | 4.4 | **T** | 2.7 | 0.1 | 2-3 |
| 1050016-2 | | | | | | | | | | | | | | | | | **TR** | 4.9 | | 2-3 |
| 1990180-1 | 1990180 | Mumba Palace (MB-2) | Japan Techno | 0.05 | PW | Gneiss | Basement | 3 | 12 | 19.05.1994 | 8 | 0.99 | 30.30 | 4.37 | 0.33 | 19.6 | **HJ** | 5.5 | 0.2 | 2-3 |
| 1050017-1 | 1050017 | Nambwa P Sch (MB-5) | Japan Techno | 0.05 | PW | Gneiss | Basement | 3 | 12 | 15.05.1994 | 8 | 0.29 | 16.80 | 6.51 | 0.78 | 3.9 | **TR** | 6.0 | | 2-3 |
| 1050017-2 | | | | | | | | | | | | | | | | | **TR** | 136 | | 4 |
| 1050017-2 | | | | | | | | | | | | | | | | | **T** | 5.4 | 1.0E-05 | 3 |
| 1050018-1 | 1050018 | Pamangoma V (MB-18) | Japan Techno | 0.05 | PW | Quartzite | Katanga | 5 | 12 | 16.10.1994 | 8 | 0.93 | 19.00 | 1.97 | 0.19 | 40.8 | **TR** | 60 | | 2 |
| 1050019-1 | 1050019 | Shimbwanga V (MB-14) | Japan Techno | 0.05 | PW | n/a {probably slate} | Katanga | 4 | 12 | 11.08.1994 | 8 | 1.04 | 21.71 | 2.31 | 0.39 | 38.9 | **J** | 31 | 0.11 | 1 |
| 1050019-2 | | | | | | | | | | | | | | | | | **TR** | 39 | | 2 |
| 1050020-1 | 1050020 | Shindaile V (MB-19) | Japan Techno | 0.05 | PW | Phyllite, slate | Katanga | 4 | 12 | 26.09.1994 | 8 | 0.26 | 15.20 | 13.99 | 0.87 | 1.6 | **T** | 0.98 | 0.06 | 2 |
| 1050020-2 | | | | | | | | | | | | | | | | | **TR** | 1.8 | | 3 |
| 1050022-1 | 1050022 | Nalubanda Sch (MB-20) | Japan Techno | 0.05 | PW | Pyroxenite | Katanga ? | 1 | 12 | 16.08.1994 | 8 | 1.15 | 17.81 | 10.67 | 0.15 | 9.3 | **T** | 15.8 | | 2-3 |
| 1050027-1 | 1050027 | Mulela (MB-17) | Japan Techno | 0.05 | PW | Granite-gneiss | Basement | 3 | 12 | 09.10.1994 | 8 | 0.4 | 9.06 | 8.23 | 0.95 | 4.2 | **TR** | 3.2 | | 1 |
| 1050027-2 | | | | | | | | | | | | | | | | | **T** | 3.4 | 0.009 | 2 |

## Lusaka Province

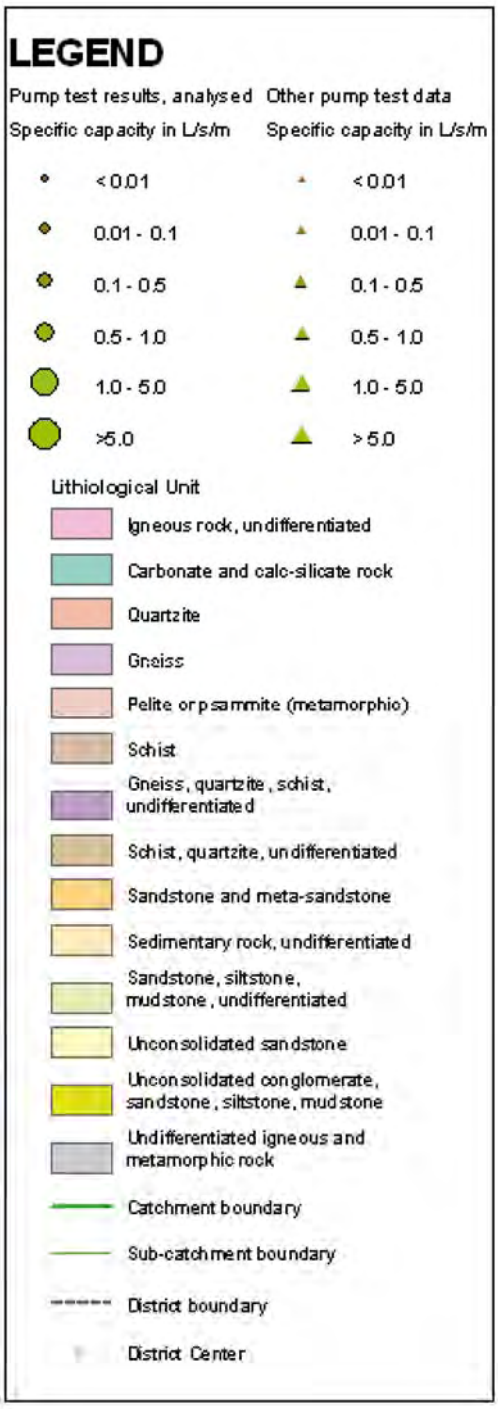
| Sort | WP-No. | Borehole | Data Source | Distance or radius [m] | B/h Type | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | Q [L/s] | SWL [m bgs] | DWL [m bgs] | RWL [m bgs] | q [$m^2$/d] | Analysis Method | T [$m^2$/d] | S [-] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5010027-1 | 5010027 | St. Luke's Hospital Mpanshya | Japan Techno Co. Ltd | 0.05 | PW | Gravel with clay | Recent | 10 | 12 | 26.08.1993 | 8 | 1.11 | 10.13 | 3.55 | 0.02 | 27.0 | H | 7.2 | 0.16 | 3 |
| 5010052-1 | 5010052 | Rufunsa P Sch | Japan Techno Co. Ltd | 0.05 | PW | Sand and clay | Recent | 10 | 12 | 10.08.1993 | 8 | 0.24 | 11.18 | 11.62 | 0.54 | 1.8 | T | 1.7 | 8.50E-04 | 2 |
| 5010052-2 | | | | | | | | | | | | | | | | | TR | 2 | | 2-3 |
| 5010057-1 | 5010057 | Chinkuli P Sch | Japan Techno Co. Ltd | 0.05 | PW | Granite | Basement | 1 | 20 | 14.09.1983 | 8 | 0.15 | 3.14 | 18.50 | 2.91 | 0.7 | T | 0.58 | 4.00E-04 | 2-3 |
| 5010057-2 | | | | | | | | | | | | | | | | | TR | 0.24 | | 2 |
| 5010063-1 | 5010063 | Chiwala V | Japan Techno Co. Ltd | 0.05 | PW | Gravel with sand | Recent | 10 | 12 | 20.08.1993 | 8 | 0.62 | 10.99 | 11.16 | 1.21 | 4.8 | T | 3.2 | 0.11 | 2 |
| 5010085-1 | 5010085 | Mukunya V | Japan Techno Co. Ltd | 0.05 | PW | Gneiss | Katanga | 3 | 12 | 19.08.1993 | 8 | 0.27 | 3.08 | 18.96 | 0.33 | 1.2 | T | 0.57 | 0.05 | 2-3 |
| 5010086-1 | 5010086 | Mupwaya V | Japan Techno Co. Ltd | 0.05 | PW | Clay with sand, mudstone | Karoo (?) | 7 | 12 | 14.08.1993 | 8 | 1.04 | 9.83 | 9.99 | 2.02 | 9.0 | J | 3.5 | | 2 |
| 5010086-2 | | | | | | | | | | | | | | | | | TR | 4.2 | | 1 |
| 5010093-1 | 5010093 | Unda Unda Palace | Japan Techno Co. Ltd | 0.05 | PW | Granite/Gneiss | Basement | 3 | 12 | 06.08.1993 | 8 | 0.7 | 4.80 | 12.02 | 2.06 | 5.0 | T | 3.6 | 0.05 | 2 |
| 5010093-2 | | | | | | | | | | | | | | | | | TR | 4 | | 1 |
| 5010099-1 | 5010099 | NRDC 2 (B10/30N) | GIBB Africa | 0.125 | PW | Limestone | Katanga | 6 | 12 | 19.04.2001 | 72 | 24 | 1.39 | 14.93 | 1.62 | 138.9 | J | 449 | | 2-3 |
| 5010099-2 | | | | | | | | | | | | | | | | | TR | 720 | | 2 |
| 5010122-1 | 5010122 | Avondale 1 | GIBB Africa | 0.1 | PW | Limestone | Katanga | 6 | 30 | 23.07.2001 | 48 | 27.8 | 1.32 | 6.72 | 1.88 | 357.4 | TR | 341 | | 3 |
| 5010123-1 | 5010123 | Avondale 2 F12-33W | GIBB Africa | 0.05 | PW | Limestone | Katanga | 6 | 12 | 13.04.2001 | 70 | 22 | 1.64 | 9.92 | 0.06 | 191.6 | T | 172 | 9.80E-03 | 2-3 |
| 5010124-1 | 5010124 | Avondale 3 F12-0/70 | GIBB Africa | 0.08 | PW | Limestone | Katanga | 6 | 9 | 28.06.2001 | 60 | 6.1 | 2.61 | 15.00 | 0.09 | 35.1 | J | 28 | 9.70E-03 | 4 |
| 5010124-2 | | | | | | | | | | | | | | | | | TR | 192 | | 3 |
| 5010127-1 | 5010127 | Marian Shrine | GIBB Africa | 0.05 | PW | Limestone/Schist | Katanga | 6 | 9 | 25.02.2001 | 68 | 10 | 1.22 | 7.36 | 0.15 | 117.4 | J | 73 | | 2 |
| 5010127-2 | | | | | | | | | | | | | | | | | H | 68 | | 2 |
| 5010130-1 | 5010130 | NRDC 3 (C14-4/65) | GIBB Africa | 0.075 | PW | Limestone | Katanga | 6 | 15 | 29.09.2001 | 72 | 14.5 | 4.85 | 24.80 | 1.41 | 50.5 | -- | | | 4 |
| 5010130-2 | 5010098 | NRDC C13 | GIBB Africa | 70 | OW | | | | | | | | | 0.50 | | | J | 161 | 0.05 | 2-3 |
| 5010131-1 | 5010131 | NRDC 4 D13/50W | GIBB Africa | 0.075 | PW | Limestone | Katanga | 6 | 9 | 01.07.2001 | 37 | 13.9 | 1.97 | 20.00 | 0.44 | 60.1 | TR | 81 | | 2-3 |
| 5010164-1 | 5010164 | Mr.C.Holmes | DWA | 0.08 | PW | Schist | Katanga | 4 | 18 | 18.06.2009 | 6.3 | 3.5 | 8.00 | 4.80 | 0.00 | 63.0 | TR | 17 | | 3 |
| 5010168-1 | 5010168 | NRDC Ranch B6-4 | GIBB Africa | 0.1 | PW | Limestone | Katanga | 6 | 15 | 22.09.2001 | 48 | 15.3 | 1.97 | 22.19 | | 59.6 | -- | | | 4 |
| 5010168-2 | 5010128 | NRDC1 B6-3 | | 55 | OW | | | | | | | | 1.97 | 1.66 | | | T | 132.5 | 0.018 | 2 |
| 5010176-1 | 5010176 | Luangwa Bridge | Japan Techno Co. Ltd | 0.05 | PW | Gneiss | Basement | 3 | 16 | 25.11.1993 | 8 | 0.15 | 25.16 | 13.51 | 6.54 | 1.0 | TR | 3.4 | | 3 |
| 5010177-1 | 5010177 | Soweto | Japan Techno Co. Ltd | 0.05 | PW | Granite | Basement | 1 | 12 | 26.11.1993 | 8 | 0.77 | 31.90 | 6.42 | 1.39 | 10.4 | J | 18.2 | | 2 |
| 5010179-1 | 5010179 | Hon Namugala | DWA | 0.08 | PW | Sandstone, schist | Basement | 4 | 24 | 22.04.2008 | 5 | 1.5 | 9.38 | 37.02 | 0.01 | 3.5 | -- | | | 4 |
| 5020210-1 | 5020210 | MFEZ BH-J1 | Oriental Cons, GReSP | 0.075 | PW | Limestone | Katanga | 6 | 18 | 04.07.2008 | 21.2 | 3.92 | 12.64 | 4.08 | 0.17 | 83.0 | H | 38 | | 3 |
| 5020211-1 | 5020211 | MFEZ BH-J2 | Oriental Cons, GReSP | 0.075 | PW | Limestone | Katanga | 6 | 24 | 04.07.2008 | 21.5 | 2.5 | 20.51 | 11.02 | 0.10 | 19.6 | T | 19.9 | 0.007 | 2 |
| 5020211-2 | | | | | | | | | | | | | | | | | J | 17.8 | 0.016 | 2 |
| 5020212-1 | 5020212 | MFEZ BH-J3 | Oriental Cons, GReSP | 0.075 | PW | Limestone | Katanga | 6 | 24 | 24.07.2008 | 21.2 | 10.3 | 4.10 | 2.43 | 0.01 | 366.2 | H | 316 | 0.1 | 3 |
| 5020213-1 | 5020213 | MFEZ BH-J4 | Oriental Cons, GReSP | 0.075 | PW | Limestone | Katanga | 6 | 25 | 18.07.2008 | 21.2 | 8.5 | 19.00 | 2.69 | 0.08 | 273.0 | T | 208 | | 2 |
| 5020213-2 | | | | | | | | | | | | | | | | | TR | 165 | | 2 |
| 5020214-1 | 5020214 | MFEZ BH-J5 | Oriental Cons, GReSP | 0.075 | PW | Limestone | Katanga | 6 | 24 | 08.07.2008 | 21.5 | 8.5 | 6.98 | 6.77 | 0.01 | 108.5 | T | 60 | | 3 |
| 5020216-1 | 5020216 | Chanyanya Harbour 2 | Japan Techno Co. Ltd | 0.05 | PW | Sand, siltstone | Recent | 10 | 12 | 11.01.1995 | 6 | 1.84 | 3.60 | 8.90 | 1.96 | 17.9 | J | 28 | | 3 |
| 5020216-2 | | | | | | | | | | | | | | | | | TR | 23 | | 3 |
| 5020218-1 | 5020218 | Chanyanya Harbour 1 | Japan Techno Co. Ltd | 0.05 | PW | Unconsolidated clastic sediments | Recent | 10 | 12 | 10.01.1995 | 6 | 0.86 | 4.30 | 4.18 | 0.36 | 17.8 | TWL | 34 | 6.00E-03 | 2 |
| 5020218-2 | | | | | | | | | | | | | | | | | TR | 50 | | 2 |
| 5020219-1 | 5020219 | Chapanga Village | Japan Techno Co. Ltd | 0.05 | PW | Shale (Mudstone) | Karoo | 7 | 12 | 12.01.1995 | 6 | 1.23 | 22.85 | 8.24 | 0.15 | 12.9 | H | 5.5 | 0.21 | 2 |
| 5020220-1 | 5020220 | Chibwalu Village | Japan Techno Co. Ltd | 0.05 | PW | Shale | Katanga | 4 | 12 | 13.12.1994 | 8 | 0.93 | 13.25 | 3.04 | 0.07 | 26.4 | TR | 152 | | 3 |
| 5020223-1 | 5020223 | Chikupi P Sch | Japan Techno Co. Ltd | 0.05 | PW | Limestone/Shale | Katanga | 6 | 12 | 07.01.1995 | 8 | 1.63 | 5.90 | 10.27 | 3.87 | 13.7 | J | 56 | | 3 |
| 5020224-1 | 5020224 | Chilimanga Village (LR-46) | Japan Techno Co. Ltd | 0.05 | PW | Sandstone | Karoo | 8 | 12 | 01.02.1995 | 7.7 | 2.53 | 13.99 | 22.09 | 0.19 | 9.9 | -- | | | 4 |
| 5020225-1 | 5020225 | Chimbwe Village | Japan Techno Co. Ltd | 0.05 | PW | Gravel | Recent | 10 | 16 | 23.12.1994 | 8 | 1.31 | 2.92 | 3.80 | 0.02 | 29.8 | J | 465 | | 2 |
| 5020225-2 | | | | | | | | | | | | | | | | | TR | 200 | | 3 |
| 5020226-1 | 5020226 | Chimusambo Village | Japan Techno Co. Ltd | 0.05 | PW | Mudstone | Karoo | 7 | 12 | 17.12.1994 | 7.8 | 1.45 | 23.80 | 11.38 | 0.53 | 11.0 | TR | 13 | | 1 |
| 5020226-2 | | | | | | | | | | | | | | | | | T | 17 | 2.50E-06 | 2 |
| 5020227-1 | 5020227 | Chimusebo Village | Japan Techno Co. Ltd | 0.05 | PW | Unconsolidated clastic sediments | Recent | 10 | 12 | 20.01.1995 | 8 | 0.57 | 11.49 | 7.17 | 0.26 | 6.9 | T | 8.4 | 2.60E-05 | 3 |
| 5020232-1 | 5020232 | Chisompolo Village | Japan Techno Co. Ltd | 0.05 | PW | Sand, conglomerate, shale | Katanga ? | 4 | 12 | 08.12.1994 | 8 | 0.49 | 5.39 | 4.18 | 0.01 | 10.1 | T | 7.2 | 0.028 | 2 |
| 5020236-1 | 5020236 | Chombe Village | Japan Techno Co. Ltd | 0.05 | PW | Shale | Katanga ? | 4 | 12 | 17.12.1994 | 8 | 1.19 | 9.00 | 6.01 | 0.03 | 17.1 | H | 8.1 | 0.05 | 2 |
| 5020237-1 | 5020237 | Gota-Gota Village | Japan Techno Co. Ltd | 0.05 | PW | Sandstone | Karoo | 8 | 12 | 12.12.1994 | 8 | 2.1 | 11.60 | 3.51 | 0.70 | 51.7 | T | 112 | | 3 |
| 5020238-1 | 5020238 | Gunduza Village | Japan Techno Co. Ltd | 0.05 | PW | Clay, mudstone | Karoo | 7 | 16 | 22.01.1995 | 8 | 0.65 | 19.23 | 3.22 | 0.30 | 17.4 | T | 18.9 | 1.84E-03 | 3 |
| 5020238-2 | | | | | | | | | | | | | | | | | TR | 59 | | 2 |
| 5020239-1 | 5020239 | Kabwadu Village | Japan Techno Co. Ltd | 0.05 | PW | Sandstone | Karoo | 8 | 12 | 26.01.1995 | 10 | 0.56 | 19.60 | 8.41 | 0.50 | 5.8 | T | 8 | 2.00E-05 | 2 |
| 5020239-2 | | | | | | | | | | | | | | | | | J | 7 | 1.00E-04 | 2 |
| 5020241-1 | 5020241 | Kabweza P Sch | Japan Techno Co. Ltd | 0.05 | PW | Limestone | Katanga | 6 | 16 | 08.01.1995 | 8 | 1.63 | 9.71 | 0.99 | 0.06 | 142.3 | TR | 285 | | 1 |
| 5020241-2 | | | | | | | | | | | | | | | | | J | 71 | 4.30E-03 | 2 |
| 5020242-1 | 5020242 | Kakote Village | Japan Techno Co. Ltd | 0.05 | PW | Limestone | Katanga | 6 | 12 | 01.12.1994 | 8 | 2.52 | 5.87 | 5.76 | 0.00 | 37.8 | T | 138 | | 2 |

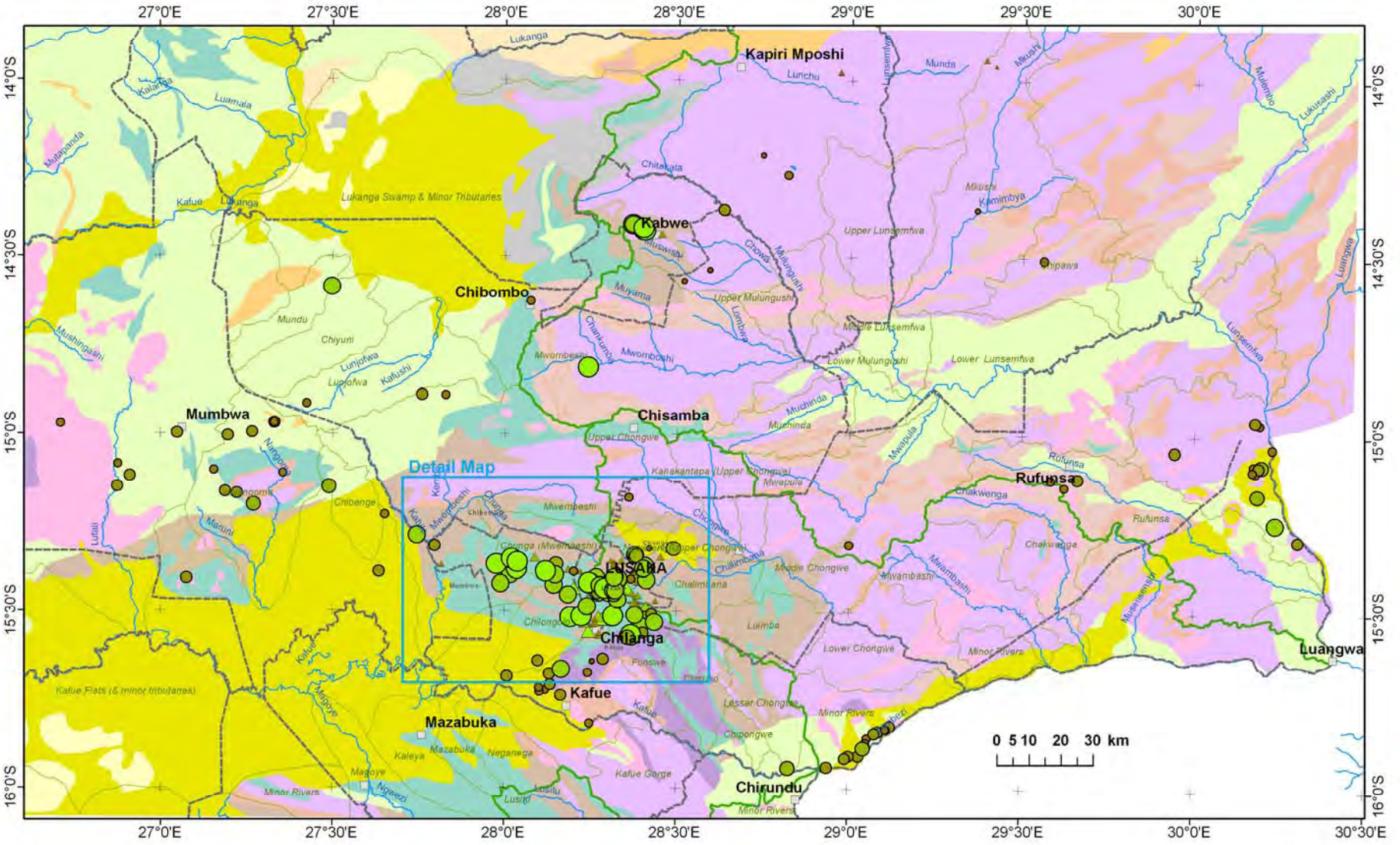
| Sort | WP-No. | Borehole | Data Source | Distance or radius [m] | B/h Type | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | Q [L/s] | SWL [m bgs] | DWL [m bgs] | RWL [m bgs] | q [m²/d] | Analysis Method | T [m²/d] | S [-] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5020243-1 | 5020243 | Kalimina Village | Japan Techno Co. Ltd | 0.05 | PW | Psammite, quartzite | Katanga | 11 | 12 | 30.01.1995 | 8 | 0.34 | 28.28 | 2.74 | 0.88 | 10.7 | | | | 4 |
| 5020243-2 | | | | | | | | | | | | | | | | | TR | 5.9 | | 2 |
| 5020243-3 | | | | | | | | | | | | | | | | | T | 4.7 | | 3 |
| 5020244-1 | 5020244 | Kalundu B Sch | Japan Techno Co. Ltd | 0.05 | PW | Limestone | Katanga | 6 | 12 | 01.07.1993 | 8 | 3.5 | 3.56 | 1.40 | 0.09 | 216.0 | T | 417 | 2.50E-07 | 2 |
| 5020244-2 | | | | | | | | | | | | | | | | | TR | 1074 | | 3 |
| 5020246-1 | 5020246 | Kandoko Village | Japan Techno Co. Ltd | 0.05 | PW | Unconsolidated clastic sediments and chalk (?) | Recent | 10 | 12 | 19.01.1995 | 8 | 0.34 | 18.72 | 7.29 | 0.78 | 4.0 | TR | 2.6 | | 1 |
| 5020246-2 | | | | | | | | | | | | | | | | | T | 2.8 | 0.03 | 2 |
| 5020253-1 | 5020253 | Kusemwa V | Japan Techno Co. Ltd | 0.05 | PW | Siltstone | Karoo | 8 | 12 | 14.01.1995 | 8 | 1.04 | 24.68 | 6.54 | 0.23 | 13.7 | H | 3.4 | 0.35 | 2 |
| 5020255-1 | 5020255 | Makanya Village | Japan Techno Co. Ltd | 0.05 | PW | Sandstone | Karoo | 8 | 12 | 28.01.1995 | 8 | 2.85 | 7.52 | 9.02 | 0.43 | 27.3 | T | 51 | 2.4E-07 | 1 |
| 5020255-2 | | | | | | | | | | | | | | | | | J | 47 | 1.40E-06 | 1 |
| 5020257-1 | 5020257 | Maunda V | Japan Techno Co. Ltd | 0.05 | PW | Sand and gravel | Recent | 10 | 12 | 19.01.1995 | 8 | 0.7 | 14.14 | 12.48 | 1.62 | 4.9 | T | 4.2 | 0.005 | 1 |
| 5020257-2 | | | | | | | | | | | | | | | | | TR | 3.7 | | 2 |
| 5020258-1 | 5020258 | Muchingamire Village | Japan Techno Co. Ltd | 0.05 | PW | Sandstone | Karoo | 8 | 12 | 20.01.1995 | 6 | 2.89 | 15.98 | 3.20 | | 78.0 | -- | | | 4 |
| 5020259-1 | 5020259 | Mudzama Village | Japan Techno Co. Ltd | 0.05 | PW | Mudstone, shale | Karoo | 7 | 12 | 24.01.1995 | 8 | 0.82 | 20.32 | 7.05 | 0.45 | 10.1 | J | 10.7 | 2.20E-03 | 2 |
| 5020259-2 | | | | | | | | | | | | | | | | | TR | 20 | | 2-3 |
| 5020260-1 | 5020260 | Mugurameno Village | Japan Techno Co. Ltd | 0.05 | PW | Mudstone | Karoo | 7 | 12 | 19.12.1994 | 7 | 1.0 | 17.01 | 15.90 | 0.74 | 5.4 | T | 8.2 | 2.30E-06 | 2 |
| 5020260-2 | | | | | | | | | | | | | | | | | TR | 6 | | 1 |
| 5020266-1 | 5020266 | Mushongentende Village | Japan Techno Co. Ltd | 0.05 | PW | Slate (mudstone) | Karoo | 7 | 12 | 15.12.1999 | 7.7 | 0.27 | 31.50 | 8.90 | 1.00 | -- | T | 0.5 | 0.2 | 2 |
| 5020266-2 | | | | | | | | | | | | | | | | | TR | 3.5 | | 2 |
| 5020268-1 | 5020268 | Mwembeshi P Sch | Japan Techno Co. Ltd | 0.05 | PW | Limestone | Katanga | 6 | 12 | 19.06.1993 | 8 | 0.42 | 1.83 | 30.12 | 0.06 | -- | J | 1.3 | | 3 |
| 5020274-1 | 5020274 | Kafue Nutrition Center | Japan Techno Co. Ltd | 0.05 | PW | Schist | Katanga | 4 | 12 | 22.01.1995 | 8 | 0.74 | 5.60 | 16.44 | 0.40 | 3.9 | J | 1.8 | 0.08 | 2-3 |
| 5020274-2 | | | | | | | | | | | | | | | | | HB | 1.6 | 0.09 | 1 |
| 5020277-1 | 5020277 | Shachinyama Village | Japan Techno Co. Ltd | 0.05 | PW | Unconsolidated clastic sediments | Recent | 10 | 16 | 16.01.1995 | 8 | 0.38 | 4.65 | 15.80 | 0.66 | 2.1 | J | 2.6 | 3.00E-05 | 2 |
| 5020279-1 | 5020279 | Shampule Village B | Japan Techno Co. Ltd | 0.05 | PW | Quartzite | Katanga | 5 | 8 | 30.01.1995 | 8 | 2.05 | 14.95 | 1.04 | 0.30 | 170.3 | T | 91 | | 1 |
| 5020279-2 | | | | | | | | | | | | | | | | | TR | 96 | | 1 |
| 5020280-1 | 5020280 | Shamunyemba Village | Japan Techno Co. Ltd | 0.05 | PW | Clay with (coarse) sand | Recent | 10 | 12 | 18.01.1995 | 8 | 0.18 | 9.14 | 9.23 | 0.47 | 1.7 | TR | 1.2 | | 1 |
| 5020285-1 | 5020285 | Shibeleka Village | Japan Techno Co. Ltd | 0.05 | PW | Shale | Katanga | 4 | 12 | 10.12.1994 | 8 | 2.65 | 7.39 | 0.36 | 0.04 | 636.0 | T | 587 | | 1 |
| 5020285-2 | | | | | | | | | | | | | | | | | TR | 538 | | 1 |
| 5020286-1 | 5020286 | Shikabeta Village | Japan Techno Co. Ltd | 0.05 | PW | Limestone, chert | Katanga | 11 | 12 | 11.12.1994 | 8 | 1.59 | 18.08 | 2.89 | 0.51 | 47.5 | J | 189 | | 2 |
| 5020286-2 | | | | | | | | | | | | | | | | | TR | 98 | | 1 |
| 5020288-1 | 5020288 | Shimabala Village | Japan Techno Co. Ltd | 0.05 | PW | Slate with sand | Katanga | 4 | 12 | 25.01.1995 | 8 | 0.34 | 8.91 | 13.87 | 0.13 | 2.1 | T | 0.6 | 0.2 | 3 |
| 5020291-1 | 5020291 | Tandeo Village | Japan Techno Co. Ltd | 0.05 | PW | Slate & sand | Katanga | 4 | 12 | 26.01.1995 | 8 | 0.15 | 10.62 | 17.58 | 0.07 | 0.7 | T | 0.5 | 5.00E-03 | 3 |
| 5020318-1 | 5020318 | U-4 | BGR, GIBB Africa | 0.3 | PW | Limestone | Katanga | 6 | 91 | 28.04.1999 | 72 | 36 | 1.34 | 8.64 | 0.14 | 360.0 | J | 633 | | 2 |
| 5020318-2 | | | | | | | | | | | | | | | | | TR | 578 | | 2 |
| 5020318-3 | 9999999 | Unknown borehole | GIBB Africa | 54 | OW | | | | 54 | | | | 1.24 | 1.47 | 0.14 | | T | 649 | 1.40E-02 | 2-3 |
| 5020325-1 | 5020325 | U-8D | BGR, GIBB Africa | 0.13 | PW | Limestone | Katanga | 6 | 109 | 18.05.1999 | 48 | 46 | 1.19 | 2.99 | 0.03 | 1329 | T | 2874 | 2.50E-07 | 2 |
| 5020325-2 | | Unknown borehole | GIBB Africa | 9.5 | OW | | | | | | | | 1.97 | 0.45 | 0.03 | | T | 3595 | 0.16 | 2-3 |
| 5020325-3 | | | | | | | | | | | | | | | | | TR | 3380 | | 3 |
| 5020350-1 | 5020350 | U-20F | BGR, GIBB Africa | 0.3 | PW | Limestone | Katanga | 6 | 95 | 18.12.1998 | 66.3 | 28.1 | 2.66 | 9.62 | 0.16 | 252.4 | TR | 65 | | 3 |
| 5020350-2 | | | | | | | | | | | | | | | | | J | 2000 | | 3 |
| 5020352-1 | 5020352 | U-21B | BGR, GIBB Africa | 0.2 | PW | Limestone | Katanga | 6 | 44 | 20.06.1999 | 72 | 53 | 1.52 | 2.07 | 0.09 | 2212.2 | J | 1363 | | 2 |
| 5020352-2 | | | | | | | | | | | | | | | | | TR | 1812 | | 2 |
| 5020352-3 | | Unknown borehole | GIBB Africa | 113 | OW | | | | | | | | 1.77 | 0.34 | 0.10 | | J | 2100 | 0.1 | 3 |
| 5020733-1 | 5020733 | Mr Kimena | DWA, BGR | 0.08 | PW | Limestone | Katanga | 6 | 18 | 30.04.2009 | 6 | 4 | 3.84 | 0.29 | 0.00 | 1191.7 | -- | | | 4 |
| 5020777-1 | 5020777 | Mugurameno School | Japan Techno Co. Ltd | 0.05 | PW | Mudstone | Karoo | 7 | 12 | 21.12.1994 | 6.7 | 1.07 | 19.02 | 11.57 | 0.28 | 8.0 | H | 4.3 | 0.018 | 2 |
| 5020777-2 | | | | | | | | | | | | | | | | | T | 6.9 | 1.30E-03 | 3 |
| 5020778-1 | 5020778 | Mr Chuunga (Chilanga) | DWA | 0.08 | PW | Dolomite | Katanga | 6 | 9 | 26.02.2009 | 4.3 | 0.5 | 6.10 | 36.06 | 30.65 | 1.2 | J | 0.34 | | 4 |
| 5020779-1 | 5020779 | Mrs. Mutanga Dorothy | DWA | 0.08 | PW | Dolomitic limestone | Katanga | 6 | 3 | 16.01.2010 | 3 | 2.5 | 17.30 | 0.40 | | 540.0 | T | 156 | | 3 |
| 5020782-1 | 5020782 | Disciple's Int. Church | DWA | 0.08 | PW | Mudstone/Clay | ? | 4 | 24 | 16.09.2009 | 5.3 | 2 | 3.80 | 13.65 | 0.00 | 12.7 | J | 5.8 | 0.14 | 2 |
| 5020782-2 | | | | | | | | | | | | | | | | | H | 3.4 | 0.28 | 2-3 |
| 5020809-1 | 5020809 | Mpamba P Sch | Japan Techno Co. Ltd | 0.05 | PW | Quartzite | Katanga | 5 | 10 | 25.06.1993 | 8 | 1.94 | 10.66 | 7.77 | 0.85 | 21.6 | TR | 17.3 | | 1 |
| 5020809-2 | | | | | | | | | | | | | | | | | T | 18.8 | 0.015 | 2 |
| 5030001-1 | 5030001 | Balakusau | Japan Techno Co. Ltd | 0.05 | PW | Gravel, Sand | Recent | 10 | 20 | 26.09.1993 | 6 | 0.34 | 5.63 | 11.39 | 0.08 | 2.6 | H | 1.5 | 7.50E-02 | 3 |
| 5030003-1 | 5030003 | Chilimanga (LG-10) | Japan Techno Co. Ltd | 0.05 | PW | Clay (with gravel) | Recent | 10 | 12 | 14.11.1993 | 7 | 1.73 | 9.77 | 2.26 | 0.20 | 66.1 | H | 9.1 | | 2 |
| 5030003-2 | | | | | | | | | | | | | | | | | TR | 100 | | 2 |
| 5030004-1 | 5030004 | Chirukusya V | Japan Techno Co. Ltd | 0.05 | PW | Mudstone/Clay | Karoo ? | 7 | 12 | 16.11.1993 | 8 | 0.32 | 5.84 | 8.78 | 0.61 | 3.2 | TR | 4.2 | | 2 |
| 5030005-1 | 5030005 | Chiwera | Japan Techno Co. Ltd | 0.05 | PW | Calcrete, gravel with clay | Recent | 10 | 16 | 21.11.1993 | 8 | 1.31 | 6.89 | 2.55 | 0.05 | 44.4 | TR | 84 | | 2 |
| 5030005-2 | | | | | | | | | | | | | | | | | TWL | 50 | 1.00E-03 | 3 |

| Sort | WP-No. | Borehole | Data Source | Distance or radius [m] | B/h | Type | Aquifer | Stratigraphy | Aquifer Class | Aquifer Thickness [m] | Date of Test | Duration [h] | Q [L/s] | SWL [m bgs] | DWL [m bgs] | RWL [m bgs] | q [$m^2$/d] | Analysis Method | T [$m^2$/d] | S [-] | Rating |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 5030009-1 | 5030009 | Kasakazya | Japan Techno Co. Ltd | 0.05 | PW | | Quartzite, clay | Basement | 5 | 12 | 19.11.1993 | 8 | 1.45 | 14.85 | 6.50 | 1.15 | 19.3 | H | 8.9 | 0.03 | 3 |
| 5030010-1 | 5030010 | Katondowe Mission Hospital | Japan Techno Co. Ltd | 0.05 | PW | | Sandstone, conglomerate | Karoo ? | 8 | 16 | 17.11.1993 | 8 | 2.83 | 6.69 | 0.74 | 0.03 | 330.4 | TR | 1332 | | 3 |
| 5030010-2 | | | | | | | | | | | | | | | | | | T | 875 | | 2 |
| 5030011-1 | 5030011 | Kaunga School Kanabenti | Japan Techno Co. Ltd | 0.05 | PW | | Gravel with sand and clay | Recent | 10 | 24 | 21.09.1993 | 1.5 | 1.23 | 7.41 | 22.43 | 0.09 | 4.7 | TR | 144 | | 3 |
| 5030015-1 | 5030015 | Manuelle | Japan Techno Co. Ltd | 0.05 | PW | | Clay with sand | Recent | 10 | 14 | 23.11.1993 | 8 | 0.27 | 7.32 | 19.05 | 0.37 | 1.2 | | | | 4 |
| 5030016-1 | 5030016 | Mkando | Japan Techno Co. Ltd | 0.05 | PW | | Clay & fractured quartzite | Recent/Basement | 10 | 12 | 09.11.1993 | 7.5 | 0.17 | 5.25 | 13.12 | 0.02 | 1.1 | -- | | | 4 |
| 5030018-1 | 5030018 | Mpona | Japan Techno Co. Ltd | 0.05 | PW | | Gravel, sand with clay | Recent | 10 | 12 | 12.11.1993 | 8 | 0.8 | 6.78 | 5.08 | 0.11 | 13.6 | TR | 17 | | 4 |
| 5030020-1 | 5030020 | Shipopa | Japan Techno Co. Ltd | 0.05 | PW | | Quartzite and biotite gneiss | Basement | 5 | 12 | 14.11.1993 | 8 | 0.28 | 5.89 | 11.06 | 0.05 | 2.2 | T | 1.5 | 0.01 | 3 |
| 5040056-1 | 5040056 | UNZA-4 Lawn | GReSP | 0.08 | PW | | Limestone | Katanga | 6 | 18 | 21.11.2007 | 6 | 1.25 | 4.49 | 14.47 | 0.26 | 7.5 | J | 3.6 | 0.11 | 2-3 |
| 5040056-2 | | | | | | | | | | | | | | | | | | TR | 1.5 | 0.3 | 2-3 |
| 5040056-3 | 5040362 | UNZA 1 Education | | 67 | OW | | | | | | | | | 5.57 | | | | J | 92 | 2.00E-04 | 3 |
| 5040165-1 | 5040165 | Mr Kawatu | DWA | 0.08 | PW | | Dolomite | Katanga | 6 | | 08.10.2009 | 6 | 2.5 | 4.70 | 5.14 | 0.00 | 42.0 | -- | | | 4 |
| 5040165-1 | 5040165 | Mr Chuunga John | DWA | 0.08 | PW | | Dolomite | Katanga | 6 | 18 | 28.03.2009 | 8 | 0.5 | 5.90 | 0.43 | 0.00 | 100.5 | J | 74 | | 3 |
| 5040395-1 | 5040395 | Buckley 2 | GIBB Africa | 0.08 | PW | | Limestone | Katanga | 6 | 27 | 28.08.2001 | 24 | 4 | 15.65 | | 0.41 | | TR | 57 | | 3 |
| 5040426-1 | 5040426 | Lumumba Rd 4A | GIBB Africa | 0.1 | PW | | Dolomite | Katanga | 6 | 25 | 01.03.1999 | 89 | 39 | 1.03 | 9.55 | 0.36 | 352.8 | T | 264 | | 2 |
| 5040426-2 | | | | | | | | | | | | | | | | | | TR | 435 | | 1 |
| 5040433-1 | 5040433 | Mass Media 4 (C5 gs) | GIBB Africa | 0.05 | PW | | Limestone | Katanga | 6 | 6.3 | 16.10.1998 | 72 | 19.9 | 14.95 | 5.44 | 0.05 | 316.1 | T | 561 | 2.30E-05 | 2 |
| 5040433-2 | | | | | | | | | | | | | | | | | | J | 596 | 6.80E-06 | 2 |
| 5040434-1 | 5040434 | Mass Media 5 (F1/25W) | GIBB Africa | 0.11 | PW | | Limestone | Katanga | 6 | 9.1 | 07.09.1998 | 72 | 17.8 | 10.73 | 5.57 | 0.12 | 276.1 | T | 417 | 8.50E-05 | 2 |
| 5040434-2 | | | | | | | | | | | | | | | | | | TR | 410 | | 2 |
| 5040434-3 | | | | | | | | | | | | | | | | | | TWL | 552 | 0.006 | 2 |
| 5040435-1 | 5040435 | Mass Media 6 | GIBB Africa | 0.05 | PW | | Argillaceous limestone | Katanga | 6 | 6.2 | 04.12.1998 | 72 | 14.9 | 9.19 | 19.16 | -0.08 | 67.2 | TR | 364 | | 2 |
| 5040435-2 | 9999999 | C3/50W VES | | 0.08 | OW | | | | | | 04.12.1998 | | 0 | 9.66 | 1.46 | 0.03 | | T | 417 | 0.005 | 1 |
| 5040435-3 | 9999999 | C3/50W VES | | | | | | | | | 04.12.1998 | | | | | | | TR | 357 | | 1 |
| 5040435-4 | 5040435 | Mass Media 6 | GIBB Africa | 0.05 | PW | | Argillaceous limestone | Katanga | 6 | 6.2 | 01.08.2001 | 69 | 15 | 4.52 | 16.40 | 0.20 | 79.0 | T | 200 | | 2 |
| 5040435-5 | 9999999 | C3/50W VES | | 0.08 | OW | | | | | | 01.08.2001 | | 0 | 4.99 | 0.79 | 0.29 | | J | 345 | 0.11 | 2 |
| 5040435-6 | 9999999 | C3/50W VES | | | | | | | | | 01.08.2001 | | | | | | | TR | 849 | | 2-3 |
| 5040451-1 | 5040451 | Quarries 3 (QA4) | GIBB Africa | 0.21 | PW | | Limestome | Katanga | 6 | 6 | 18.11.2001 | 71 | 41.1 | 4.2 | 0.42 | 0.11 | 8455 | T | 8930 | | 2-3 |
| 5040451-2 | 5040450 | Quarries 2 (QA5) | | 53 | OW | | | | | | | | | 4.35 | 0.05 | 0.01 | | -- | | | 4 |
| 5040452-1 | 5040452 | Mumbwa Rd (Roadside 1) | GIBB Africa | 0.15 | PW | | Limestone | Katanga | 6 | 57 | 21.01.1999 | 50 | 51 | 5.49 | 0.94 | 0.11 | 4687.7 | T | 2036 | | 3 |
| 5040452-2 | | | | | | | | | | | | | | | | | | TR | 4045 | | 2-3 |
| 5040453-1 | 5040453 | Mumbwa Rd (Roadside 2) | GIBB Africa | 0.1 | PW | | Limestone | Katanga | 6 | 40 | 30.01.1999 | 62 | 51 | 5.43 | 0.89 | -0.58 | 4951.0 | T | 3653 | | 2 |
| 5040453-2 | | | | | | | | | | | | | | | | | | | | | |
| 5040454-1 | 5040454 | Mumbwa Rd (Roadside 4) | GIBB Africa | 0.125 | PW | | Limestone | Katanga | 6 | 60 | 11.06.1999 | 48 | 52 | 6.00 | 2.47 | -0.02 | 1819.0 | T | 2111 | | 3 |
| 5040454-3 | | Unknown borehole | GIBB Africa | 113 | OW | | | | | | | | | 6.56 | | | | J | 3585 | 0.027 | 3 |
| 5040455-1 | 5040455 | Mumbwa Rd (Roadside 5) | GIBB Africa | 0.1 | PW | | Limestone | Katanga | 6 | 37 | 19.05.1999 | 48.2 | 29.4 | 2.37 | 0.50 | -0.34 | 5080.3 | T | 7238 | 8.60E-05 | 3 |
| 5040456-1 | 5040456 | Mumbwa Rd (Roadside 6) | GIBB Africa | 0.125 | PW | | Limestone | Katanga | 6 | 12 | 02.02.1999 | 56 | 51 | 3.09 | 0.93 | 0.06 | 4738.1 | T | 2308 | | 3 |
| 5040456-2 | | | | | | | | | | | | | | | | | | TR | 2583 | | 2-3 |
| 5040935-1 | 5040935 | Kamwala South B16 | GIBB Africa | 0.13 | PW | | Dolomite | Katanga | 6 | 15 | 31.08.2002 | 68 | 30 | 11.48 | 11.02 | 0.09 | 235 | H | 26 | | 3 |
| 5040935-2 | | | | | | | | | | | | | | | | | | J | 64 | | 3 |
| 5041025-1 | 5041025 | Plant Agrichem | DWA, GReSP | 0.08 | PW | | Dolomitic limestone | Katanga | 6 | 12 | 28.05.2009 | 6 | 3.5 | 2.03 | 7.19 | 0.00 | 42.1 | J | 14 | | 3 |
| 5041026-1 | 5041026 | Mrs Zyambo | DWA, GReSP | 0.08 | PW | | Limestone | Katanga | 6 | 6 | 04.04.2009 | 4.5 | 5 | 3.00 | 11.13 | 0.00 | 38.8 | -- | | | 4 |
| 5041028-1 | 5041028 | Mrs Moyo | DWA, GReSP | 0.08 | PW | | Limestone | Katanga | 6 | | 01.03.2008 | 2 | 3 | 11.00 | 1.16 | | 223.5 | -- | | | 4 |
| 5041045-1 | 5041045 | Waterworks 3 | GIBB Africa | 0.13 | PW | | Limestome | Katanga | 6 | 12 | 05.01.2008 | 48 | 25 | 11.5 | 31.3 | 0.1 | 69 | T | 111 | | 2 |
| 5041059-1 | 5041059 | Ministry of Education 2 | DWA | 0.05 | PW | | Limestone | Katanga | 6 | 12 | 09.05.2009 | 6.8 | 2 | 4.80 | 27.98 | 1.96 | 6.2 | TR | 3.2 | | 3 |
| 5041062-1 | 5041062 | Mrs Mushipe Belemu | DWA? | 0.08 | PW | | Schist | Katanga | 4 | 18 | 11.06.2009 | 6.4 | 1 | 12.60 | 34.59 | 2.20 | 2.5 | H | 0.32 | 0.078 | 2 |
| 5041064-1 | 5041064 | Mr Mbewe | DWA | 0.08 | PW | | Limestone | Katanga | 6 | 18 | 04.05.2009 | 3 | 5 | 0.83 | 2.73 | 0.00 | 158.2 | -- | | | 4 |
| 5041082-1 | 5041082 | DEBS Office | DWA | 0.08 | PW | | Limestone | Katanga | 6 | | 26.07.2010 | 6 | 5 | 4.00 | 2.00 | 0.00 | 216.0 | | | | 4 |
| 5041083-1 | 5041083 | Kamwala Basic School | DWA | 0.08 | PW | | Limestone | Katanga | 6 | | 01.07.2010 | 6 | 3.5 | 4.00 | 0.26 | 0.00 | 1163.1 | H | 348 | | 2-3 |
| 5041084-1 | 5041084 | Lusakasa Basic School | DWA | 0.08 | PW | | Limestone | Katanga | 6 | | 03.07.2010 | 7 | 3.5 | 4.80 | 1.20 | 0.00 | 252.0 | J | 60 | | 3 |
| 5041085-1 | 5041085 | Mukandawire B Sch | DWA | 0.08 | PW | | Limestone | Katanga | 6 | | 09.07.2010 | 6 | 3.5 | 6.20 | 0.94 | 0.00 | 321.7 | | | | 4 |
| 5041130-1 | 5041130 | Mass Media 1 D12/50N | GIBB Africa | 0.11 | PW | | Limestone | Katanga | 6 | 9.3 | 18.11.1998 | 67 | 14 | 14.74 | 4.54 | 0.20 | 266.4 | T | 324 | 0.045 | 3 |
| 5041130-2 | | | | | | | | | | | | | | | | | | TR | 320 | | 3 |
| 5041130-3 | 5040415 | International School 6D | | 120 | OW | | | | | | | | | 15.67 | | | | | | | 4 |
| 5041142-1 | 5041142 | Avondale 4 (1-NEW) | LWSC | 0.1 | PW | | Limestone, & Sandstone? | Katanga | 6 | 12 | 01.11.2005 | 48 | 30 | 2.93 | 22.94 | 0.09 | 113.0 | TR | 445 | | 3 |
| 5041142-2 | | | | | | | | | | | | | | | | | | T | 142 | 2.00E-04 | 3 |

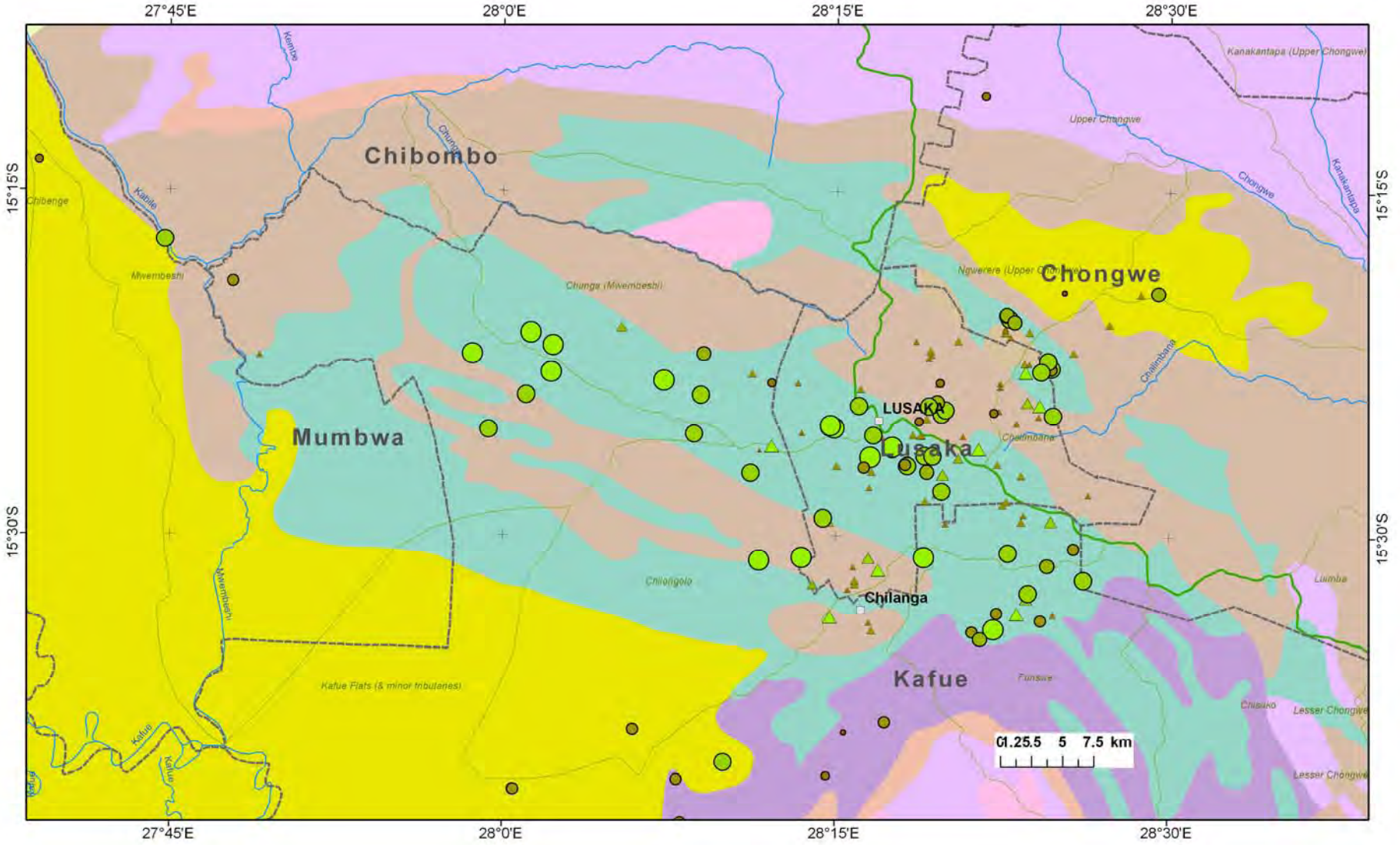
# Annex 5

## Maps showing the pumping test results (Specific Capacity)


LEGEND
Pump test results, analysed
Specific capacity in L/s/m
Other pump test data
Specific capacity in L/s/m
< 0.01
0.01 - 0.1
0.1 - 0.5
0.5 - 1.0
1.0 - 5.0
>5.0
< 0.01
0.01 - 0.1
0.1 - 0.5
0.5 - 1.0
1.0 - 5.0
> 5.0
Lithiological Unit
Igneous rock, undifferentiated
Carbonate and calc-silicate rock
Quartzite
Gneiss
Pelite or psammite (metamorphic)
Schist
Gneiss, quartzite, schist, undifferentiated
Schist, quartzite, undifferentiated
Sandstone and meta-sandstone
Sedimentary rock, undifferentiated
Sandstone, siltstone, mudstone, undifferentiated
Unconsolidated sandstone
Unconsolidated conglomerate, sandstone, siltstone, mudstone
Undifferentiated igneous and metamorphic rock
Catchment boundary
Sub-catchment boundary
District boundary
District Center




Approximate scale 1:2,000,000




Approximate scale 1:500,000