# GROUND WATER RESOURCES OF KERALA
# (MARCH 2017)

**Prepared by**

**Ground Water Department & Central Ground Water Board,**
**Government of Kerala Government of India**

**Thiruvananthapuram**
**May- 2019**

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**May- 2019**

TINKU BISWAL IAS
SECRETARY TO GOVERNMENT

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# FOREWORD

Scientific assessment of our natural resources like water and very much essential for planning and development in Kerala, the southernmost state of India is said to be abundant in surface water resources with 44 rivers and a large number of lakes and ponds. Kerala is a small strip of land with high density of population. The state receives an average annual rainfall of about 3000 mm per year. However, in spite of the apparent riches, water scarcity is becoming common place in parts of the State, especially during summer months. This is so, because, none of the 44 rivers fall under the category of major rivers and only 4 are falling in the category of medium rivers, whereas the remaining 40 are all minor rivers. Secondly the unique topographic and geomorphic settings of the State and finally the limited storage space However, over and above the natural causes, it is the lack of judicious management of available fresh water resources which is largely responsible for the scarce situation.

Ground water extraction by means of simple dug wells has traditionally been the prevalent source of fresh water for various uses in Kerala. With nearly 90 percent of the geographical area of the State underlain by massive hard rocks, the ground water development prospects are very limited. Increasing demand of fresh water resources to satisfy the requirements of an increasing population especially in the density of population has changes in land use pattern has led to reduction in the recharge into ground water resources of the State. Contamination of ground water resources from natural and anthropogenic sources is also emerging as a major threat to the sustainability of ground water sources in many areas. Strategies for scientific management of ground water resources in the State have become imperative to ensure prevention of their depletion, contamination and to ensure their long term sustainability.

Realistic assessment of ground water resource availability, status of its utilization and balance available for development are basic prerequisites for building a sound ground water management strategy. It is heartening to note that the Central Ground Water Board, Ministry of Water Resources , RD & GR, Government of India jointly with the Ground Water Department, Government of Kerala has reassessed the ground water resources of the State as in March 2017 as per the Ground Water Estimation methodology 2015. This effort deserves appreciation as it will help Government of Kerala identify and prioritize necessary management interventions and initiatives including regulation and augmentation measures to ensure long-term sustainability of ground water resources in the State and to ensure its water security for the future generations.

I take the opportunity to congratulate the Central Ground Water Board, Kerala Region, Thiruvananthapuram and Ground Water Department, Government of Kerala for the collection, compilation, and analysis of voluminous data on various aspects of ground water resources and for bringing out this compilation in such a comprehensive fashion. I hope this document will be of immense use to administrators, planners and other stake holders to have a better understanding of the ground water scenario of the State for planning and implementing various projects and schemes to ensure their long-term sustainability.

Thiruvananthapuram
4th December 2018

(TINKU BISWAL)
Secretary (Water Resources & CSIN)
Government of Kerala

भारत सर्कार
GOVERNMENT OF INDIA
जल संसाधन, नदी विकास एवं गंगा जीर्णोद्धार मंत्रालय
MINISTRY OF WATER RESOURCES, RIVER DEVELOPMENT & GANGA REJUVENATION
केंद्रीय भूमिजल बोर्ड, केरल क्षेत्र
CENTRAL GROUND WATER BOARD, KERALA REGION

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**Thiruvananthapuram**
**Dated 06.05.2019**

The State of Kerala has a total area of about 38,863 sq.km which is only 1.2 percent of the geographical area of India. The State is home to about 3 percent of the population of the country. Though richly endowed with surface water source such as rivers, tanks and ponds and having average annual rainfall of about 3000 mm, the topographic and geomorphic settings of the State allows utilization of only a small portion of the available resources. Nearly 88 percent of the total geographical area of the State is underlain by crystalline rocks devoid of any primary porosity, with limited ground water prospects. In the alluvial formations having multiple aquifer systems, quality is sometimes a constraint in the utilization of available resources. Increasing population, rapid urbanization and industrialization has resulted in increase in use of ground water resource over the last few decades in the State. Judicious and planned development of ground water and its scientific management have become necessary to ensure long-term sustainability of this precious natural resource. This requires realistic estimates of the availability of ground water resources and the current status of its utilization.

The dynamic ground water resources of the State are being periodically assessed jointly by the State Ground water Department, Government of Kerala and the Central Ground water Board, Ministry of water Resources, Government of India, following the methodology recommended by the Ground Water Estimation Committee (GEC) constituted by the Government of India. The previous assessment was carried out in 2013. Salient features of the estimation of dynamic ground water resources of Kerala as on March 2017, as per modified GEC 2015 methodology recommendations are presented in this report. The report was approved by the state level committee convened on 29/11/2018 and subsequently submitted to CGWB Headquarters and minor modifications on ground water extraction is incorporated.

This report has been prepared through the sincere and painstaking efforts of the officers of the Ground Water Department, Government of Kerala, Thiruvananthapuram and Central Ground Water Board, Kerala Region, Thiruvananthapuram under the supervision and guidance of the Regional Director. I take this opportunity to thank every one of them for their help and cooperation in the preparation of this report. I am also thankful to the Chairman and members of the State Level Committee for Re-estimation of the Ground water Resources of Kerala for their valuable guidance and encouragement during the estimation and for finalizing the report. Thanks are due to various organizations of Government of Kerala and Government of India for fruitful discussions and for providing data required for the assessment of ground water resources of the State. All possible care has been taken to assess various components of the ground water resource of the State are realistically as possible. I hope this compilation will be of help to the planners, administrators and all stake holders in Kerala and will serve as a useful guide for the optimal and sustainable management of the limited ground water resources of Kerala.

**V.Kunhambu**
**Regional Director**

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# GROUNDWATER RESOURCES OF KERALA (As on March 31, 2017)

## 1.0 INTRODUCTION

Kerala is a tiny strip of land, located in the southwestern tip of India between North latitudes $8^0$ 18'and $12^0$ 48' and East longitudes $74^0$ 52' and $77^0$ 22', occupying only 1.2 percent of India's land area. Its geographical contours can be described as an elongated strip of land, cushioned between the Western Ghats on the east and the sandy shores of the Arabian Sea on the west. Its land area is 38,863 sq.km, stretching 580 km in length and 30.130 km in average breadth. In terms of area, though Kerala forms only 1.2% of the total area of India (3,287,263 sq. km), 3 percent of country's population inhabits the State. The State is subdivided into 14 districts and 152 community development blocks for administrative convenience.

The occurrence and availability of ground water vary considerably from place to place within the State depending on the prevailing climatic, geomorphological and hydrogeological conditions. About 88 percent of the total geographical area of the State is underlain by crystalline rocks devoid of any primary porosity, with limited ground water prospects. In the alluvial formations having multiple aquifer systems, quality is sometimes a constraint in the optimal development of available resources. Increasing population, rapid urbanization and industrialization has resulted in increasing use of ground water resources over the last few decades in the State. Judicious and planned development of ground water and its scientific management have become necessary to ensure long-term sustainability of this precious natural resource in Kerala. The ground water resources of the State are being periodically assessed by the Central Ground Water Board (CGWB), jointly with the State Ground Water Department and other Central Government as well as State Government agencies, according to the methodology recommended by the Groundwater Estimation Committee constituted by Govt. of India from time to time. The previous assessment was carried out in 2013. Salient features of the estimation of dynamic ground water resources of Kerala as on March 2017, as per GEC-2015 recommendations are presented in this report.

## 1.1 Background

The first attempt to estimate the groundwater resources of the country on a scientific basis dates back to the year 1979, when the 'Ground Water Over-Exploitation Committee' was constituted by Agriculture Refinance and Development Corporation (ARDC) of Reserve Bank of India for the purpose. The ground water resources of India were assessed based on the norms recommended by the above Committee. Subsequently, with the objective of refining the assessment methodology, the "Groundwater Estimation Committee (GEC)" headed by the Chairman, Central Ground Water Board (CGWB) came into existence. Based on the information gathered during the studies carried out by CGWB, the Committee formulated the detailed methodology for estimation of groundwater resources in 1984 (GEC' 84). The methodology was reviewed in 1997 in the light of feedback from different agencies and information gathered from various studies by the departments, a modified methodology was formulated in 1997(GEC'97) for computation of groundwater resources. This methodology has since undergone some modifications and the modified GEC-2015 norms are currently being used for estimation of ground water resources of the country.

## 1.2. Constitution of the State Level Committee

Directions were issued by the Ministry of Water Resources; Government of India vide D.O.No.3/16/2008-GW dated 05.01.2010 to all States/Union Territories for constitution of State Level Committees for co-ordination of various activities related to estimation of dynamic ground water resources as in 2009. A request was made for constitution of the committee by the Regional Director, Central Ground Water Board, Kerala Region, Thiruvananthapuram also vide Letter No.11 (T20)/10-11/561 dated 29.04.2010. In response, Water Resources

Department, Government of Kerala issued orders vide G.O. (Rt) No.590/2010/WRD dated 18.05.2010 constituted the State Level Committee for Re-estimation of Ground Water Resources of Kerala with the following members:

| | |
|---|---|
| Principal Secretary, Water Resources Department | **Chairman** |
| Director, Ground Water Department | Member |
| Director, Agriculture Department | Member |
| Managing Director, Kerala Water Authority | Member |
| Chief Engineer, Irrigation & Administration | Member |
| Director, Dept. of Industries & Commerce | Member |
| General Manager, NABARD, Thiruvananthapuram | Member |
| Executive Director, Centre for Water Resources Development & Management, Kozhikode | Member |
| Regional Director, CGWB, Thiruvananthapuram | Member Secretary |

Copy of the Government order constituting the Committee is presented in **Annexure I** (**a**)

The committee had continued for the estimation of dynamic ground water resources of Kerala in the years 2011, 2013.As per the direction of Central Head quarter of Central ground Water Board, the present ground water Resources estimation has to be carried out as per the methodology GEC-2015. Accordingly, the Regional Director, CGWB, Kerala Region, Thiruvananthapuram had requested to re constitute the State Level Committee for Re-estimation of ground water resources vide letter No 11/CGWB/KR/T/ 20/17-18/954 dated 18/07/2017. In response, Water Resources Department, Government of Kerala issued orders vide G.O. (Rt) No.888/2017/WRD dated 30.10.2017 reconstituting the State Level Committee for Re-estimation of Ground Water Resources of Kerala with the same members. Copy of the Government order is presented in **Annexure I(b).**

## 1.3 Ground Water Estimation Procedure

As per directions of the Central Ground Water Board, dedicated Ground Water Resource Assessment Cells were constituted at both Central Ground Water Board and State Ground Water Department to facilitate realistic and coordinated estimation of ground water resources. The exercise of resource estimation commenced with the collection, collation, compilation and validation of relevant data from various sources. A critical evaluation of the results of the ground water resource assessment taken up during 2013 was undertaken with focus on assessment units categorized as "Over-exploited" and "Critical". The present ground water scenario in these assessment units were reviewed with the help of field data.

The estimation of ground water resources as on March-2017 was undertaken as per the GEC-2015 methodology and ground water resources were computed for all the assessment units. The results were validated in consultation with field professionals of CGWB and State Ground Water Department. Additional field data was collected and incorporated into the computations wherever required before finalizing the report.

As the ground water resources are to be computed block-wise, it was felt that the basic data pertaining to the blocks need to be re-computed as there was re-organization of blocks and change of some of the Panchayats to Muncipalities. As per available statistics on agriculture appears to indicate no significant increase in ground water extraction for irrigation due to reduction in the cultivation of irrigated food-crops. On the other hand, there is increase in the ground water Extraction for drinking and domestic uses consequent on the population rise. The ground water extraction data collected during 5$^{th}$ Minor Irrigation census and the additional data available from ground water Department,Agricultural department and local government bodies are utilized for the ground water resources computations .It is assumed that there is no much variations in ground water irrigations in the state and a proportional increase in the number of structures for homestead irrigation in the blocks as per the available field data were

also incorporated. The dependency on domestic ground water extraction had some changes due to the availability of new surface water schmes in some of the cities and adjoining areas in the state.
Till 2013, only the dynamic ground water resources of the state were computed but from this assessment year (2017), the instorage ground water resources (both phreatic and confined aquifers) of each block were also computed and the total ground water resources of the assessment unit was computed.

The assessment of the ground water resources of Kerala as in March 2017 was computed as per GEC 2015 norms and was approved in the 7th Meeting of the State Level Committee on 29.11.2018.

# 2.0 HYDROGEOLOGY

The occurrence and movement of groundwater in various litho-units underlying the State are mainly controlled by the physiography, geological setting and structural features.

## 2.1 Physiography

The State can be sub-divided into three major units based on their geomorphic characteristics viz. the coastal plains, the midlands and the hill ranges. The coastal plains have an elevation of less than 7.6m above mean sea level (a.m.s.l). The elevation of the midland region ranges from 7.6 to 76 m amsl and that of the hill ranges is more than 76 m above mean sea level. Along the hill ranges two distinct plateau regions are seen, the important being the Wayanad plateau, covering major part of Wayanad district, with elevations above 700 m.amsl and the Munnar plateau, located along the northern part of Idukki district with a general elevation of about 1000 m.amsl are the prominent plateaus in the hilly region of the State.

## 2.2 Rainfall

Kerala receives normal annual rainfall of 3060 mm, received mainly during the Southwest Monsoon period, extending from May to September, followed by the Northeast Monsoon in the months of November and December. The period between May and October accounts for about 87 percent of the annual rainfall. This period has been considered as monsoon season for computation of monsoon rainfall recharge. The amount of rainfall received shows a gradual decrease from North to South. The spatial distribution of normal annual rainfall in the State is shown in **Fig.2.1.**

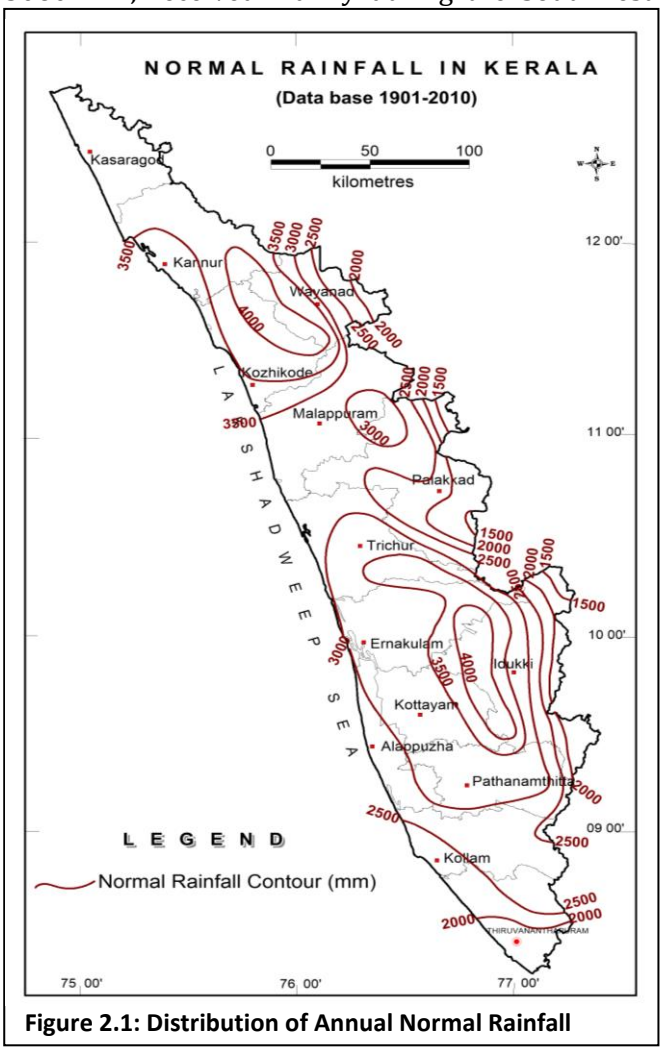


**Figure 2.1: Distribution of Annual Normal Rainfall**

## 2.3 Geology

As much as 88% of the State is underlain by crystalline rocks of Archaean age comprising schistose formations, Charnockites, Khondalites and gneisses. All these formations are intruded by dykes of younger age. The sedimentary formations of Tertiary age occurring along the western parts of the State comprise four distinct beds viz. Alleppey, Vaikom, Quilon and Warkali. The crystalline and the Tertiary formations are lateritized along the midland area. Alluvial deposits of Recent origin are seen along the coastal plains. The general stratigraphic sequence is given in **Table 2.1.**

**Table 2.1: Stratigraphic Succession of Geological Formations in Kerala**

| AGE | FORMATION | LITHOLOGY |
|---|---|---|
| Recent | Alluvium | Sand, clay, riverine alluvium etc. |
| Sub-recent | Laterite | Derived from crystalline and sedimentaries |
| Tertiary | Warkali | Sand stone, clays with lignite |
| | Quilon | Lime stone, marl and clay |
| | Vaikom | Sandstone with pebbles, clay and lignite |
| | Alleppey | Carbonaceous clay and fine sand |
| Undated | Intrusives | Dolerite, Gabbro, Granites, Quartzo - feldspathic Veins. |
| Archaean | Wayanad group | Granitic gneiss, Schists etc. |
| | Charnockites | Charnockites and associated rocks |
| | Khondalites | Khondalites suite of rocks and its associates |

## 2.4 Occurrence of Groundwater

A generalized Hydro-geological Map of Kerala is given in **Fig.2.2.** In hard rock terrain, comprising weathered crystallines and laterites, ground water occurs under phreatic conditions in the weathered residuum and the shallow fractures hydraulically connected to it, whereas it is under semi-confined to confined conditions in the deep fracture zones. In the alluvial terrain, ground water in the shallow ` systems is in phreatic condition. Granular zones in the Tertiary sedimentary formations at deeper levels form potential confined to semi-confined aquifers.

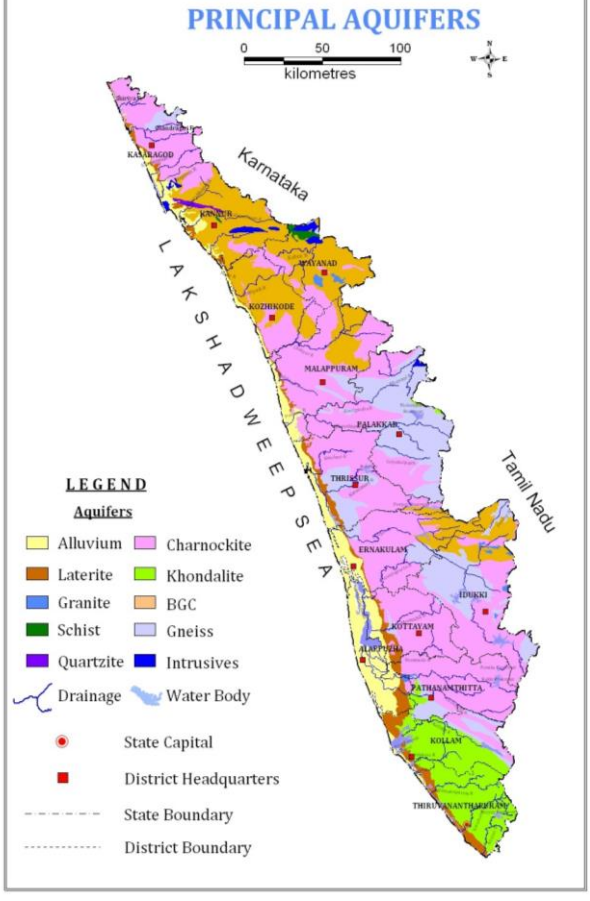


**Figure 2.2: Principal Aquifers of Kerala**

### 2.4.1 Crystalline Rock Aquifers

The shallow aquifers of the crystalline rocks are made up of the highly decomposed weathered zone or partly weathered and fractured rocks. Thick weathered zone is seen along the midland area either beneath the laterites or exposed. In the hill ranges thin weathered zone is seen along topographic lows and area with lesser elevation and gentle slope. In areas along the hill ranges generally rock exposures are seen. The depth to water level in this aquifer varies from 2 to 16 m.bgl and the yield of the well ranged between 2 to 10 $m^3$ per day.

Exploratory drilling carried out by Central Ground Water Board in the State in the crystalline formations has indicated that the potential fractures are encountered at depths ranging between 30 to 175 m.bgl with yield varying from less than 1 to as much as 35 litres per second (lps). In Charnockites, more than 40% of the wells have yielded more than 10 lps or above

indicating that in Kerala, Charnockite suite of rocks are better aquifers compared to Khondalite group.

### 2.4.2 Tertiary Rock Aquifers

Groundwater occurs under phreatic condition in the shallow zone and under semi-confined to confined conditions in the deeper aquifers. The Tertiary formation of Kerala coast is divided into four distinct beds viz. Alleppey, Vaikom, Quilon and Warkali. These formations except the Alleppey beds are outcrops and they are lateritized wherever they are exposed. The maximum thickness of Tertiary sediments is found between Karunagapally and Kattoor and all the four beds are found in this area.

Groundwater is commonly developed through dug wells tapping the sandy zones at shallow depth in the Tertiary sediments. The depth to water level in this shallow zone ranges from 2.0 to 27 m.bgl and the yield of the wells range from 500 lpd to 10 $m^3$ per day.

The Vaikom and Warkali beds form the most potential aquifers in the Tertiary group. The Alleppey bed has been encountered at deeper levels in the bore holes drilled in the coastal tract of Alappuzha district and the formation water is found to be saline and hence, no tube well has been constructed tapping this formation.

In the Vaikom aquifers, the piezometric level is between 2 and 20 m above msl. The yield of the tube wells constructed in this formation ranges from 1 to 57 lps. This bed forms auto flow zones along the coast between Karunagapally in Kollam district and Nattika and Kaipamangalam in Thrissur district. The water is generally fresh south of Karuvatta in Alappuzha district. Recent exploration by CGWB proved that good quality groundwater pockets are in existence in this formation in and around Cochin.

Warkali aquifers are the most developed aquifer system among the Tertiary group. The urban and rural water supply in the coastal area between Kollam and Alappuzha is mostly dependent on this. The piezometric head is about 3 m. above msl along the eastern part of the sedimentary basin whereas it is 10 m. below msl in and around Alappuzha. The yield of the wells tapping this formation ranges from 3 to 14 lps.

The hydrogeological information on Quilon beds is very limited. The formation is considered to be a poor aquifer compared to Vaikom and Warkali beds.

### 2.4.3 Laterite Aquifers

Laterites are the most widely distributed lithological unit in the State and the thickness of this formation varies from a few meters to about 30 m. Laterite forms potential aquifers along topographic lows and valleys. The depth to water level in this formation ranges from 2 to 25 mbgl and the yield ranges from 0.5 to 30 $m^3$ per day. The occurrence and movement of groundwater in the laterites are mainly controlled by the topography. Laterite is a highly porous rock formation, which can form potential aquifers along topographic lows. However, due to the porosity, groundwater is drained from elevated places and slopes at shortest duration after monsoon and hence water scarcity is experienced in the elevated places and slopes.

### 2.4.4 Alluvial Aquifers

The alluvial deposits form potential aquifer along the coastal plains and groundwater occurs under phreatic and semi-confined conditions in this aquifer. The thickness of this formation varies from few meters to above 100 m and the depth to water level ranges from less than a meter to 6 mbgl. Filter point wells are feasible wherever the saturated thickness exceeds 5m. This potential aquifer is extensively developed by dug wells and filter point wells throughout the State and the yield ranges from 5 to 35 $m^3$ per day.

## 2.5 Ground Water level Conditions in 2016

The depth to water level was monitored from 1672 monitoring wells distributed throughout the State during the months of April, August, November and January. The water level measured during the month of April is taken as pre-monsoon water level and the data of November is taken as post-monsoon water level, based on temporal distribution of long-term rainfall in the State.

The depth to water level mostly depends on the hydrogeological conditions of the area as well as topography, rainfall pattern, etc. In coastal plains the depth to water level is generally restricted to 6 mbgl. In midland areas, where the undulating topography is seen, the depth to water level generally varies from near ground level to 25 mbgl. The variation is mostly due to topographical variations, thickness of lateritic overburden etc. In areas where laterites are underlain by sedimentary aquifers of Tertiary age, the water level goes very deep, even to the extent of 55 mbgl. In highlands the depth to water level is in the range of few cm to 10 mbgl depending on the topography and thickness of overburden (weathered zone).

### 2.5.1 Depth to water level during Pre-monsoon Period (April 2016)

The pre-monsoon water level in Kerala State as measured from Ground Water Monitoring Wells (GWMW) during April 2016 ranged from 1.30 to 25.5 metres below ground level but mostly falls within the range of 5 – 15.0 mbgl as shown by Monitoring wells (GWMW). Shallow water level in less than 2.0 mbgl is seen in Alappuzha district, in the coastal tracts of Ernakulam and Thrissur districts and also eastern parts of high ranges along valleys in Idukki district. The areas falling in the midland region generally show water level in the range of 5 – 10 mbgl. In Kasargod, Kannur, Kollam, Malapuram, Palakkad and Thiruvananthapuram districts deep water level more than 20mbgl is noticed in certain pockets of areas where thick lateritic overburden is seen. A map showing the spatial distribution of ground water levels in the phreatic zone during pre-monsoon period is given as **Fig.2.3**

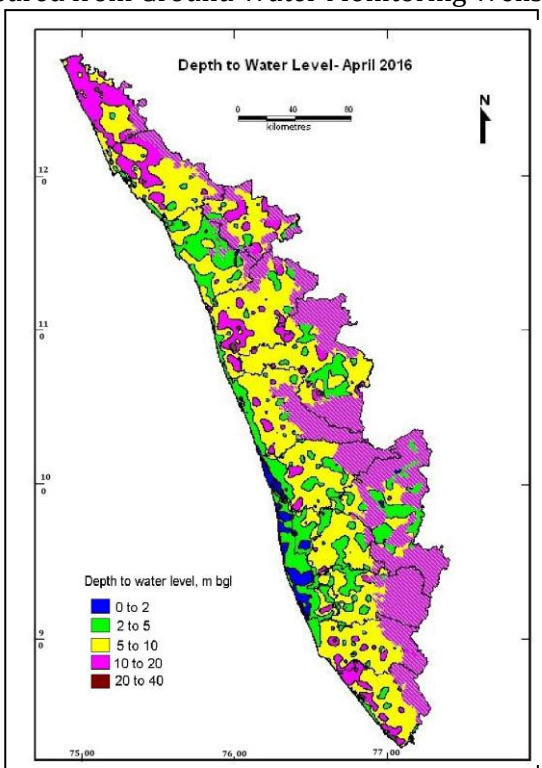


**Figure 2.3: Spatial Distribution of Ground Water Levels in Kerala (Apr. 2016)**

### 2.5.2 Depth to water level during August 2016

During the month of August 2016, the depth to water level varies widely from 0.50 to 24.50 mbgl but mostly falls within the range of 3 – 10.0 mbgl as shown by GWMWs. Shallow water level in less than 2.0 mbgl is seen in Alappuzha District, all along the coastal tracts and in eastern parts of high ranges in Idukki and Wayanad districts. The areas falling in the midland region generally show water level in the range of 2 – 10 mbgl. In Kasaragod and Thiruvananthapuram districts deep water level more than 20 mbgl is noticed in certain pockets of areas where thick lateritic overburden is seen.

### 2.5.3 Depth to Water Level during Post-monsoon Period (November 2016)

Depth to water level in Kerala State ranged from 0.55 to 24.75 metres below ground level but mostly falls within the range of 3 – 10 mbgl as shown by Ground Water Monitoring Wells (GWMW). Shallow water level of less than 2mbgl is seen along the coastal tracts of Kollam, Alappuzha, Ernakulam, Thrissur, Kozhikode and Kannur districts and in the low-lying parts of high ranges in Idukki and Wayanad districts. The midland areas show water level in the range of 3 – 10 mbgl. In central parts of Kasargod, northern parts of Kannur and in certain areas of

Wayanad districts show water level in the range of 10 – 20 mbgl. In Kasargod, and Thiruvananthapuram districts water level deeper than 20 bgl are noticed in certain pockets of areas where thick lateritic overburden is seen.

### 2.5.4 Depth to water level during January 2017

Depth to water level varies widely from 0.80 to 25.0 mbgl during the month of January 2017 but mostly falls within the range of 4 – 12 mbgl as shown by GWMWs. Shallow water level of less than 2mbgl is seen in Alappuzha district, along the coastal tracts of Kollam, Kozhikode Ernakulam and Thrissur districts and in thr low lying parts of high ranges in Idukki and also as small patches in Kottayam and Pathanamthitta districts. The midland areas show water level in the range of 5 – 10 mbgl. In central parts of Kasargod, northern parts of Kannur and in certain areas of Wayanad districts show water level in the range of 10 – 20 mbgl

### 2.5.5 Fluctuation of Ground Water Levels between April 2016 and November 2016

Comparison of November 2016 water level with that of April 2016 indicates rise in water level in the range of 0.0 to 8.0 m in most parts of the State. Decline in water levels is noticed in isolated pockets in parts of Thiruvananthapuram, Kollam, Kottayam, Pathanamthitta, Ernakulam Malapuram, Kozhikode and Waynad districts. Major part of the State recorded a rise in water level and is represented by 82.37 % of total monitoring wells.

### 2.5.6 Long-term Fluctuation of Ground Water levels

The long-term fluctuations in ground water levels in the State have been studied by comparing the pre-and post-monsoon water levels during 2016 with the average fluctuation of the previous 10 years (2006-2015).

#### 2.5.6.1 Fluctuation between Mean April (2006-2015) and April 2016

The change in water level over the last ten years period is brought out by the comparison of April 2016 water level with the mean value of April measurements of the period 2006 – 2015. This analysis indicates that the change in water level is mostly restricted to + 2(rise) to –2(fall) m as recorded by 90% of dug wells monitored. However, fall in waterlevel is predominant in many parts of the state though in small quantity as represented by 64% of monitoring wells.

#### 2.5.6.2 Fluctuation between Mean November (2006-2015) and November 2016

A comparison of water levels recorded during November 2016 with the average water levels during the month for the period 2006-2015 indicates that the change in the water level is mostly restricted to +2 (rise) to –2 (fall) m as recorded in 85.36 % of observation wells. However, fall in water level is predominant mainly in Thiruvananthapuram and Malappuram districts of the state as represented by 84.64% of monitoring wells. Rise in water level is confined to Pathanamthitta, Kottayam and isolated pockets of central and northern districts.

## 2.6 Quality of Ground Water

Ground water in phreatic aquifers in Kerala, in general, is fresh and suitable for domestic, irrigation and industrial uses. About 95% observation wells tapping the phreatic zone have Specific Electrical Conductance below 500 µS/cm at 25$^{o}$C. Isolated occurrence of brackish/saline ground water has been observed, mainly in the coastal districts and in the vicinity of tidal estuaries and streams. Fluoride in excess of permissible limits of 1.5 mg/l has been observed in parts of Palakkad district in the phreatic zone and around Alappuzha town in the deeper zones and presence of Iron in excess of permissible limits in parts of most of the distrits, especially in the mid land areas. Nitrate is another constituent present in excess of permissible limits in parts of most of the districts in the State. Bacterial contamination is observed all along coastal area and it is found more in Alappuzha district.

# 3.0 GROUND WATER RESOURCES ESTIMATION METHODOLOGY, 2015.

Ground water resources of Kerala was assessed during 2004 as per the recommendations of Groundwater Estimation Committee-1984 (GEC-84). The GEC-84 methodology was subsequently modified in the light of enhanced data base and new findings of experimental studies in the field of hydrogeology. The present methodology used for resource assessment is based on Groundwater Resource Estimation Methodology-2015 (GEC -2015). A brief description of the salient aspects of the methodology is furnished below:

In GEC-2015, two approaches were recommended for estimation of ground water recharge - water level fluctuation method and rainfall infiltration method. The water level fluctuation method is based on the concept of storage change due to difference between various input and output component. Input refers to recharge from rainfall and other sources and subsurface inflow into the unit of assessment. Output refers to groundwater Extraction, evapotranspiration, base flow to streams and subsurface outflow from the unit. Since the data on subsurface inflow/outflow are not readily available, it is advantageous to adopt the unit for groundwater assessment as basin/sub basin/watershed, as the inflow/outflow across these boundaries may be taken as negligible.

Thus it is ideal to have the groundwater resources assessment unit as watershed particularly in hard rock areas. In case of alluvium areas and where there is no data on water shed wise is available, administrative block can also be the assessment unit. In each assessment unit, hilly areas having slope more than 20% are deleted from the total area to get the area suitable for recharge. Further, areas where the quality of groundwater is beyond the usable limits should be identified and handled separately. The remaining area after deleting the hilly area and separating the area with poor groundwater quality is to be delineated into command and non-command areas. Groundwater assessment in command and non-command areas are done separately for monsoon and non-monsoon seasons.

## 3.1 Ground Water Recharge

### a. Monsoon season

The resources assessment during monsoon season is estimated as the sum total of the change in storage and gross Extraction. The change in storage is computed by multiplying water level fluctuations between pre and post monsoon periods with the area of assessment and specific yield of the formation. Monsoon recharge can be expressed as

$$\mathbf{R= (h \times Sy \times A) + DG}$$

Where,

h = rise in water level in the monsoon season,
A = area for computation of recharge
Sy = specific yield, and
DG= gross groundwater Extraction

The monsoon groundwater recharge has two components- rainfall recharge and recharge from other sources. Mathematically it can be represented as:

$$\mathbf{R\ (Normal) = R_{rt}\ (normal) + R_c + R_{sw} + R_t + R_{gw} + R_{wc}}$$

where $R_{rt}$ is the normal monsoon rainfall recharge. The other sources of groundwater recharge during monsoon season include $R_c$, $R_{sw}$, $R_t$, $R_{gw}$, $R_{wc}$ which are recharge from seepage from canals, surface water irrigation, tanks and ponds, groundwater irrigation and water conservation structures respectively.

The rainfall recharge during monsoon season computed by Water Level Fluctuation (WLF) method is compared with recharge figures from Rainfall Infiltration Factor (RIF) method. In case the difference between the two sets of data are more than 20% then RIF figure is considered, otherwise monsoon recharge from WLF is adopted. While adopting the rainfall recharge figures, weightage is to be given to WLF method over ad hoc norms method of RIF. Hence, wherever the difference between RIF and WLF is more than 20%, data have to be scrutinized and corrected accordingly.

As per GEC-2015 a minimum threshold of 10% of annual rain fall is reduced from the annual rainfall and also the rain fall in excess of 3000 mm are also not considered.

**b. Non-Monsoon season**

During non-Monsoon season, rainfall recharge is computed by using Rainfall Infiltration Factor (RIF) method. Recharge from other sources is then added to get Total Non-Monsoon recharge.

## 3.2 Total Ground Water Resource

The total ground water resource of the area is the sum of monsoon and non-monsoon recharge. An allowance is kept for natural discharge in the non monsoon season by deducting 5% of annual replenishable groundwater resource, wherever WLF method is employed to compute rainfall recharge during monsoon and 10% if RIF method is employed.

## 3.3 Annual Extractable Ground Water Recharge

The annual extractable ground water recharge has been computed after deducting the natural discharge from the Total ground Water Recharge and can be expressed as:

**Annual Extractable Groundwater Recharge = Total Annual Groundwater Recharge - Natural discharge duringnon-monsoon Season.**

## 3.4 Annual Ground Water Extraction

Annual groundwater Extraction has been calculated for Irrigation, Domestic and Industrial uses. The gross groundwater Extraction would include the groundwater extraction from all existing groundwater structures during monsoon as well as during non-monsoon period. While the number of groundwater structures should preferably be based on latest well census, the average unit Extraction from different types of structures should be based on specific studies or ad-hoc norms given in GEC-2015 report.

## 3.5 Future Utilization of Ground Water Resource

The demand for domestic and industrial water supply has been kept based on projected population for the year 2025. Future allocation of ground water resources for utilization is computed based on projected population, fractional load on ground water and per-capita requirement as given below:

**Case I:**

When GWav ≥ Dgi+ Alld

Allocation for future domestic requirement = Alld

**Case II:**

When GWav < Dgi+ Alld

Allocation for future domestic requirement = (GWav – Dgi) or Dgd, whichever is more.

Where,

GWav = Net Annual Ground Water Availability

Dgi = Existing Ground Water Extraction for Irrigation

Dgd = Existing Ground Water Extraction for Domestic use

Dg = Existing Ground water Extraction for all uses

Alld = Computed value of allocation for domestic use

## 3.6 Net Ground Water Available for Future Use

The ground water available for future usehas been computed by deducting the projected demand for Domestic use and existing irrigation Extraction from the Annual Extractable Ground Water Recharge.

## 3.7 Poor Quality Ground Water

Computation of groundwater recharge in poor quality water is to be done on the same line as described above. However, in saline areas, there may be practical difficulty due to non availability of data, as there will usually be no observation wells in such areas. Recharge assessment in such cases may be done based on rainfall infiltration factor method.

## 3.8 Apportioning of Ground Water Assessment from Watershed to Development Unit

Where the assessment unit is a watershed, the groundwater assessment is converted in terms of an administrative unit such as block / taluk / mandal. This is done by converting the volumetric resource into depth unit and then multiplying this depth with the corresponding area of the block.

## 3.9 Additional Potential Recharge

In shallow water table areas, particularly in discharge areas, rejected recharge would be considerable and water level fluctuation are subdued resulting in under estimation of recharge component. In the areas where the groundwater level is less than 5 m below ground level or in waterlogged areas, groundwater resources have to be estimated up to 5 mbgl based on the following equation.

**Potential groundwater recharge = (5-D) x A x Specific Yield**

WhereD= depth to water table below ground surface in pre monsoon season in shallow aquifers and A= area of shallow water table zone.

## 3.10 Stage of Ground Water Extraction

The stage of Groundwater extraction has been computed as given below

$$\text{Stage of Groundwater Extraction (\%)} = \frac{\text{Existing Gross Groundwater Extraction for all uses}}{\text{Annual Extractable Groundwater Recharge}} \times 100$$

## 3.11 Categorization of Assessment Units

The units of assessment are categorized for groundwater development based on stage of groundwater extraction. There are four categories based on the above norms (1) 'Safe' areas which have groundwater potential for development; (2) 'Semi-Critical' areas where cautious groundwater development is recommended. (3) 'Critical' areas and (4) 'Over-Exploited' areas where there should be intensive monitoring and evaluation and future groundwater extraction be linked with water conservation measures and micro level studies. The details of criteria for categorization of assessment units are given in **Table 3.1.**

**Table 3.1: Criteria for Categorization of Assessment Units**

| Sl.No | Stage of Ground Water Extraction | Categorization |
|---|---|---|
| 1 | < = 70% | Safe |
| 2 | >70% and <=90% | Semi-Critical |
| 3 | >90% and <=100% | Critical |
| 4 | >100% | Over Exploited |

## 3.12. Instorage Ground Water Resources

The instorage ground water resources are also calculated in this assessment. The depth zone considered for this calculation is 150 metres below ground level excluding water table fluction zone in hard rock area .In the soft rock area the depth zone is 300 metres below ground level excluding the water table fluctuation zone.The thickness of clay zone also excluded as per the available data.The saline/ non potable water zone also excluded for the instorage ground water resource computations.

# 4.0 PROCEDURE FOLLOWED IN THE ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES OF KERALA (MARCH 2017)

The dynamic ground water resources of Kerala, as in 2017 have been assessed as per the GEC-2015 norms.

## 4.1 Norms used in the Computation of Resources

Salient details of the norms used in the estimation of dynamic ground water resources are discussed below in brief:

### 4.1.1 Rainfall Infiltration Factor (RIF)

In the absence of documented studies for determination of Rainfall Infiltration Factor (RIF) in the State, standard values recommended by GEC have been used. The RIF values used for various geological formations in the State are shown below **(Table.4.1)**

**Table 4.1: Values of Rainfall Infiltration Factor used for Computation of Dynamic Ground Water Resources of Kerala.**

| Sl.No | Geological Formation | Rainfall Infiltration Factor (RIF) (%) |
|---|---|---|
| 1 | Alluvium | 8-12 |
| 2 | Laterite | 6-8 |
| 3 | Weathered Granites/Gneisses | 5-9 |
| 4 | Rocks of Granulite facies | 4-6 |
| 5 | Massive/poorly fractured rock | 1-3 |

### 4.1.2 Specific Yield

Specific yield values were taken as per the recommended norms in general, with appropriate corrections, considering the field conditions and data availability. The specific yield values taken for computation are given below **(Table.4.2).**

**Table 4.2: Specific Yield Values of Different Hydrogeological Units Used in the Computation of Ground Water Resources of Kerala.**

| Sl.No. | Hydrogeological unit | Specific yield (%) |
|---|---|---|
| 1 | Sandy alluvial area | 12-18 |
| 2 | Valley fills | 10-14 |
| 3 | Silty/clayey alluvial area | 5-12 |
| 4 | Granites | 0.2-2 |
| 5 | Laterite | 2-5 |
| 6 | Weathered Granites & Gneisses | 1-4 |
| 7 | Massive/poorly fractured rocks | 0.2-0.5 |

For instorage ground water resources computations, in the phreatic zone (Unconfined aquifer),the specific yield value of 10 to 20% of the water table fluction zone is taken up.In the semi confined and confined zones, the specific yield value of 5 to 10% of the water table fluctuation zone is taken up.

### 4.1.3 Unit Ground Water Extraction

As in the previous assessment (2013), ground water Extraction for domestic uses has been computed based on the population in 2011, projected to the year 2013. A per-capita requirement of 150 Litre/ day has been assumed for domestic uses in the State. The fractional load of this requirement is computed on the basis of the extent of surface water supply for domestic use in the assessment unit.

Values of unit ground water Extraction for irrigation for different types of wells, adopted in the previous assessment (2012-13), modified wherever necessary based on sample surveys have

been used in the present assessment for computation of ground water Extraction. The unit Extraction values for different types of wells in the State are shown in Table.4.3.

**Table 4.3: Unit Ground Water Extraction for Irrigation in Different Types of Wells in Kerala.**

| Sl. No. | Type of Well | Unit Extraction (ha.m) |
|---|---|---|
| 1 | Non-energized dug wells | 0.06 to 0.12 |
| 2 | Energized dug wells | 0.3 to 0.54 |
| 3 | Shallow tube/bore wells | 0.30 to 1.0 |
| 4 | Domestic wells used for irrigation | 0.007 to 0.05 |

# 5.0 COMPUTATION OF GROUND WATER RESOURCES OF KERALA (2017)

## 5.1 Introduction

In the absence of watershed wise data on various components of recharge and discharge, the ground water resources have been computed for administrative units in the State, with block as the assessment unit. Accordingly, the computations have been made for 152 assessment units spread across 14 districts of the State. The ground water resources of urban habitations comprising 6 Municipal Corporations, 87 Municipalities and 1 Township have not been assessed separately due to constraints of data availability. Instead, they have been combined with one of the adjoining blocks based on their hydrogeologic setting. The list of such urban habitations and the blocks with which they have been combined is given in **Table.5.1.**

The area under command and non command could not be separated mainly due to non availability of data pertaining to canal command areas of the State. Further, the irrigation projects of Kerala are mostly planned for irrigating paddy along the topographic lows and as such the irrigation canals are all center controlled. Hence in each unit there are large areas along the upstream side of the canal, which do not get benefits of surface water irrigation. Due to the highly undulating topography of the mid land area where most of the canals exist, it is quite difficult to accurately demarcate the areas under command and non-command. In view of the factors mentioned above, the computations have been made by taking all assessment units as non-canal command area. The recharge from canal segments and return seepage from irrigation due to surface water in the command area have, however, been incorporated into the computations. Salient details of assessment units in the State are furnished in **Annexure IIIA**. Data variables used in the estimation are shown in **Annexure IIIB** and details of parameters used in the computation in **Annexure IIIC**.

The data required for computation of resources have been collected, to the extent possible, with 2017 as the base year. Wherever data pertaining to 2017 are not available, the data pertaining to the most recent period have been collected and used for computation. Due to non-availability of relevant data for computation of recharge from other sources during non-monsoon period, data used in the earlier assessment has been used in the current assessment as well.

## 5.2. Method Adopted for Computing Rainfall Recharge During Monsoon:

Based on the analysis of long-term rainfall data in the State, the period from May to October has been considered as the monsoon period and from November to April as non-monsoon period. The method adopted for computation of rainfall recharge during monsoon season depends on the Percentage Departure (PD), which is the difference between the recharge computed using Water Table Fluctuation (WTF) method and Rainfall Infiltration Factor (RIF) methods, expressed as a percent of recharge computed by the latter method. In cases where PD is between +20 and -20, monsoon rainfall recharge computed by Water Table Fluctuation Method is used, whereas in other cases, recharge computed by Rainfall Infiltration Method is used.

## 5.3 Total Annual Ground Water Recharge

The Total Annual Ground Water Availability in Kerala State as on March 31, 2017 has been computed as **5.21 Billion Cubic Metre (BCM)**. Rainfall recharge accounts for about **82** percent of the annual recharge, with the remainder contributed by other sources. The contribution of districts to the total annual recharge of the State is shown in **Fig.5.1.** Details of block-wise total annual ground water recharge are shown in **Annexure IIID.**

**Table 5.1: List of Urban Habitations in Kerala which have been Combined with Adjacent Blocks for Assessment of Dynamic Ground Water Resources**

| Sl.No | District | Urban Habitation | Habitation Type | Block |
|---|---|---|---|---|
| 1 | Alappuzha | Cherthala | Municipality | Thycattusserry |
| 2 | | Alappuzha | Municipality | Aryad |
| 3 | | Kayamkulam | Municipality | Muthukulam |
| 4 | | Chengannur | Municipality | Chenganur |
| 5 | | Mavelikara | Municipality | Mavelikara |
| 6 | | Harippad | Municipality | Harippad |
| 7 | Ernakulam | Aluva | Municipality | Vazhakulam |
| 8 | | Angamaly | Municipality | Angamaly |
| 9 | | Kalamassery | Municipality | Vazhakulam |
| 10 | | Kothamangalam | Municipality | Kothamangalam |
| 11 | | Maradu | Municipality | Palluruthy |
| 12 | | Muvattupuzha | Municipality | Muvattupuzha |
| 13 | | Paravur | Municipality | Paravur |
| 14 | | Perumbavur | Municipality | Koovapady |
| 15 | | Thrippunithura | Municipality | Mulanthuruthy |
| 16 | | Kochi (Cochin) | Municipal Corporation | Edapally |
| 17 | | Eloor | Municipality | Edapally |
| 18 | | Thrikkakara | Municipality | Vazhakulam |
| 19 | | Koothatukulam | Municipality | Pampakuda |
| 20 | | Piravom | Municipality | Pampakuda |
| 21 | Idukki | Idukki Township | Township | Idukki |
| 22 | | Thodupuzha | Municipality | Thodupuzha |
| 23 | | Kattapana | Municipality | Kattapana |
| 24 | Kannur | Kannur | Municipal Corporation | Kannur |
| 25 | | Koothuparambu | Municipality | Koothuparamabu |
| 26 | | Mattanur | Municipality | Iritty |
| 27 | | Payyannur | Municipality | Payyannur |
| 28 | | Thaliparambu | Municipality | Thaliparambu |
| 29 | | Thalassery | Municipality | Thalassery |
| 30 | | Anthoor | Municipality | Taliparamba |
| 31 | | Panur | Municipality | Panur |
| 32 | | Iritty | Municipality | Iritty |
| 33 | | Sreekantapuram | Municipality | Irikkur |
| 34 | Kasargod | Kanhangad | Municipality | Kanhangad |
| 35 | | Kasargod | Municipality | Kasargod |
| 36 | | Nileswaram | Municipality | Nileswar |
| 37 | Kollam | Karunagappalli | Municipality | Oachira |
| 38 | | Kollam | Municipal Corporation | Mukhathala |
| 39 | | Paravoor | Municipality | Ithikara |
| 40 | | Punalur | Municipality | Pathanapuram |
| 41 | | Kottarakkara | Municipality | Kottarakkara |
| 42 | Kottayam | Pala | Municipality | Lalam |
| 43 | | Vaikom | Municipality | Vaikom |
| 44 | | Kottayam | Municipality | Pallom |
| 45 | | Chanaganassery | Municipality | Madapally |
| 46 | | Ettumanoor | Municipality | Ettumanoor |
| 47 | | Eratupetta | Municipality | Eratupetta |
| 48 | Kozhikode | Kozhikode | Municipal Corporation | Kozhikode |
| 49 | | Quilandy | Municipality | Panthalayani |
| 50 | | Vadakara | Municipality | Vadakara |
| 51 | | Payyoli | Municipality | Mekadi |
| 52 | | Mukkam | Municipality | Kunnamangalam |
| 53 | | Koduvally | Municipality | Koduvally |
| 54 | | Ramanattukara | Municipality | Kozhikode |
| 55 | | Faroke | Municipality | Kozhikode |
| 56 | Malappuram | Kottakkal | Municipality | Vengara |
| 57 | | Malappuram | Municipality | Malappuram |
| 58 | | Manjeri | Municipality | Areakode |
| 59 | | Nilambur | Municipality | Nilambur |

| | | | | |
|---|---|---|---|---|
| 60 | | Perinthalamanna | Municipality | Perinthalamanna |
| 61 | | Ponnani | Municipality | Ponnani |
| 62 | | Tirur | Municipality | Tirur |
| 63 | | Parappanangadi | Municipality | Tirurangadi |
| 64 | | Valancheri | Municipality | Kuttipuram |
| 65 | | Tirurangadi | Municipality | Tirurangadi |
| 66 | | Tanur | Municipality | Tanur |
| 67 | | Kondotty | Municipality | Kondotty |
| 68 | Palakkad | Chittur-Thathamangalam | Municipality | Chittur |
| 69 | | Ottapalam | Municipality | Ottapalam |
| 70 | | Palakkad | Municipality | Palakkad |
| 71 | | Shoranur | Municipality | Pattambi |
| 72 | | Pattambi | Municipality | Pattambi |
| 73 | | Mannarkkad | Municipality | Mannarkkad |
| 74 | | Cherupalussery | Municipality | Sreekrishnapuram |
| 75 | Pathanamthitta | Adoor | Municipality | Parakkode |
| 76 | | Patahanamthitta | Municipality | Konni |
| 77 | | Thiruvalla | Municipality | Mallapally |
| 78 | | Pandalam | Municipality | Pandalam |
| 79 | Thiruvananthapuram | Attingal | Municipality | Chirayinkeezh |
| 80 | | Nedumangad | Municipality | Nedumanagad |
| 81 | | Neyyattinkara | Municipality | Athiyannur |
| 82 | | Varkala | Municipality | Varkala |
| 83 | | Trivandrum | Municipal Corporation | Nemom |
| 84 | Thrissur | Chalakkudy | Municipality | Chalakkudy |
| 85 | | Chavakkad | Municipality | Chavakkad |
| 86 | | Guruvayur | Municipality | Chavakkad |
| 87 | | Irinjalakuda | Municipality | Irinjalakuda |
| 88 | | Kodungalur | Municipality | Mathilakam |
| 89 | | Kunnamkullam | Municipality | Chowannur |
| 90 | | Thrissur | Municipal Corporation | Puzhakkal |
| 91 | | Wadakkanchery | Municipality | Wadakkanchery |
| 92 | Wayanad | Kalpetta | Municipality | Kalpetta |
| 93 | | Sulthanbathery | Municipality | Sulthanbathery |
| 94 | | Mananthavady | Municipality | Mananthavady |

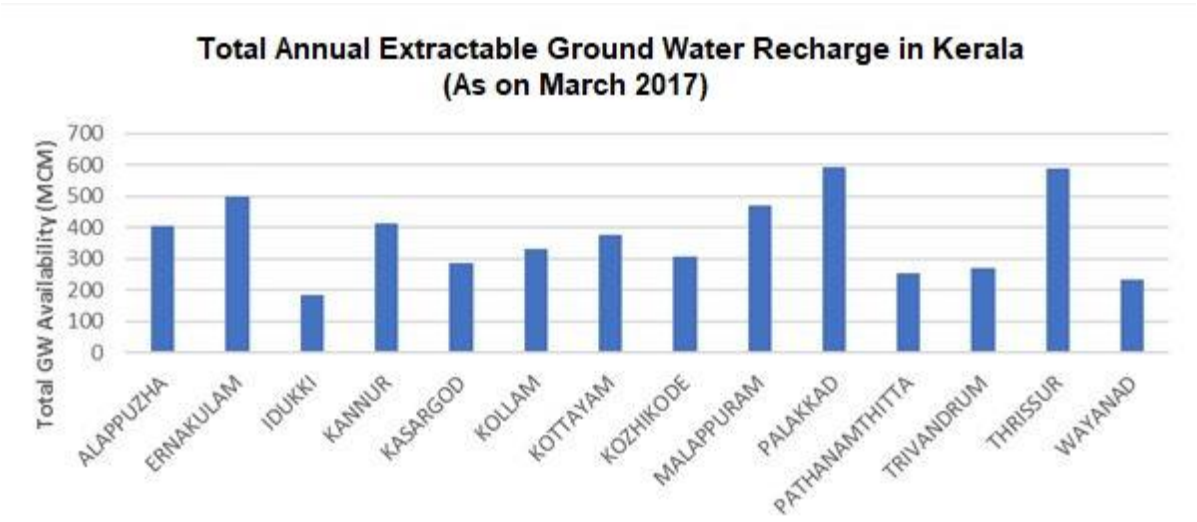


**Figure 5.1: Contribution of districts to the Total Annual Extractable Ground Water Recharge in Kerala**

The spatial distribution of Total Annual Ground Water Recharge in Kerala as in March 2017 in depth units (m) is shown in **Fig.5.2.**

## 5.4 Annual Extractable Ground Water Recharge

The Annual Extractable Ground water Recharge was calculated as per the norms recommended in the 2015 methodology by deducting un-accounted losses and natural discharge during the non-monsoon season from the Total Annual Recharge available. Such losses were considered to account for 10% of the total annual recharge in assessment units where the monsoon rainfall recharge was calculated using Rainfall Infiltration Factor Method and 5% in assessment units where the monsoon rainfall re-charge was calculated by Water Level Fluctuation Method. Block wise Annual Extractable Ground water Recharge in the State as in March 2017is given in **Annexure III D.** As per the computation, Annual Extractable Ground water Recharge for the entire State is **5.211 billion cubic metre (BCM)**. The district-wise availability in the State ranges from **186.14 MCM** in Idukki district to **591.44 MCM** in Palakkad district.

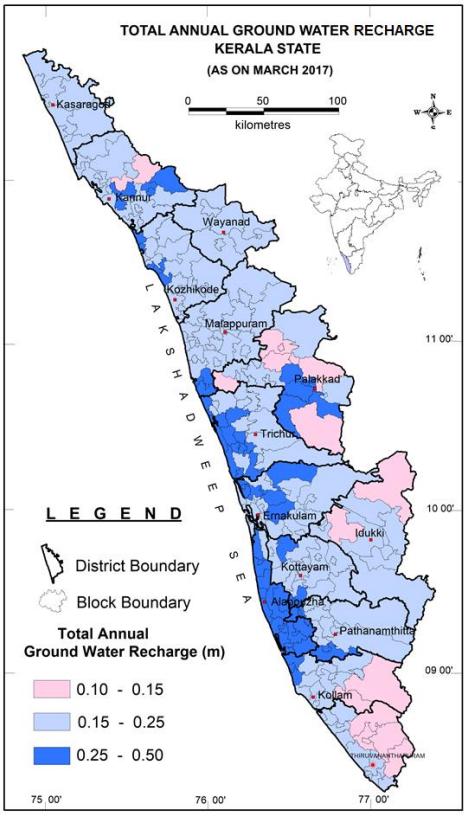


**Figure 5.2: Spatial Distribution of Total Annual Ground Water Recharge in Kerala**

## 5.5 Ground Water Extraction

Ground water Extraction in Kerala is mainly for domestic uses and for irrigation. In view of the non-availability of data on the number of wells being used for domestic purposes, the ground water Extraction for domestic uses has been computed block-wise on the basis of 2011 population, projected to the year of assessment (2017). Domestic requirement of water in the State has been computed as the product of the population and the per-capita water requirement (assumed as 150 L / day/person). The share of ground water in the requirement has been computed as a percentage varying from 25 to 100%, arrived at on the basis of availability of surface water sources for domestic water supply.

The ground water Extraction has been computed from the data on the block-wise number of irrigation wells collected by the State Ground Water Dept., Government of Kerala. The ground water Extraction figures are arrived at by multiplying the number of wells with the corresponding unit Extraction.

The Annual Ground Water Extraction for all uses in the State is of the order of **2.623 BCM** and ranges from **56.78 MCM** in Wayanad district to **333.82 MCM** in Palakkad district. Details of block- wise groundwater Extraction are given in **Annexure IIID**. The spatial distribution of ground water Extraction among districts in the State is shown in **Fig.5.3**.

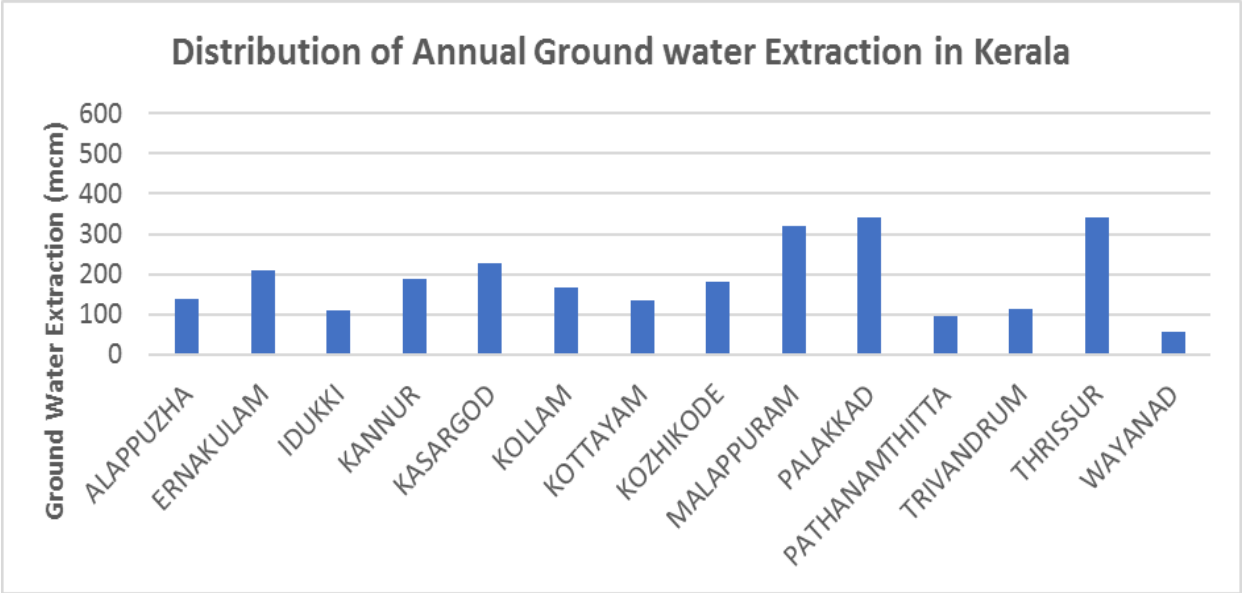


**Figure 5.3: Distribution of Ground Water Extraction in Kerala as in March 2017**

## 5.6 Provision for Domestic and Industrial Requirements for the Year 2025

The provision of ground water resources for domestic and industrial uses for the year 2025 has been computed as per GEC 2015 norms and is of the order of **1.58 BCM**. The block-wise figures are given in **Annexure III D**

## 5.7 Net Ground Water Availability for Future Irrigation Development

The availability of ground water resources for future development has been computed as the difference between the Net Annual Ground Water Resource available and the Annual Ground Water Extraction for all purposes. The Net Ground Water Availability for future irrigation development in the State as in March 2017 is of the order of **2.41 BCM**. The district-wise net ground water availability ranges from **51.64 MCM** in Kasargod district to **267.03 MCM** in Alappuzha district. The block-wise balance ground water available is shown in **Annexure III D**. District-wise status of Net Ground Water Availability and Annual Ground Water Extraction for all uses is shown in **Fig.5.4.**

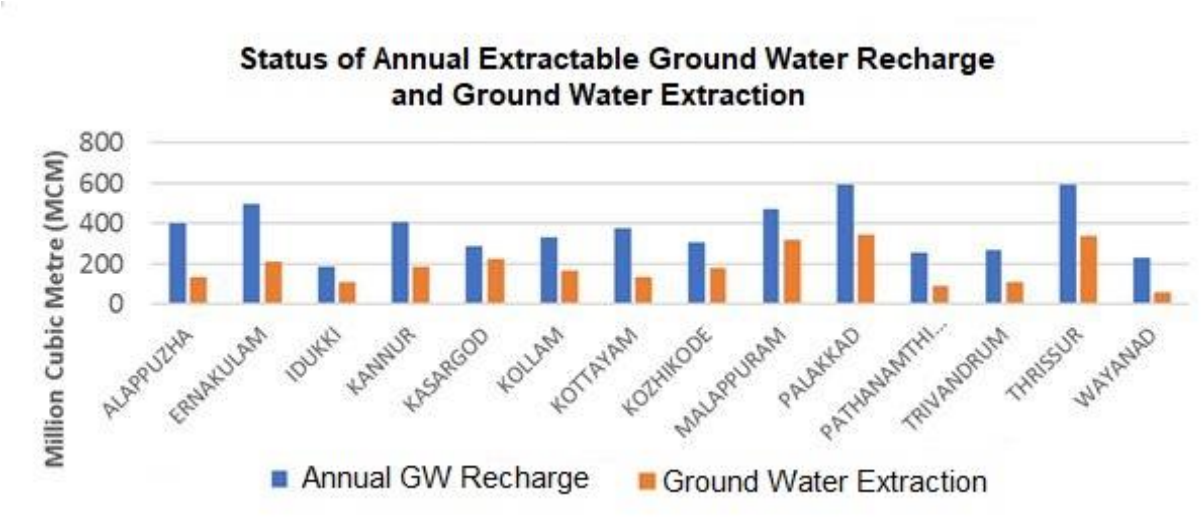


**Figure 5.4: Status of Annual Extractable Ground Water Recharge & Ground Water Extraction (As in March 2017)**

## 5.8 Stage of Ground Water Extraction

The Stage of Ground Water Extraction of assessment units computed as the ratio of Existing Gross Ground Water Extraction for all uses and the Annual Extractable Ground Water Recharge is of the order of **51.24** percent for the State of Kerala as a whole. The average Stage of Ground Water Extraction is the highest in Kasargod district **(79.6%)** and the lowest in Wayanad district **(24.5%).** Block-wise details of Stage of Ground Water Extraction as in March 2017 are given in **Annexure III D.**

## 5.9 Categorization of Blocks

The Assessment units have been categorized as "Over-exploited", "Critical", "Semi-critical" or "Safe" on the basis of Stage of Ground Water Extraction and the long-term decline of average ground water levels in the observation wells in the assessment unit, as per the criteria suggested in GEC-2015 methodology. In cases where the Water Level Fluctuation (WLF) method has been used for computation of ground water recharge during monsoon season, the assessment units have been categorized strictly as per the norms.

Decline of ground water levels of 15 cm per year or more has been considered significant in the State while categorizing the blocks. However, in such units where the monsoon recharge has been computed by ad-hoc method on account of the water level data not being representative, categorization has been done primarily based on stage of ground water extraction and the existing ground situation. Out of 152 assessed units in the State, Chittur block of Palakkad district has been categorized as 'Over-exploited' and **2** blocks (Kasargod block of Kasargod district and Malampuzha block of Palakkad district) have been categorized as "Critical". Out of the remaining blocks, **30** blocks are "Semi-critical" and **119** blocks are "Safe". The block-wise details of categorization, along with ground water quality issues wherever prevalent are furnished in **Annexure IIIE** and district-wise details of blocks under different categories are furnished in **Annexure IIIF**. The Stage of Ground Water Extraction and the block-wise long-term (2005-2016) water level trends of the observation wells being monitored by Central Ground Water Board and the State Ground Water Department for pre and post-monsoon were considered for categorization of the blocks. The spatial distribution of different categories of assessment units is given in **Figure 5.5**.

## 5.10 District-wise Ground Water Resource Scenario

A summary of major components of dynamic ground water resources of Kerala is furnished in **Table. 5.2**. The summary of total ground water resources of Kerala is furnished in **Table.5.3**.Brief accounts of the resource scenario in the districts are given below:

### 5.10.1 Alappuzha

The district is underlain by unconsolidated sediments of Recent age and formations of Tertiary age. The sedimentary formations cover about 83% of the geographical area of the district. The alluvium and laterite form potential phreatic aquifers. The water level fluctuation ranges from 1.0 to 2.5 m in general. The shallow ground water is generally fresh with low fluoride and nitrate content and is suitable for drinking, irrigation and industrial uses. The Annual Extractable Ground Water Recharge of the district is **404.57MCM** and existing Gross Ground Water Extraction is of the order of **136.65 MCM. The** Stage of Ground Water Extraction is **34%.** All the blocks in the district are Safe from the point of view of ground water extraction.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**662.69 MCM**, and the confined zone is **263.85 MCM**. The total ground water resources of the district are **1331.11MCM**

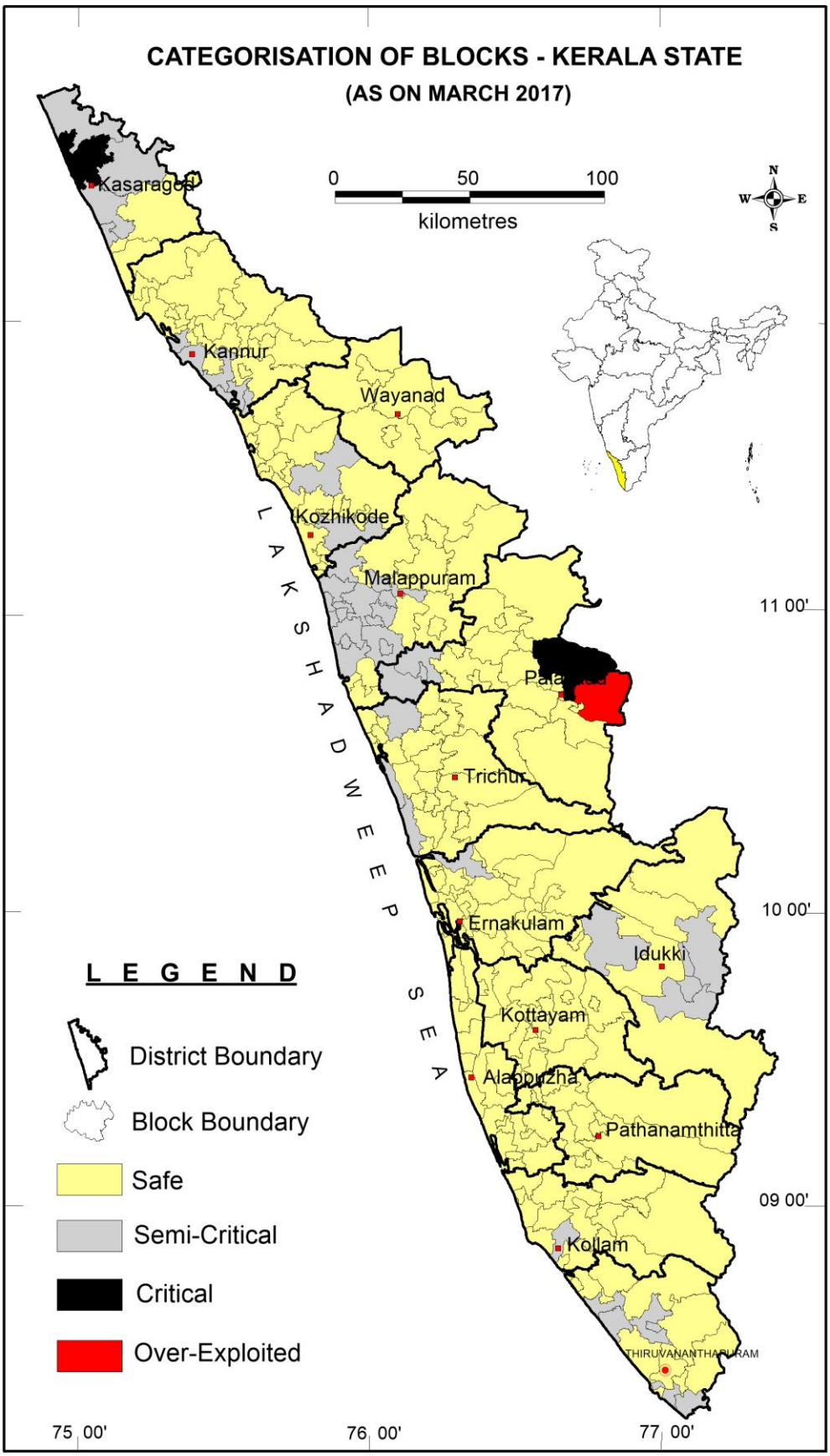


**Figure 5.5: Categorization of Blocks in Kerala (As in March 2017)**

### 5.10.2 Ernakulam

Charnockites and gneisses of Achaean age, laterite of sub recent age form the main geological units in the district. Ground water occurs under phreatic conditions in the weathered and fractured hard crystalline rocks, laterites and unconsolidated coastal sediments. The quality of ground water from the shallow zone in hard rocks, residual laterite and coastal alluvium is suitable for drinking and agricultural purposes. Localized salinity problems are observed. The Annual Extractable Ground Water Recharge of the district is **499.53MCM** and existing Gross Ground Water Extraction is of the order of **218.95 MCM. The** Stage of Ground Water Extraction is **44%.** All the blocks in the district are Safe from the point of view of ground water extraction.

The **Parakadavu** block in the district is categorised as **semi critical**

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**788.24 MCM**, the semi- confined zone is **334.88 MCM** and the confined zone is **309.39MCM**. The total ground water resources of the district are **1931.63MCM**

### 5.10.3 Idukki

Groundwater occurs under phreatic condition in the weathered crystallines and laterite throughout the district. The thickness of weathering and lateritization generally ranges from 3 to 20 mbgl. Along steep slopes and high ranges, the weathered mantle is absent or very thin, and is devoid of perennial phreatic aquifers. The Annual Extractable Ground Water Recharge of the district is **186.14 MCM** and existing Gross Ground Water Extraction is of the order of **108.66 MCM. The** Stage of Ground Water Extraction is **58%.** Out of 8 blocks in the district, 3 have been categorized as 'Semi-critical' and 5 blocks as 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**138.48 MCM**, the semi- confined zone is **82.52 MCM** and the confined zone is **92.13MCM**. The total ground water resources of the district are **499.27MCM**

### 5.10.4 Kannur

The district receives an average annual rainfall of 2666 mm. Laterites and underlying crystallines form important aquifers in the district. Bore wells and large diameter dug wells are the most common groundwater abstraction structures in the district. The water level fluctuation between pre and post monsoons is generally less than 5 metre. The chemical quality of ground water is generally good. The Annual Extractable Ground Water Recharge of the district is **412.55 MCM** and existing Gross Ground Water Extraction is of the order of **187.85 MCM. The** Stage of Ground Water Extraction is **46%.** Out of 11 blocks in the district, 3 have been categorized as 'Semi-critical' viz; **Kannur, Thalassery and Panur** and 8 blocks as 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**486.76 MCM**, the semi- confined zone is **265.01 MCM** and the confined zone is **329.01MCM**. The total ground water resources of the district are **1492.12 MCM**

### 5.10.5 Kasargod

The major aquifer types are Alluvium, Laterite and Crystallines. The yield of wells in alluvium ranges from 10 to 50$m^3$/day. The dug wells have the depth ranges from 4 to 16 mbgl, some of the wells in laterite uplands in Kasaragod taluk have depth upto 26 m bgl. Filter point wells with a depth of about 6 meters are constructed long the coastal areas especially along Kasargod, Kanhangad and Padannakkad areas. The yield of wells in laterite ranges from 5 to 50 $m^3$ /day in winter period and it returns to 2 to 10 $m^3$ /day in summer. In weathered crystallines the yield of well ranges from 1 to 10 $m^3$ /day in summer period. The Annual Extractable Ground Water Recharge of the district is **285.75 MCM** and existing Gross Ground Water Extraction is of the order of **227.58 MCM. The** Stage of Ground Water Extraction is **80%.** Out of 6 blocks in the district, 1 has been categorized as 'Critical', 3 as 'Semi-critical' and 2 blocks as 'Safe'.

The **Kasaragod** block is categorized as Critical and **Kanhangad**, **Karadka** and **Manjeshwar blocks** are categorized as Semi-critical

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**249.96 MCM**, the semi- confined zone is **150.42 MCM** and the confined zone is **195.76 MCM**. The total ground water resources of the district are **881.88 MCM**

### 5.10.6 Kollam

The aquifer system of the district can be divided into three provinces i.e. the crystalline provinces covering the eastern upland, foothills and hilly tract, laterite province covering the midland region and the coastal province covering the alluvium and Tertiary sediments. The depth of weathering in crystalline (hard rock) province varies from 15 to 20m. The wells tapping these aquifers range in diameter from 2 to 5m and their depth vary from 5.0 to 20.0 mbgl. The yield of these wells is of the order of 12 $m^3$/day. The wells located in charnockite vary in depth from 6 to 13 mbgl. The yield of the wells ranges from 4 to 5 $m^3$/day. A major part of the district is underlain by Laterite. The thickness of laterite capping in charnockite area varies from 1 to 3 m and from 15 to 20 m in khondalites. The depth of wells in laterite ranges from 5 to 30 mbgl. The coastal province has Tertiary sediments and Quaternary alluvium. The Tertiary formation consists of Warkali, Quilon and Vaikom beds overlain by 10 to 15 m thick alluvium. Ground water occurs in Warkali formation under phreatic and confined conditions. The dug wells in the Warkali beds tap groundwater from the laterite cappings. Often very deep dug wells are sunk into the underlying sandstone beds. Shallow dug wells sunk into the alluvium overlying the lateritic horizon of Tertiary sediments range in depth from 2 to 15 mbgl.

Apart from the coastal alluvial deposits, alluvial material composed mainly of clay and sand which are limited in aerial extent are confined to the flood plains of Achenkovil river and vary in depth from 3 to 5 m. Another type of aquifer is the inter mountain valley fills, which are composed of a highly assorted mixture of sand, gravels, pebbles and boulders. The Annual Extractable Ground Water Recharge of the district is **332.94 MCM** and existing Gross Ground Water Extraction is of the order of **164.66 MCM. The** Stage of Ground Water Extraction is **49%.** Out of 11 blocks in the district, 1 block **(Mukhathala)** is 'Semi-critical' and 10 blocks are 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**371.78 MCM**, the semi- confined zone is **206.89 MCM** and the confined zone is **212.81MCM**. The total ground water resources of the district are **1124.42 MCM**

### 5.10.7 Kottayam

The aquifers in the district can be grouped into four distinct groups viz. alluvial aquifers, lateritic aquifers, Tertiary sedimentary aquifers and crystalline rock aquifers. The crystalline rock aquifers can further be classified as shallow and deep aquifers. The shallow aquifers of the crystalline rocks in the area occur within a depth of 15 mbgl. They are composed of weathered crystalline and fractured crystalline occurring just below the weathered zone. TheTertiary sediments in the district are composed mainly of Vaikom beds. Groundwater occurs under phreatic condition in the shallow zone and under confined condition in the deeper zones. Groundwater is developed through both dug wells and tube wells in this formation. Laterites form potential aquifers along valley and topographic lows where the saturated zone is more and can sustain large diameter open wells. Alluvial aquifer is the most potential aquifer in the district and is commonly developed through dug wells. The Annual Extractable Ground Water Recharge of the district is **374.54 MCM** and existing Gross Ground Water Extraction is of the order of **136.04 MCM. The** Stage of Ground Water Extraction is **36%.** All the blocks in the district are in 'Safe' category.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**317.12 MCM**, the semi- confined zone is **170.11 MCM** and the confined zone is **193.88MCM**. The total ground water resources of the district are **1055.65 MCM**

**Table 5.2: Summary of Major Components of Dynamic Ground Water Resources of Kerala (2017)**

| Sl. No. | Assessment Unit/ District | Command / Non-Command / Total | Recharge from rainfall during monsoon season (MCM) | Recharge from other sources during monsoon season (MCM) | Recharge from rainfall during non-monsoon season (MCM) | Recharge from other sources during non-monsoon season (MCM) | Total Annual Ground Water Recharge [(4)+(5)+(6)+(7)] (MCM) | Provision for Natural Discharges (MCM) | Net Annual Ground Water Availability [(8)-(9)] (MCM) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | ALAPPUZHA | Non-command | 258.65 | 0.96 | 70.91 | 108.69 | 439.20 | 34.63 | 404.57 |
| 2 | ERNAKULAM | Non-command | 343.34 | 3.60 | 72.64 | 135.45 | 555.03 | 55.50 | 499.53 |
| 3 | IDUKKI | Non-command | 153.43 | 2.08 | 32.76 | 18.54 | 206.82 | 20.68 | 186.14 |
| 4 | KANNUR | Non-command | 389.39 | 0.00 | 0.00 | 69.00 | 458.39 | 45.84 | 412.55 |
| 5 | KASARGOD | Non-command | 263.19 | 7.73 | 0.00 | 46.58 | 317.50 | 31.75 | 285.75 |
| 6 | KOLLAM | Non-command | 238.68 | 1.49 | 89.49 | 38.81 | 368.47 | 35.54 | 332.94 |
| 7 | KOTTAYAM | Non-command | 278.84 | 1.16 | 66.07 | 70.08 | 416.15 | 41.62 | 374.54 |
| 8 | KOZHIKODE | Non-command | 283.34 | 1.69 | 40.21 | 14.89 | 340.13 | 34.01 | 306.12 |
| 9 | MALAPPURAM | Non-command | 373.90 | 3.56 | 59.82 | 85.53 | 522.81 | 52.28 | 470.53 |
| 10 | PALAKKAD | Non-command | 286.93 | 7.71 | 60.98 | 301.54 | 657.15 | 65.72 | 591.44 |
| 11 | PATHANAMTHITTA | Non-command | 182.99 | 1.32 | 63.44 | 35.34 | 283.09 | 27.25 | 255.83 |
| 12 | TRIVANDRUM | Non-command | 195.99 | 2.47 | 66.03 | 30.37 | 294.85 | 25.15 | 269.70 |
| 13 | THRISSUR | Non-command | 413.01 | 9.24 | 58.88 | 171.13 | 652.27 | 61.78 | 590.48 |
| 14 | WAYANAD | Non-command | 250.35 | 0.31 | 0.00 | 6.71 | 257.37 | 25.74 | 231.63 |
| | **KERALA STATE** | | **3912.03** | **43.31** | **681.23** | **1132.67** | **5769.23** | **557.48** | **5211.75** |
| | **TOTAL (BCM)** | | **3.91** | **0.04** | **0.68** | **1.13** | **5.77** | **0.56** | **5.21** |

**Table.5.2 (Continued)**

| Sl. No. | Assessment Unit/ District | Command / Non-Command | Annual Extractable GroundWater Recharge (Ha.m) | Current Annual Ground Water Extraction (Ha.m) | | | | Annual Groundwater Allocation for Domestic use as on 2025 | Net Ground Water Availability for future use (4-5-6-9) | Stage of Ground Water Extraction (%) (8/4) *100 |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | Irrigation Use | Industrial Use | Domestic Use | Total Extraction (5+6+7) | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | ALAPPUZHA | Non-command | 404.57 | 39.83 | 2.58 | 94.24 | 136.65 | 95.06 | 267.10 | 33.78 |
| 2 | ERNAKULAM | Non-command | 499.53 | 88.63 | 1.85 | 128.48 | 218.95 | 143.49 | 265.57 | 43.83 |
| 3 | IDUKKI | Non-command | 186.14 | 62.96 | 0.13 | 45.58 | 108.66 | 45.58 | 77.48 | 58.38 |
| 4 | KANNUR | Non-command | 412.55 | 88.88 | 0.20 | 98.77 | 187.85 | 105.54 | 217.92 | 45.54 |
| 5 | KASARGOD | Non-command | 285.75 | 164.51 | 0.14 | 62.93 | 227.57 | 69.98 | 51.64 | 79.64 |
| 6 | KOLLAM | Non-command | 332.94 | 53.51 | 0.18 | 110.98 | 164.66 | 128.10 | 151.15 | 49.46 |
| 7 | KOTTAYAM | Non-command | 374.54 | 52.43 | 0.00 | 83.61 | 136.04 | 92.46 | 229.65 | 36.32 |
| 8 | KOZHIKODE | Non-command | 306.12 | 50.78 | 0.01 | 127.50 | 177.62 | 142.18 | 113.15 | 58.02 |
| 9 | MALAPPURAM | Non-command | 470.53 | 101.13 | 0.00 | 215.14 | 316.28 | 254.99 | 114.41 | 67.22 |
| 10 | PALAKKAD | Non-command | 591.44 | 194.21 | 5.72 | 113.90 | 333.82 | 144.33 | 249.44 | 55.48 |
| 11 | PATHANAMTHITTA | Non-command | 255.83 | 39.27 | 0.00 | 55.21 | 94.49 | 55.21 | 161.35 | 36.93 |
| 12 | TRIVANDRUM | Non-command | 269.70 | 54.29 | 0.02 | 117.84 | 172.16 | 121.74 | 93.65 | 41.58 |
| 13 | THRISSUR | Non-command | 590.48 | 213.49 | 0.39 | 126.68 | 340.56 | 134.56 | 242.04 | 57.67 |
| 14 | WAYANAD | Non-command | 231.63 | 16.65 | 3.17 | 36.95 | 56.78 | 38.06 | 173.75 | 24.51 |
| | **KERALA STATE** | | **5211.75** | **1220.57** | **14.39** | **1437.81** | **2672.09** | **1571.28** | **2408.29** | **51.27%** |
| | **TOTAL (BCM)** | | **5.21** | **1.22** | **0.014** | **1.44** | **2.67** | **1.57** | **2.41** | |

### 5.10.8 Kozhikode

Groundwater occurs under phreatic conditions in the weathered and fractured crystalline rocks, laterite and shallow coastal aquifers. It occurs under semi confined to confined conditions in the deep-seated fractured aquifers of the crystalline rocks. The depth of dug wells tapping the shallow zones in the weathered/fractured crystalline area varies from 3 to 11 mbgl. The Annual Extractable Ground Water Recharge of the district is **306.12 MCM** and existing Gross Ground Water Extraction is of the order of **177.62 MCM. The** Stage of Ground Water Extraction is **58%.** Out of 12 blocks in the district, 2 are 'Semi-critical'**( Balussery and Kunnamangalam)** and others are 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**236.33 MCM**, the semi- confined zone is **430.50 MCM**. The total ground water resources of the district are **972.94MCM**

### 5.10.9 Malappuram

Ground water occurs in phreatic condition in almost all the geological formations in the district and under semi confined to confined condition in the deep-seated fractures in the crystalline rocks and in Tertiary sediments. Broadly the aquifer system in the district can be divided into three provinces viz. the crystalline province covering the eastern uplands, foothills and hilly tracts, the laterite province (covering the midland regions) and the coastal province covering the alluvium and Tertiary sediments. The eastern crystalline province essentially constitutes the hard rock aquifers and other intrusives. The depth of weathering varies from a few metres to 22 m and major portion of the district is covered by laterites and the thickness of it varies highly. Along the western part of the district coastal alluvium of Recent age is seen as a thin strip. Vaikom beds of Tertiary group are seen underlying the coastal alluvium The Annual Extractable Ground Water Recharge of the district is **470.53 MCM** and existing Gross Ground Water Extraction is of the order of **316.27 MCM. The** Stage of Ground Water Extraction is **67%**. Out of 15 blocks in the district, 7 are 'Semi-critical' and remaining blocks are 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is **595.16 MCM**, the semi- confined zone is **426.61 MCM** and the confined zone is **331.77 MCM**. The total ground water resources of the district are **1824.07 MCM**

### 5.10.10 Palakkad

Groundwater occurs in phreatic condition in the laterites, alluvium and in weathered crystallines. It is under semi confined to confined conditions in the deeper fractured rocks. Alluvium encountered along the bank of Bharathapuzha river (the largest river in Kerala) act as potential phreatic aquifer. The yield of the wells tapping the alluvium ranges from 5000 to 50000 lpd. The thickness of laterites varies from 2 to15 mbgl and the depth of dug wells ranges from 4 to 10 mbgl. The thickness of laterites increases towards the western parts of the district where the dug wells are potential. Along the western part the yield of the dug wells ranges from 500 to 10000 lpd. Along the eastern part the dug wells are quite deep, and it varies in depth from 7 to 32 mbgl with a varying yield in the range of 200 to 10000 lpd. The shallow and deep fractures in the crystalline rocks also form potential aquifers in the district and bore wells tapping these aquifers range in depth from 80.77 to 300.81 mbgl. The yield of these bore wells ranges from 2 to 25 lps. The Annual Extractable Ground Water Recharge of the district is **591.44 MCM** and existing Gross Ground Water Extraction is of the order of **333.82 MCM. The** Stage of Ground Water Extraction is **56%.** Out of 13 blocks in the district, 1 each are 'Over-exploited',(**Chittur)** 'Critical'(**Malampuzha),** 2 blocks are 'Semi-critical'(**Pattambi and Thrithala)** and 9 blocks are 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**546.06 MCM**, the semi- confined zone is **878.42 MCM.** The total ground water resources of the district is **2017.51MCM**

### 5.10.11 Pathanamthitta

Groundwater in the district occurs under phreatic condition in the alluvium, laterite and weathered/fractured crystalline rocks. It occurs in semi confined/confined condition in the Tertiary sediments and deep-seated fractured aquifers in crystalline rock. Charnockites are the dominant crystalline rock type of the district. The dug wells in the crystalline rock area ranges in depth from 11 to 15 mbgl. The Tertiary sediments belonging to the Vaikom bed occurs below the alluvium and form potential semi consolidated aquifers. Groundwater occurs under confined/semi confined condition. The average thickness of unconsolidated Recent alluvium ranges from 4 to 6m. TheThe Annual Extractable Ground Water Recharge of the district is **255.83 MCM** and existing Gross Ground Water Extraction is of the order of **94.49 MCM. The** Stage of Ground Water Extraction is **37%.** All the 8 blocks of the district have been categorized as 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**163.72 MCM**, the semi- confined zone is **310.66 MCM**. The total ground water resources of the district is **730.22 MCM**

### 5.10.12 Thiruvananthapuram

A major part of the district is underlain by the crystalline rocks. At places, sedimentary formations overlie the crystallines, especially in the western part of the district. Coastal belt is mostly occupied by the alluvial deposits of Recent origin. Ground Water exploration in the deeper aquifers of hard rock area has indicated that yield varies from 1to7 lps whereas the sedimentaries, the yield goes up to 10 lps. The shallow aquifers are generally developed through dug wells in the hard rock areas; the yield varies from 1 to 3 lps. In alluvial areas, dug wells/ filter point wells are common structures; the yield varies from 2 to 5 lps. The Annual Extractable Ground Water Recharge of the district is **269.70 MCM** and existing Gross Ground Water Extraction is of the order of **172.16 MCM. The** Stage of Ground Water Extraction is **64%.** Out of 11 blocks, 5 are 'Semi critical'(**Athiyannur,Chirayinkil,Nedumangad,Parassala and Pothencode)** and 6 are 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is **353.08 MCM**, the semi- confined zone is **189.42 MCM** and the confined zone is **221.08 MCM**. The total ground water resources of the district are **1033.28 MCM**

### 5.10.13 Thrissur

Groundwater occurs both under water table and confined/semi confined condition in almost all the geological formations in the district. Confined/semi confined conditions are encountered in the deep fracture of the crystalline rocks and in the Vaikom beds of the sedimentaries. The dug wells tapping the phreatic aquifers range in depth from 3.5 to 22 mbgl. The yield of these wells' ranges from 1200 to 20000 lph. The Vaikom beds are encountered at depth ranges of 6-51 mbgl. The thickness of the beds ranges from 8-30m. The yield of tube wells tapping Vaikom beds varies from 24000 to 115000 lph. The laterite formations encountered along the midland regions of the districts act as a very good water table aquifer along valleys and low-lying regions. The depth of dug wells tapping the laterite formation ranges from 9 to 19 mbgl and the yield of these wells ranges from 800 and 20000 lph. The sandy coastal alluvium also constitutes a potential water table aquifer with depth of dug wells ranging between 4 and 7 m. Shallow filter point tube wells are constructed in areas where the thickness of the alluvium exceeds about 5 m. The yield of wells tapping the coastal alluvium ranges between 15000 and 40000 lph. The Annual Extractable Ground Water Recharge of the district is **590.48 MCM** and existing Gross Ground Water Extraction is of the

order of **340.56 MCM. The** Stage of Ground Water Extraction is **58%.** Out of 16 blocks in the district, 3 are 'Semi-critical'(**Chowannur,Mathilakam and Thalikulam).** All the other blocks are safe.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**685.51 MCM**, the semi- confined zone is **627.31 MCM.** The total ground water resources of the district are **1903.30 MCM**

### 5.10.14 Wayanad

The district is covered by peninsular shield of Western Ghats and form the tri-junction of the charnockites of the Western Ghats – The Nilgiri range and the southern extension of the Dharwars of Mysore. Major rock types are Wayanad supracrustals, gneisses and charnockites of Archaean, basic and acidic intrusives of Proterozoic, laterite of Sub-Recent age and the alluvium of the Recent age. Groundwater occurs in the weathered rocks, fractures of crystalline rocks and the alluvial formations. In weathered formations water occur under phreatic conditions and is mostly developed by dug wells for domestic and irrigation purposes. The Annual Extractable Ground Water Recharge of the district is **231.63 MCM** and existing Gross Ground Water Extraction is of the order of **56.78 MCM. The** Stage of Ground Water Extraction is **25%.** All four blocks in the district are 'Safe'.

The **instorage ground water resources** of phreatic zone (unconfined aquifer) is**171.31 MCM**, the semi- confined zone is **214.14 MCM** and the confined zone is **149.90 MCM**. The total ground water resources of the district are **766.99 MCM**

**The district wise Ground Water Availability is presented Table 5.3**

## 5.11 Comparison of the Dynamic Ground Water Resources as in (2013) & (2017)

A comparison of the major components of dynamic ground water resources of Kerala during 2013 and 2017, along with justification is given in **Table.5.4**

A comparative analysis of the components of dynamic ground water resources during 2013 and 2017 shows that the annual extractable ground water recharge for Kerala during 2017 has decreased by 6.93% when compared with the corresponding figures during 2013. The annual ground water Extraction for all uses has decreased by 7.08% during the period. The net ground water availability for future use in the state shows a decrease of 3.94% in 2017 when

compared to the corresponding figures computed in 2013. The Stage of Ground Water Extraction in the State shows an increase from 46.63% during 2013 to 51.27% during 2017. The variation in the spatial distribution of various recharge and discharge components resulting from the changes in ground water levels and re-organization of blocks has resulted in the change in the number of blocks in various categories when compared to the previous assessment. The number of 'Semi-critical' blocks in the State has increased from 18 to 30 whereas the number of 'Safe' blocks decreased from 131 to 119. There is no change in the number of Over Exploited and Critical blocks.

**Table 5.3: District wise Total Ground Water Availability of Kerala State (2017)**

| Total Ground Water Availability -2017 | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Kerala | | | | | | | | | | | |
| **S.No** | **District** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Alappuzha | 40457.33 | 66268.66 | 106726.00 | 0 | 0.00 | 0.00 | 0 | 26385.44 | 26385.44 | 133111.44 |
| 2 | Ernakulam | 49952.53 | 78823.79 | 128776.31 | 0 | 33487.51 | 33487.51 | 0 | 30938.75 | 30938.75 | 193163.02 |
| 3 | Idukki | 18613.64 | 13847.90 | 32461.54 | 0 | 8252.37 | 8252.37 | 0 | 9212.59 | 9212.59 | 49926.50 |
| 4 | Kannur | 41254.71 | 48675.98 | 89930.69 | 0 | 26500.73 | 26500.73 | 0 | 32901.08 | 32901.08 | 149211.55 |
| 5 | Kasargod | 28575.24 | 24995.59 | 53570.83 | 0 | 15041.82 | 15041.82 | 0 | 19575.60 | 19575.60 | 88188.26 |
| 6 | Kollam | 33293.56 | 37177.97 | 70471.53 | 0 | 20689.38 | 20689.38 | 0 | 21281.27 | 21281.27 | 112442.19 |
| 7 | Kottayam | 37453.94 | 31712.29 | 69166.22 | 0 | 17010.55 | 17010.55 | 0 | 19388.25 | 19388.25 | 105565.02 |
| 8 | Kozhikode | 30611.65 | 23632.76 | 54244.41 | 0 | 43049.92 | 43049.92 | 0 | 0.00 | 0.00 | 97294.33 |
| 9 | Malappuram | 47053.16 | 59516.45 | 106569.62 | 0 | 42660.69 | 42660.69 | 0 | 33177.10 | 33177.10 | 182407.40 |
| 10 | Palakkad | 59143.79 | 54606.43 | 113750.22 | 0 | 87842.28 | 87842.28 | 0 | 0.00 | 0.00 | 201751.14 |
| 11 | Pathanamthitta | 25583.23 | 16372.38 | 41955.61 | 0 | 31066.09 | 31066.09 | 0 | 0.00 | 0.00 | 73021.70 |
| 12 | Thiruvananthapuram | 26970.47 | 35307.72 | 62278.19 | 0 | 18941.59 | 18941.59 | 0 | 22108.26 | 22108.26 | 103328.03 |
| 13 | Thrissur | 59048.35 | 68550.64 | 127599.00 | 0 | 62730.65 | 62730.65 | 0 | 0.00 | 0.00 | 190329.65 |
| 14 | Wayanad | 23163.14 | 17131.44 | 40294.58 | 0 | 21414.30 | 21414.30 | 0 | 14990.01 | 14990.01 | 76698.89 |
| | **Total (ham)** | **521174.74** | **576620.00** | **1097794.75** | **0** | **428687.86** | **428687.86** | **0** | **229958.35** | **229958.35** | **1756439.11** |
| | **Total (bcm)** | **5.21** | **5.77** | **10.98** | **0.00** | **4.29** | **4.29** | **0.00** | **2.30** | **2.30** | **17.56** |

**Table 5.4: Comparison of Major Components of Dynamic Ground Water Resources of Kerala (2013 & 2017)**

| Sl. No | Component | | | Variation in 2017 w.r. to 2013 | Variation (%) | Remarks /Justification |
|---|---|---|---|---|---|---|
| | | 2013 | 2017 | | | |
| 1 | Total Annual Ground Water Recharge (Ha.m) | 6251 | 5769 | 482 | 7.71 | Variation due mainly to the changes in the precipitation and consequent water level fluctuations. 10% reduction in rainfall and limiting the maximum rainfall quantity as 3000mm. |
| 2 | Annual Extractable Ground Water Recharge (MCM) | 5664 | 5212 | 452 | 7.98 | - do - |
| 3 | Total Ground Water Extraction (MCM) | 2635 | 2671 | 36 | 1.35 | Variation attributed to increased domestic demand due to population increase. The increase is comparatively less due to increased dependency on surface water |
| 4 | Annual Ground Water allocation for domestic use as on 2025 (MCM) | 1550 | 1571 | 21 | 1.34 | -do- |
| 5 | Net Ground Water Availability for Future use (MCM) | 2945 | 2408 | 537 | 18.23 | The variation is due to reduction in the extractable ground water recharge as per GEC 2015 computation viz;10% reduction of annual rain fall for the resource computation. |
| 6 | Stage of Ground Water Extraction (%) | 47 | 51 | 4% | 4 | |

# CONTRIBUTORS PAGE

## I Computation of Ground Water Resources

### Central Ground Water Board

| | |
|---|---|
| 1.V. Kunhambu | Regional Director |
| 2.Dr.K.R. Sooryanarayana | Superintending Hydrogeologist |
| 3.K. Balakrishnan | Scientist-D |
| 4.Vijesh. V.K | Scientist-B |
| 5 Roopesh G Krishnan | Scientist-B |

### Ground Water Department

| | |
|---|---|
| 1.Dr. Lal Thompson | Hydrogeologist |
| 2.Smt.Santy | Jr. Hydrogeologist |

## II Cartography

| | |
|---|---|
| Tonny Eapen | Chief Draughtsman, CGWB |

## III Scutiny& Finalisation of Report

| | |
|---|---|
| 1.V Kunhambu | Regional Director, CGWB<br>Kerala Region, Thiruvananthapuram |
| 2. Gopakumar.A.G. | Superintending Hydrogeologist,<br>Ground Water Department, Thiruvananthapuram |

# ANNEXURES

# ANNEXURE I

## GOVERNMENT ORDER ON CONSTITUTION OF STATE LEVEL COMMITTEE FOR RE-ESTIMATION OF DYNAMIC GROUND WATER RESOURCES OF KERALA.

## Annexure-I (a)

**Abstract**

Water Resources Department-State Level Committee for Re-estimation of Ground Water Resources-Constituted – Orders issued

_WATER RESOURCES (GROUND WATER) DEPARTMENT
G.O. (Rt)No:590/2010/WRD. Dated, Thiruvananthapuram, 18..05..2010

Read: 1. G.O. (Rt) No.900/2008/WRD. Dated 29.08.2008
2. G.O. (Rt) No. 262/2010/WRD. Dated, 06.08.2010
3. Letter No.11(T 20)/10-11/561 dated 29.04.2010 from the Regional Director, Central Ground water Board, Kerala region, Thiruvananthapuram

**ORDER**

Government have constituted a Committee for Estimation of Ground Water Resources of Kerala, as per the Ground Water Estimation Committee 1997 methodology with 2007-08 as base year vide Government Order read as 1st paper above. The above Committee is made a permanent Standing Committee for the State to do the ground water estimation of the State, vide Government Order 2nd cited.

Now the Regional director, Central Ground Water Board in his letter read as 3rd paper above has requested Government to constitute the State Level Committee for Re-estimation of Ground Water Resources as per the recommendation of Central Headquarters. After examination of the suggestion by the Regional director, Central Ground Water Board, Government are pleased to constitute a State Level Committee for Re-estimation of Ground Water Resources of Kerala, with the following members:

| | | |
|---|---|---|
| The Principal Secretary, Water Resources Department | - | Chairman |
| The Director, Ground Water Department, Thiruvananthapuram | - | Member |
| The Director, Agriculture Department | - | Member |
| The Managing Director, Kerala Water Authority | - | Member |
| The Chief Engineer, Irrigation & Administration | - | Member |
| The Director, Department of Industries & Commerce | - | Member |
| The General Manager, NABARD, Thiruvananthapuram | - | Member |
| The Executive Director, Centre for Water Resources Development and Management | - | Member |
| The Regional Director, Central Ground Water Board Thiruvananathapuram | - | Member Secretary |

Terms of reference : The broad terms of reference of the Committee will be as follows:

(1) To estimate annual replenishable ground water resources of the State in accordance with the ground water resources estimation methodology
(2) To estimate the status of utilization of the annual replenishable ground water resource.

The Committee will submit its report within 6 months from the date of its constitution.

(BY ORDER OF THE GOVERNOR)

L. RADHAKRISHNAN
PRINCIPAL SECRETARY TO GOVERNMENT

To
The Members of the Committee
S/F, O/C

Forwarded / By order
Sd/
Section Officer

**Annexure-I (b)**

**GOVERNMENT OF KERALA**

**Abstract**

Water Resources Department–Ground Water Department State Level Committee for Re-estimation of Ground Water Resources-Constituted-Orders issued.

==========

**WATER RESOURCES (GROUND WATER) DEPARTMENT**

**G.O.(Rt)No.888/2017/WRD Dated,Thiruvananthapuram, 30.10.2017.**

==========

Read: 1.G.O.(Rt)No. 590/2010/WRD Dated 18.05.2010.
2. G.O(Rt)No. 262/2010/WRD dated 06.08.2010.
3. Letter No. 11/CGWB/KR/T 20/17-18/954 dated 18.07.2017 from the Regional Director, Central Ground Water Board, Kerala region, Thiruvananthapuram.

**ORDER**

Government had constituted a Committee for Estimation of Ground Water Resources of Kerala, as per the Ground Water Estimation Committee 1997 methodology as per the Government Order read as 1st paper above and the Committee was made a permanent standing committee for the State to do the ground water estimation of the State as per Government Order read as 2nd paper above.

2. The Regional director, Central Ground Water Board in his letter read as 3rd paper above has requested Government to re-constitute the State Level Committee for Re-estimation of Ground Water Resources as per the recommendation of Central Headquarters.

3. In the circumstances reported by the Regional director, Central Ground Water Board, Government are pleased to constitute a State Level Committee for Re-estimation of Ground Water Resources of Kerala as per the Ground Water Estimation Committee 2015 methodology with 2016-17 as base year, with the following members.

| | |
|---|---|
| The Secretary, Water Resources Department | -Chairman |
| The Director, Ground Water Department, Thiruvananthapuram | -Member |
| The Director, Agriculture Department | -Member |
| The Managing Director, Kerala Water Authority | -Member |
| The Chief Engineer, Irrigation & Administration | -Member |
| The Director, Department of Industries & Commerce | -Member |
| The General Manager, NABARD, Thiruvananthapuram | -Member |
| The Executive Director, Centre for Water Resources Development and management | -Member |
| The Regional Director, Central Ground | |

Water Board, Thiruvananthapuram -Member Secretary

The Terms of reference: The broad terms of reference of the Committee will be as follows:

(1) To estimate annual replenishable ground water resources of the State in accordance with the ground water resources estimation methodology (2015). The Committee will adopt improved procedures and practices wherever possible.
(2) To estimate the status of utilization of the annual replenishable ground water resource.

The Committee will submit its report within six months.

**TINKU BISWAL**
**SECRETARY TO GOVERNMENT**
(By order of the Governor)

To
The Secretary, Water Resources Department
The Director, Ground Water Department, Thiruvananthapuram
The Director, Agriculture Department
The Managing Director, Kerala Water Authority
The Chief Engineer, Irrigation & Administration
The Director, Department of Industries & Commerce
The General Manager, NABARD, Thiruvananthapuram
The Executive Director, Centre of Water Resources Development and Management
The Regional Director, Central Ground Water Board, Thiruvananthapuram.

Stock File/Office Copy.

Forwarded/By Order,

Section Officer.

# ANNEXURE-II

## MINUTES OF MEETINGS OF THE STATE LEVEL COMMITTEE

## Annexure-II (a)
## Minutes of the meeting of the Joint Committee on Ground Water Resource Estimation comprising of officers of CGWB and State GWD

**No.CGWB/KR/T/20**
**Dt.: 14/11/2018**

**Gist of discussion held between the sub group of Central Ground Water Board, Kerala Region and Ground Water Department, Government of Kerala regarding the Ground Water Resource Estimation as on 31st March 2017 based on GEC 2015 methodology**

The sub-group meeting on the finalization of the Draft Report compiled jointly by Central Ground Water Board, Kerala Region and Ground Water Department, Government of Kerala held on 14/11/2018 at 1500 hrs. in Ground Water Department Office, Thiruvananthapuram.

The following officers attended the meeting:

1. **Dr.K.R.Sooryanarayana, Supdtg.Hydrogeologist, CGWB, Kerala Region, Thiruvananthapuram.**
2. **Sh.K.Balakrishnan, Scientist 'D', CGWB, Kerala Region, Thiruvananthapuram**
3. **Sh.Gopa Kumar, Supdtg.Hydrogeologist, GWD, Thiruvananthapuram**
4. **Smt.Shanti, Hydrogeologist, GWD, Thiruvananthapuram**

At the outset, Sh.Gopakumar, Supdtg. Hydrogeologist welcomed the members and invited Dr.K.R.Sooryanarayana, Supdtg. Hydrogeologist, CGWB to initiate the discussion. Dr.K.R.Sooryanarayana briefed the methodology followed and constraints and invited Sh.K.Balakrishnan, Scientist 'D' to further the discussion. Sh.K.Balakrishnan thanked the GWD for providing the available data and presented the draft report and contents are summarized below:

**'GEC as on March 2017 was computed as per GEC Methodology 2015. The rainfall recharge was calculated as per annual rainfall and the rainfall in assessment year as average of 5 years (2012 – 2016). The minimum threshold of 10% is reduced from the rainfall and the maximum rainfall is limited to 3000 mm. Pre-monsoon and post-monsoon water level data of maximum Observation wells were utilized. Data from 5 to more than 15 Observation wells in each block were utilized for computation.**

**Irrigation well data is mainly from 4th MI Census which is updated from the State Department. The increase in homestead irrigation is calculated by increase in extraction structures by 0.5 to 1.5% per year from 2013 data in different blocks.**

**Data as number of ponds/tanks, other structures for panchayat statistics/GWD.**

**Domestic extraction as per dependency on ground water and @ 150 lpd per person.**

**Industrial extractions data collected from the Directorate of Industry & Commerce.'**

The sub-committee unanimously resolved to send the draft estimation formats/reports to Central Ground Water Board, Central Headquarter as desired by 15th November 2018. Further, it was decided to request the Chairman of State GWR Estimation Committee to give a date for convening the State Level Meeting for placing the estimation formats/reports for further approval.

Signed by

**(Gopa Kumar)**
**Supdtg. Hydrogeologist i/c**
**Ground Water Department,**
**Govt. of Kerala**

**(Dr.K.R.Sooryanarayana)**
**Supdtg. Hydrogeologist**
**Central Ground Water Board,**
**Kerala Region.**

*जल बचाईए. हर बूँद कीमती है !*
***Save Water. Every Drop Counts!***

## Annexure-II (b)

**MINUTES OF THE MEETING OF THE STATE LEVEL STANDING COMMITTEE FOR RE-ESTIMATION OF GROUND WATER RESOURCES OF KERALA, HELD ON 29.11.2018**

The meeting of the State Level Standing Committee for Re-estimation of Groundwater resources of Kerala was held at 16.00 hrs in the chamber of Secretary, Water Resources Department , Government of Kerala at Thiruvananthapuram on 29.11.2018. The meeting was chaired by Smt.Tinku Biswal,IAS, Secretary (Water Resources & CSIN), Government of Kerala . The following members/invitees attended the meeting.

| | | |
|---|---|---|
| 1. | Shri.Joshy.K.A, Chief Engineer(I&A), Irrigation Department, Government of Kerala | Member |
| 2. | Shri.A.G Gopakumar, Senior Hydrogeologist, State Ground Water Department, Government of Kerala, Thiruvananthapuram | Member |
| 3. | Dr.Arun.P.R, Scientist, CWRDM, Kozhikode | Member |
| 4. | Dr.Lal Thompson, Hydrogeologist, State Ground Water Department, Thiruvananthapuram | Member |
| 5. | Shri.Praveen.M, Deputy Director, Industries and Commerce Department, Thiruvananthapuram | Member |
| 6. | Shri.V.Kunhambu, Regional Director, CGWB, Kerala Region, Thiruvananthapuram | Member Secretary |

The Chairman of the committee welcomed the members at the outset. Shri.V.Kunhambu, Member Secretary apprised the committee of the completion of the draft report on Dynamic Ground Water Resources of Kerala (as on March 2017) as per GEC 2015 methodology and placed the same for the approval of the committee. The Secretary opened discussions on the report as per the agenda.

**Estimation of Dynamic Ground Water Resources of Kerala (As on March 2017)**

The Member Secretary informed the committee that the Dynamic Ground Water Resources of Kerala as on March 2017 have been assessed following the procedure of GEC methodology 2015, jointly by the Ground Water Department, Government of Kerala and the Central Ground water Board. Further Shri.K.Balakrishnan, Scientist-D, CGWB explained the various steps involved in the methodology adopted for the estimation of resources and the final result of the computations were deliberated by the committee officers from CGWB have clarified the points raised by the Chairperson.

- The committee was informed that the assessment has been carried out for 152 blocks of the State.
- The irrigation draft data has been taken from the 4th Minor Irrigation Census by Minor Irrigation wing of Irrigation Department supported by the latest data collected by the Ground Water Department and updated with field checks by field officers of Ground water Department.
- Ground Water draft for domestic uses in the assessment units have been updated based on projected population keeping 2011 census as base.

- As per the assessment carried out, the Net annual Ground Water Availability and Gross Ground Water Draft for all uses in Kerala are of the order of 5.21 bcm and 2.62 bcm respectively. The Net Ground Water Availability for Irrigation Development has been computed as 2.41 bcm. The Stage of Ground Water Extraction, computed as the ratio of Gross Ground Water Draft to Net Ground water Availability as in March 2017 is 50.34%.
- Based on the assessment of available resources and quantum of ground water extraction. Chittur block in Palakkad district has been categorized as 'Over exploited'. Two blocks viz Malampuzha (Palakkad district) and Kasargod (Kasargod district) have been categorized as 'Critical' and 30 blocks, spread over various districts except Pathanamthitta, Kottayam, Alappuzha and Wayanad come under 'Semi-Critical category, Remaining blocks in the State fall under 'Safe' category as in March 2017.
- A comparison of the major components of dynamic ground water resources of Kerala during 2013 and 2017 indicates a decrease of 439.8 mcm in Net Annual Ground Water Availability and 11.17 mcm in Gross Annual Ground Water Extraction for all uses. Since both have decreased, the stage of ground water extraction during two period varies from 46.62 % to 50.34 %. As far as the categorization of assessment units is concerned, the number of over-exploited and critical blocks remained the same during both the assessments.

The assessment of dynamic ground water resources of Kerala as in March 2017 was approved by the Committee after discussions and deliberations by the committee. The meeting ended with thanks to the chair.

Approved for Issue

(TINKU BISWAL)
Secretary, Water Resources
Govt.of Kerala

# ANNEXURE III A

# GENERAL DESCRIPTION OF GROUND WATER ASSESSMENT UNITS

| **District** | | **ALAPPUZHA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Ambalappuzha | Alluvial | 6890.00 | 0.00 | 0.00 | 6890.00 | 0.00 | 6890.00 | 0.00 |
| 2 | Aryad | Alluvial | 8772.00 | 0.00 | 0.00 | 8772.00 | 0.00 | 8772.00 | 0.00 |
| 3 | Bharanikkavu | Alluvial | 12995.00 | 0.00 | 0.00 | 12995.00 | 0.00 | 2500.00 | 0.00 |
| 4 | Champakkulam | Alluvial | 15383.00 | 0.00 | 0.00 | 15383.00 | 0.00 | 7500.00 | 0.00 |
| 5 | Chengannur | Alluvial | 14996.00 | 0.00 | 0.00 | 14996.00 | 0.00 | 6890.00 | 0.00 |
| 6 | Harippad | Alluvial | 11439.00 | 0.00 | 0.00 | 11439.00 | 0.00 | 11439.00 | 0.00 |
| 7 | Kanjikkuzhy | Alluvial | 11013.00 | 0.00 | 0.00 | 11013.00 | 0.00 | 9000.00 | 0.00 |
| 8 | Mavelikkara | Alluvial | 10044.00 | 0.00 | 0.00 | 10044.00 | 0.00 | 4000.00 | 0.00 |
| 9 | Muthukulam | Alluvial | 11651.00 | 0.00 | 0.00 | 11651.00 | 0.00 | 5000.00 | 0.00 |
| 10 | Pattanakkad | Alluvial | 10871.00 | 0.00 | 0.00 | 10871.00 | 0.00 | 10871.00 | 0.00 |
| 11 | Thycattussery | Alluvial | 14159.00 | 0.00 | 0.00 | 14159.00 | 0.00 | 14159.00 | 0.00 |
| 12 | Veliyanad | Alluvial | 13190.00 | 0.00 | 0.00 | 13190.00 | 0.00 | 10000.00 | 0.00 |
| **Total (ha)** | | | **141403.00** | **0.00** | **0.00** | **141403.00** | **0.00** | **97021.00** | **0.00** |
| **Total (Sq.km)** | | | **1414.03** | **0.00** | **0.00** | **1414.03** | **0.00** | **970.21** | **0.00** |

| **District** | | **ERNAKULAM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Alangad | Hard Rock | 7331.00 | 0.00 | 0.00 | 7331.00 | 0.00 | 5090.00 | 0.00 |
| 2 | Angamaly | Hard Rock | 23197.00 | 0.00 | 0.00 | 21197.00 | 0.00 | 0.00 | 0.00 |
| 3 | Edappally | Alluvial | 16053.00 | 0.00 | 0.00 | 16053.00 | 0.00 | 12000.00 | 0.00 |
| 4 | Koovappady | Hard Rock | 38560.50 | 0.00 | 0.00 | 35560.50 | 0.00 | 0..00 | 0.00 |
| 5 | Kothamangalam | Hard Rock | 82997.00 | 0.00 | 0.00 | 22997.00 | 0.00 | 0.00 | 0.00 |
| 6 | Moovattupuzha | Hard Rock | 21480.00 | 0.00 | 0.00 | 19980.00 | 0.00 | 0.00 | 0.00 |
| 7 | Mulamthuruthy | Hard Rock | 16327.00 | 0.00 | 0.00 | 16327.00 | 0.00 | 0.00 | 0.00 |
| 8 | Palluruthy | Alluvial | 6651.00 | 0.00 | 0.00 | 6651.00 | 0.00 | 6651.00 | 0.00 |
| 9 | Pampakkuda | Hard Rock | 18740.00 | 0.00 | 0.00 | 17740.00 | 0.00 | 0.00 | 0.00 |
| 10 | Parakkadavu | Hard Rock | 11881.00 | 0.00 | 0.00 | 11881.00 | 0.00 | 0.00 | 0.00 |
| 11 | Paravoor | Alluvial | 7665.00 | 0.00 | 0.00 | 7665.00 | 0.00 | 4665.00 | 0.00 |
| 12 | Vadavukodu | Hard Rock | 18595.00 | 0.00 | 0.00 | 18595.00 | 0.00 | 0.00 | 0.00 |
| 13 | Vazhakkulam | Hard Rock | 19328.00 | 0.00 | 0.00 | 19328.00 | 0.00 | 0.00 | 0.00 |
| 14 | Vypeen | Alluvial | 5642.00 | 0.00 | 0.00 | 5642.00 | 0.00 | 4500.00 | 0.00 |
| | **Total (ha)** | | **294447.50** | **0.00** | **0.00** | **226947.50** | **0.00** | **32906.00** | **0.00** |
| | **Total (Sq.km)** | | **2944.48** | **0.00** | **0.00** | **2269.48** | **0.00** | **329.06** | **0.00** |

| **District** | | **IDUKKI** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** | | | | | | |
| | | | (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Adimali | Hardrock | 51914.00 | 30714.00 | 0.00 | 21200.00 | 0.00 | 0.00 | 0.00 |
| 2 | Azhutha | Hard rock | 107442.00 | 92900.00 | 0.00 | 14542.00 | 0.00 | 0.00 | 0.00 |
| 3 | Devikulam | Hard Rock | 96343.00 | 80300.00 | 0.00 | 16043.00 | 0.00 | 0.00 | 0.00 |
| 4 | Elam Desom | Hardrock | 18722.00 | 9000.00 | 0.00 | 18722.00 | 0.00 | 0.00 | 0.00 |
| 5 | Idukki | Hard Rock | 73482.00 | 60000.00 | 0.00 | 13482.00 | 0.00 | 0.00 | 0.00 |
| 6 | Kattappana | Hard rock | 37238.00 | 26000.00 | 0.00 | 11238.00 | 0.00 | 0.00 | 0.00 |
| 7 | Nedumkandam | Hardrock | 34190.00 | 22000.00 | 0.00 | 12190.00 | 0.00 | 0.00 | 0.00 |
| 8 | Thodupuzha | Hardrock | 16474.00 | 6000.00 | 0.00 | 10474.00 | 0.00 | 0.00 | 0.00 |
| | **Total (ha)** | | **435805.00** | **326914.00** | **0.00** | **117891.00** | **0.00** | **0.00** | **0.00** |
| | **Total (q.km)** | | **4358.05** | **3269.14** | **0.00** | **1178.91** | **0.00** | **0.00** | **0.00** |

| **District** | | **KANNUR** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Edakkad | Hard Rock | 8948.00 | 0.00 | 0.00 | 14049.00 | 0.00 | 0.00 | 0.00 |
| 2 | Irikkur | Hard Rock | 41290.00 | 5000.00 | 0.00 | 36290.00 | 0.00 | 0.00 | 0.00 |
| 3 | Iritty | Hard Rock | 42709.00 | 11200.00 | 0.00 | 31509.00 | 0.00 | 0.00 | 0.00 |
| 4 | Kallyasseri | Hard Rock | 14339.00 | 0.00 | 0.00 | 14339.00 | 0.00 | 0.00 | 0.00 |
| 5 | Kannur | Hard Rock | 12678.00 | 0.00 | 0.00 | 7577.00 | 0.00 | 0.00 | 0.00 |
| 6 | Kuthuparamba | Hard Rock | 18235.00 | 5300.00 | 0.00 | 12935.00 | 0.00 | 0.00 | 0.00 |
| 7 | Panur | Hard Rock | 7383.00 | 0.00 | 0.00 | 7383.00 | 0.00 | 0.00 | 0.00 |
| 8 | Payyannur | Hard Rock | 39212.00 | 5000.00 | 0.00 | 34212.00 | 0.00 | 0.00 | 0.00 |
| 9 | Peravoor | Hard Rock | 42542.00 | 21200.00 | 0.00 | 21342.00 | 0.00 | 0.00 | 0.00 |
| 10 | Taliparamba | Hard Rock | 57403.00 | 16700.00 | 0.00 | 40703.00 | 0.00 | 0.00 | 0.00 |
| 11 | Thalassery | Hard Rock | 12057.00 | 0.00 | 0.00 | 12057.00 | 0.00 | 0.00 | 0.00 |
| | **Total (ha.)** | | **296796.00** | **64400.00** | **0.00** | **232396.00** | **0.00** | **0.00** | **0.00** |
| | **Total (Sq.km)** | | **2967.96** | **644.00** | **0.00** | **2323.96** | **0.00** | **0.00** | **0.00** |

| **District** | | **KASARGOD** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** | | | | | | |
| | | | (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Kanhangad | Hard Rock | 24508.00 | 500.00 | 0.00 | 24008.00 | 0.00 | 1000.00 | 0.00 |
| 2 | Karadka | Hard Rock | 37247.00 | 11700.00 | 0.00 | 25547.00 | 0.00 | 0.00 | 0.00 |
| 3 | Kasaragod | Hard Rock | 25876.00 | 500.00 | 0.00 | 25376.00 | 0.00 | 0.00 | 0.00 |
| 4 | Manjeswar | Hard Rock | 34136.00 | 1000.00 | 0.00 | 33136.00 | 0.00 | 0.00 | 0.00 |
| 5 | Nileswaram | Hard Rock | 19695.00 | 0.00 | 0.00 | 19695.00 | 0.00 | 2350.00 | 0.00 |
| 6 | Parappa | Hard Rock | 54668.00 | 19300.00 | 0.00 | 35368.00 | 0.00 | 0.00 | 0.00 |
| | **Total (ha.)** | | **196130.00** | **33000.00** | **0.00** | **163130.00** | **0.00** | **3350.00** | **0.00** |
| | **Total(Sq.km)** | | **1961.30** | **330.00** | **0.00** | **1631.30** | **0.00** | **33.50** | **0.00** |

| **District** | | **KOLLAM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** | | | | | | |
| | | | (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Anchal | Hard Rock | 94622.00 | 30000.00 | 0.00 | 64622.00 | 0.00 | 0.00 | 0.00 |
| 2 | Chadayamangalam | Hard Rock | 24903.00 | 0.00 | 0.00 | 24903.00 | 0.00 | 0.00 | 0.00 |
| 3 | Chavara | Alluvial | 7490.00 | 0.00 | 0.00 | 7490.00 | 0.00 | 3500.00 | 0.00 |
| 4 | Chittumala | Hardrock | 12125.00 | 0.00 | 0.00 | 12125.00 | 0.00 | 0.00 | 0.00 |
| 5 | Ithikkara | Alluvial | 12573.00 | 0.00 | 0.00 | 12573.00 | 0.00 | 1200.00 | 0.00 |
| 6 | Kottarakkara | Hard Rock | 13310.00 | 0.00 | 0.00 | 13310.00 | 0.00 | 0.00 | 0.00 |
| 7 | Mukhathala | Alluvium | 14703.00 | 0.00 | 0.00 | 14703.00 | 0.00 | 0.00 | 0.00 |
| 8 | Oachira | Alluvium | 11641.00 | 0.00 | 0.00 | 11641.00 | 0.00 | 4500.00 | 0.00 |
| 9 | Pathanapuram | Hardrock | 27992.00 | 8000.00 | 0.00 | 19992.00 | 0.00 | 0.00 | 0.00 |
| 10 | Sasthamkotta | Hard Rock | 12791.00 | 0.00 | 0.00 | 12791.00 | 0.00 | 0.00 | 0.00 |
| 11 | Vettikkavala | Hardrock | 16947.00 | 0.00 | 0.00 | 16947.00 | 0.00 | 0.00 | 0.00 |
| **Total (ha)** | | | **249097.00** | **38000.00** | **0.00** | **211097.00** | **0.00** | **9200.00** | **0.00** |
| **Total (Sq.km)** | | | **2490.97** | **380.00** | **0.00** | **2110.97** | **0.00** | **92.00** | **0.00** |

| **District** | | **KOTTAYAM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** | | | | | | |
| | | | (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Erattupetta | Hard Rock | 28251.00 | 13000.00 | 0.00 | 15251.00 | 0.00 | 0.00 | 0.00 |
| 2 | Ettumanoor | Hard Rock | 14172.00 | 0.00 | 0.00 | 14172.00 | 0.00 | 0.00 | 0.00 |
| 3 | Kaduthuruthy | Hard Rock | 18775.00 | 0.00 | 0.00 | 18775.00 | 0.00 | 0.00 | 0.00 |
| 4 | Kanjirappally | Hard Rock | 34200.00 | 12000.00 | 0.00 | 22200.00 | 0.00 | 0.00 | 0.00 |
| 5 | Lalam | Hard Rock | 18939.00 | 0.00 | 0.00 | 18939.00 | 0.00 | 0.00 | 0.00 |
| 6 | Madappally | Alluvial | 15854.00 | 0.00 | 0.00 | 15854.00 | 0.00 | 0.00 | 0.00 |
| 7 | Pallom | Hard Rock | 23214.00 | 0.00 | 0.00 | 23214.00 | 0.00 | 0.00 | 0.00 |
| 8 | Pampady | Hard Rock | 16630.00 | 0.00 | 0.00 | 16630.00 | 0.00 | 0.00 | 0.00 |
| 9 | Uzhavoor | Hard Rock | 22096.00 | 0.00 | 0.00 | 22096.00 | 0.00 | 0.00 | 0.00 |
| 10 | Vaikom | Alluvial | 13155.00 | 0.00 | 0.00 | 13155.00 | 0.00 | 3000.00 | 0.00 |
| 11 | Vazhoor | Hard Rock | 14224.00 | 0.00 | 0.00 | 14224.00 | 0.00 | 0.00 | 0.00 |
| **Total (ha)** | | | **219510.00** | **25000.00** | **0.00** | **194510.00** | **0.00** | **3000.00** | **0.00** |
| **Total (Sq.km)** | | | **2195.10** | **250.00** | **0.00** | **1945.10** | **0.00** | **30.00** | **0.00** |

| **District** | | **KOZHIKODE** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Ballussery | Hard Rock | 27853.00 | 13900.00 | 0.00 | 13953.00 | 0.00 | 0.00 | 0.00 |
| 2 | Chelannur | Hard Rock | 13866.00 | 0.00 | 0.00 | 13866.00 | 0.00 | 0.00 | 0.00 |
| 3 | Koduvally | Hard Rock | 39048.00 | 11750.00 | 0.00 | 27298.00 | 0.00 | 0.00 | 0.00 |
| 4 | Kozhikode | Hard Rock | 16351.00 | 0.00 | 0.00 | 16351.00 | 0.00 | 0.00 | 0.00 |
| 5 | Kunnamangalam | Hard Rock | 33794.00 | 16800.00 | 0.00 | 16994.00 | 0.00 | 0.00 | 0.00 |
| 6 | Kunnummal | Hard Rock | 26252.00 | 13100.00 | 0.00 | 13152.00 | 0.00 | 0.00 | 0.00 |
| 7 | Melady | Alluvial | 8407.00 | 0.00 | 0.00 | 8407.00 | 0.00 | 4500.00 | 0.00 |
| 8 | Panthalayani | Alluvial | 9855.00 | 0.00 | 0.00 | 9855.00 | 0.00 | 1500.00 | 0.00 |
| 9 | Perambra | Hard Rock | 27502.00 | 9600.00 | 0.00 | 17902.00 | 0.00 | 0.00 | 0.00 |
| 10 | Thodannur | Hard Rock | 9677.00 | 0.00 | 0.00 | 9677.00 | 0.00 | 0.00 | 0.00 |
| 11 | Tuneri | Hard Rock | 14397.00 | 2900.00 | 0.00 | 11497.00 | 0.00 | 0.00 | 0.00 |
| 12 | Vadakara | Hard Rock | 7228.00 | 0.00 | 0.00 | 7228.00 | 0.00 | 1000.00 | 0.00 |
| | **Total (ha)** | | **234230.00** | **68050.00** | **0.00** | **166180.00** | **0.00** | **7000.00** | **0.00** |
| | **Total (Sq.km)** | | **2342.30** | **680.50** | **0.00** | **1661.80** | **0.00** | **70.00** | **0.00** |

| **District** | | **MALAPPURAM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Areacode | Hard Rock | 33357.00 | 5000.00 | 0.00 | 28357.00 | 0.00 | 0.00 | 0.00 |
| 2 | Kalikavu | Hard Rock | 68912.00 | 44500.00 | 0.00 | 24412.00 | 0.00 | 0.00 | 0.00 |
| 3 | Kondotty | Hard Rock | 18624.00 | 0.00 | 0.00 | 18624.00 | 0.00 | 0.00 | 0.00 |
| 4 | Kuttippuram | Hard Rock | 17868.00 | 0.00 | 0.00 | 17868.00 | 0.00 | 0.00 | 0.00 |
| 5 | Malappuram | Hard Rock | 18032.00 | 0.00 | 0.00 | 18032.00 | 0.00 | 0.00 | 0.00 |
| 6 | Mankada | Hard Rock | 15245.00 | 0.00 | 0.00 | 15245.00 | 0.00 | 0.00 | 0.00 |
| 7 | Nilamboor | Hard Rock | 62120.00 | 40300.00 | 0.00 | 21820.00 | 0.00 | 0.00 | 0.00 |
| 8 | Perinthalmanna | Hard Rock | 28203.00 | 1000.00 | 0.00 | 27203.00 | 0.00 | 0.00 | 0.00 |
| 9 | Perumpadappu | Alluvial | 5899.00 | 0.00 | 0.00 | 5899.00 | 0.00 | 0.00 | 0.00 |
| 10 | Ponnani | Alluvial | 9706.00 | 0.00 | 0.00 | 9706.00 | 0.00 | 1500.00 | 0.00 |
| 11 | Thanur | Hard Rock | 12756.00 | 0.00 | 0.00 | 12756.00 | 0.00 | 1500.00 | 0.00 |
| 12 | Tirur | Alluvial | 11105.00 | 0.00 | 0.00 | 11105.00 | 0.00 | 2000.00 | 0.00 |
| 13 | Thriurangadi | Hard Rock | 13001.00 | 0.00 | 0.00 | 13001.00 | 0.00 | 0.00 | 0.00 |
| 14 | Vengara | Hard Rock | 14845.00 | 0.00 | 0.00 | 14845.00 | 0.00 | 0.00 | 0.00 |
| 15 | Wandoor | Hard Rock | 25308.00 | 10000.00 | 0.00 | 15308.00 | 0.00 | 0.00 | 0.00 |
| | **Total (ha)** | | **354981.00** | **100800.00** | **0.00** | **254181.00** | **0.00** | **5000.00** | **0.00** |
| | **Total (Sq.km)** | | **3549.81** | **1008.00** | **0.00** | **2541.81** | **0.00** | **50.00** | **0.00** |

| **District** | | **PALAKKAD** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Alathur | Hard Rock | 31447.00 | 8000.00 | 0.00 | 23447.00 | 0.00 | 0.00 | 0.00 |
| 2 | Attappadi | Hard Rock | 70323.00 | 48000.00 | 0.00 | 22323.00 | 0.00 | 0.00 | 0.00 |
| 3 | Chittur | Hard Rock | 31468.00 | 0.00 | 0.00 | 31468.00 | 0.00 | 0.00 | 0.00 |
| 4 | Kollengode | Hard Rock | 21411.00 | 1500.00 | 0.00 | 19911.00 | 0.00 | 0.00 | 0.00 |
| 5 | Kuzhalmannam | Hard rock | 19212.00 | 0.00 | 0.00 | 19212.00 | 0.00 | 0.00 | 0.00 |
| 6 | Malampuzha | Hard rock | 40394.00 | 20000.00 | 0.00 | 20394.00 | 0.00 | 0.00 | 0.00 |
| 7 | Mannarkkad | Hard rock | 45535.00 | 16000.00 | 0.00 | 29535.00 | 0.00 | 0.00 | 0.00 |
| 8 | Nenmara | Hard Rock | 79847.00 | 55894.00 | 0.00 | 23953.00 | 0.00 | 0.00 | 0.00 |
| 9 | Ottappalam | Hard rock | 27306.00 | 0.00 | 0.00 | 27306.00 | 0.00 | 0.00 | 0.00 |
| 10 | Palakkad | Hard Rock | 20706.00 | 0.00 | 0.00 | 20706.00 | 0.00 | 0.00 | 0.00 |
| 11 | Pattambi | Hard Rock | 20744.00 | 0.00 | 0.00 | 20744.00 | 0.00 | 0.00 | 0.00 |
| 12 | Sreekrishnapuram | Hard Rock | 22013.00 | 0.00 | 0.00 | 22013.00 | 0.00 | 0.00 | 0.00 |
| 13 | Thrithala | Hard rock | 17216.00 | 0.00 | 0.00 | 17216.00 | 0.00 | 0.00 | 0.00 |
| | **Total (ha)** | | **447622.00** | **149394.00** | **0.00** | **299728.00** | **0.00** | **0.00** | **0.00** |
| | **Total (Sq.km)** | | **4476.22** | **1493.94** | **0.00** | **2997.28** | **0.00** | **0.00** | **0.00** |

| **District** | | **PATHANAMTHITTA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** | | | | | | |
| | | | (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Elanthoor | Hard Rock | 10622.00 | 0.00 | 0.00 | 10622.00 | 0.00 | 0.00 | 0.00 |
| 2 | Koipuram | Hard Rock | 12367.00 | 0.00 | 0.00 | 12367.00 | 0.00 | 0.00 | 0.00 |
| 3 | Konni | Hard Rock | 86477.00 | 60500.00 | 0.00 | 25977.00 | 0.00 | 0.00 | 0.00 |
| 4 | Mallappally | Hard Rock | 15418.00 | 0.00 | 0.00 | 15418.00 | 0.00 | 0.00 | 0.00 |
| 5 | Pandalam | Hard Rock | 11641.00 | 0.00 | 0.00 | 11641.00 | 0.00 | 0.00 | 0.00 |
| 6 | Parakode | Hard Rock | 27152.00 | 4510.00 | 0.00 | 22642.00 | 0.00 | 0.00 | 0.00 |
| 7 | Pulikeezh | Alluvium | 6866.00 | 0.00 | 0.00 | 6866.00 | 0.00 | 0.00 | 0.00 |
| 8 | Ranni | Hard Rock | 92132.00 | 68000.00 | 0.00 | 24132.00 | 0.00 | 5000.00 | 0.00 |
| **Total (ha)** | | | **262675.00** | **133010.00** | **0.00** | **129665.00** | **0.00** | **5000.00** | **0.00** |
| **Total (Sq.km)** | | | **2626.75** | **1330.10** | **0.00** | **1296.65** | **0.00** | **50.00** | **0.00** |

| **District** | | **THIRUVANANTHAPURAM** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Athiyannur | Hard Rock | 7629.00 | 0.00 | 0.00 | 7629.00 | 0.00 | 0.00 | 0.00 |
| 2 | Chirayinkil | Hard Rock | 10151.00 | 0.00 | 0.00 | 10151.00 | 0.00 | 0.00 | 0.00 |
| 3 | Kilimanoor | Hard Rock | 17977.00 | 0.00 | 0.00 | 17977.00 | 0.00 | 0.00 | 0.00 |
| 4 | Nedumangad | Hard Rock | 15603.00 | 0.00 | 0.00 | 15603.00 | 0.00 | 0.00 | 0.00 |
| 5 | Nemom | Hard Rock | 33727.00 | 0.00 | 0.00 | 33727.00 | 0.00 | 0.00 | 0.00 |
| 6 | Parassala | Hard Rock | 8221.00 | 0.00 | 0.00 | 8221.00 | 0.00 | 0.00 | 0.00 |
| 7 | Perumkadavila | Hard Rock | 28538.00 | 1500.00 | 0.00 | 27038.00 | 0.00 | 0.00 | 0.00 |
| 8 | Pothencode | Alluvium | 7415.00 | 0.00 | 0.00 | 7415.00 | 0.00 | 0.00 | 0.00 |
| 9 | Vamanapuram | Hard Rock | 42115.00 | 15000.00 | 0.00 | 27115.00 | 0.00 | 0.00 | 0.00 |
| 10 | Varkala | Alluvial | 10209.00 | 0.00 | 0.00 | 10209.00 | 0.00 | 0.00 | 0.00 |
| 11 | Vellanad | Hard Rock | 37212.00 | 8000.00 | 0.00 | 29212.00 | 0.00 | 0.00 | 0.00 |
| | **Total (ha)** | | **218797.00** | **24500.00** | **0.00** | **194297.00** | **0.00** | **0.00** | **0.00** |
| | **Total (Sq.km)** | | **2187.97** | **245.00** | **0.00** | **1942.97** | **0.00** | **0.00** | **0.00** |

| **District** | | **THRISSUR** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Anthikkad | Alluvial | 9904.00 | 0.00 | 0.00 | 9904.00 | 0.00 | 0.00 | 0.00 |
| 2 | Chalakkudy | Hard Rock | 61069.00 | 40700.00 | 0.00 | 20369.00 | 0.00 | 0.00 | 0.00 |
| 3 | Chavakkad | Alluvial | 9917.00 | 0.00 | 0.00 | 9917.00 | 0.00 | 2500.00 | 0.00 |
| 4 | Cherpu | Hard Rock | 8448.00 | 0.00 | 0.00 | 8448.00 | 0.00 | 0.00 | 0.00 |
| 5 | Chowannur | Hard Rock | 17774.00 | 0.00 | 0.00 | 17774.00 | 0.00 | 0.00 | 0.00 |
| 6 | Iringalakkuda | Hard Rock | 12073.00 | 0.00 | 0.00 | 12073.00 | 0.00 | 0.00 | 0.00 |
| 7 | Kodakara | Hard Rock | 29812.00 | 9000.00 | 0.00 | 20812.00 | 0.00 | 0.00 | 0.00 |
| 8 | Mala | Hard Rock | 12713.00 | 0.00 | 0.00 | 12713.00 | 0.00 | 0.00 | 0.00 |
| 9 | Mathilakom | Alluvial | 14635.00 | 0.00 | 0.00 | 14635.00 | 0.00 | 2500.00 | 0.00 |
| 10 | Mullassery | Alluvial | 6585.00 | 0.00 | 0.00 | 6585.00 | 0.00 | 1500.00 | 0.00 |
| 11 | Ollukkara | Hard Rock | 31572.00 | 11000.00 | 0.00 | 20572.00 | 0.00 | 0.00 | 0.00 |
| 12 | Pazhayannur | Hard Rock | 23695.00 | 0.00 | 0.00 | 23695.00 | 0.00 | 0.00 | 0.00 |
| 13 | Puzhakkal | Hard Rock | 22892.00 | 0.00 | 0.00 | 22892.00 | 0.00 | 0.00 | 0.00 |
| 14 | Thalikkulam | Alluvial | 6568.00 | 0.00 | 0.00 | 6568.00 | 0.00 | 2000.00 | 0.00 |
| 15 | Vellangallur | Hard Rock | 11069.00 | 0.00 | 0.00 | 11069.00 | 0.00 | 0.00 | 0.00 |
| 16 | Vadakkancherry | Hard Rock | 23659.00 | 5000.00 | 0.00 | 18659.00 | 0.00 | 0.00 | 0.00 |
| | **Total (ha)** | | **302385.00** | **65700.00** | **0.00** | **236685.00** | **0.00** | **8500.00** | **0.00** |
| | **Total (Sq.km)** | | **3023.85** | **657.00** | **0.00** | **2366.85** | **0.00** | **85.00** | **0.00** |

| **District** | | **WAYANAD** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Name of Ground water Assessment Unit** | **Type of rock formation** | **Areal extent** (in hectares) | | | | | | |
| | | | **Total Geographical Area** | **Hilly Area** | **Ground Water Recharge Worthy Area** | | | **Shallow Water Table Area** | **Flood Prone Area** |
| | | | | | **Command area** | **Non-command area** | **Poor ground water quality area** | | |
| 1 | Kalpetta | Hard Rock | 58351.00 | 17000.00 | 0.00 | 41351.00 | 0.00 | 0.00 | 0.00 |
| 2 | Mananthavady | Hard Rock | 66651.00 | 25600.00 | 0.00 | 41051.00 | 0.00 | 0.00 | 0.00 |
| 3 | Panamaram | Hard Rock | 35086.00 | 11800.00 | 0.00 | 23286.00 | 0.00 | 0.00 | 0.00 |
| 4 | Sulthanbathery | Hard Rock | 52974.00 | 15900.00 | 0.00 | 37074.00 | 0.00 | 0.00 | 0.00 |
| | **Total (ha)** | | **160088.00** | **54400.00** | **0.00** | **105688.00** | **0.00** | **0.00** | **0.00** |
| | **Total (Sq.km)** | | **1600.88** | **544.00** | **0.00** | **1056.88** | **0.00** | **0.00** | **0.00** |

# ANNEXURE III B

# DATA VARIABLES USED IN THE ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES OF KERALA (2017)

| **State** | | **KERALA** | | | | |
|---|---|---|---|---|---|---|
| **District** | | **ALAPPUZHA** | | | | |
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/ Non-command/ Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Ambalappuzha | Non-Command | 2251 | 2.15 | 1.31 | 0.84 |
| 2 | Aryad | Non-Command | 2251 | 2.79 | 1.96 | 0.83 |
| 3 | Bharanikkavu | Non-Command | 2251 | 8.43 | 6.72 | 1.71 |
| 4 | Champakkulam | Non-Command | 2251 | 1.4 | 0.67 | 0.73 |
| 5 | Chengannur | Non-Command | 2251 | 4.88 | 3.72 | 1.16 |
| 6 | Harippad | Non-Command | 2251 | 2.17 | 1.11 | 1.06 |
| 7 | Kanjikkuzhy | Non-Command | 2251 | 1.85 | 1.1 | 0.75 |
| 8 | Mavelikkara | Non-Command | 2251 | 3.73 | 2.26 | 1.47 |
| 9 | Muthukulam | Non-Command | 2251 | 1.83 | 1.11 | 0.72 |
| 10 | Pattanakkad | Non-Command | 2251 | 2.29 | 1.21 | 1.08 |
| 11 | Thycattussery | Non-Command | 2251 | 2.16 | 1.32 | 0.84 |
| 12 | Veliyanad | Non-Command | 2251 | 0.99 | 0.75 | 0.24 |
| | **Total** | **Non-Command** | **2251** | **2.89** | **1.94** | **0.95** |

| **State** | | **KERALA** | | | | |
|---|---|---|---|---|---|---|
| **District** | | **ERNAKULAM** | | | | |
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Alangad | Non-Command | 2984 | 2.52 | 1.3 | 1.22 |
| 2 | Angamaly | Non-Command | 2984 | 6.85 | 5.66 | 1.19 |
| 3 | Edappally | Non-Command | 2984 | 1.85 | 1.38 | 0.47 |
| 4 | Koovappady | Non-Command | 2984 | 5.99 | 5.03 | 0.96 |
| 5 | Kothamangalam | Non-Command | 2984 | 4.73 | 2.92 | 1.81 |
| 6 | Moovattupuzha | Non-Command | 2984 | 6.25 | 4.33 | 1.92 |
| 7 | Mulamthuruthy | Non-Command | 2984 | 5.38 | 3.89 | 1.49 |
| 8 | Palluruthy | Non-Command | 2984 | 1.39 | 0.68 | 0.71 |
| 9 | Pampakkuda | Non-Command | 2984 | 5.82 | 4.96 | 0.86 |
| 10 | Parakkadavu | Non-Command | 2984 | 4.89 | 3.9 | 0.99 |
| 11 | Paravoor | Non-Command | 2984 | 1.465 | 1 | 0.465 |
| 12 | Vadavukodu | Non-Command | 2984 | 4.43 | 3.78 | 0.65 |
| 13 | Vazhakkulam | Non-Command | 2984 | 9.2 | 8.03 | 1.17 |
| 14 | Vypeen | Non-Command | 2984 | 1.21 | 0.85 | 0.36 |
| | **Total** | **Non-Command** | **2984** | **4.43** | **3.41** | **1.02** |

| **District** | | **IDUKKI** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Adimali | Non-Command | 3065 | 7.41 | 5.76 | 1.65 |
| 2 | Arudai | Non-Command | 3065 | 4.05 | 2.64 | 1.41 |
| 3 | Devikulam | Non-Command | 3065 | 2.61 | 1.89 | 0.72 |
| 4 | Elam Desom | Non-Command | 3065 | 5.21 | 3.4 | 1.81 |
| 5 | Idukki | Non-Command | 3065 | 4.61 | 3.46 | 1.15 |
| 6 | Kattappana | Non-Command | 3065 | 5.31 | 3.86 | 1.45 |
| 7 | Nedumkandam | Non-Command | 3065 | 6.99 | 5.64 | 1.35 |
| 8 | Thodupuzha | Non-Command | 3065 | 4.76 | 3.28 | 1.48 |
| **TOTAL** | | **Non-Command** | **3065** | **5.12** | **3.74** | **1.38** |

| **District** | | **KANNUR** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Edakkad | Non-Command | 3235 | 7.04 | 5.24 | 1.8 |
| 2 | Irikkur | Non-Command | 3235 | 7.86 | 5.83 | 2.03 |
| 3 | Iritty | Non-Command | 3235 | 7.73 | 6.05 | 1.68 |
| 4 | Kallyasseri | Non-Command | 3235 | 9 | 6.85 | 2.15 |
| 5 | Kannur | Non-Command | 3235 | 7.95 | 6.11 | 1.84 |
| 6 | Kuthuparamba | Non-Command | 3235 | 7.61 | 5.62 | 1.99 |
| 7 | Panur | Non-Command | 3235 | 7.05 | 5.45 | 1.6 |
| 8 | Payyannur | Non-Command | 3235 | 8.81 | 7.14 | 1.67 |
| 9 | Peravoor | Non-Command | 3235 | 6.78 | 5.75 | 1.03 |
| 10 | Taliparamba | Non-Command | 3235 | 12.03 | 10.15 | 1.88 |
| 11 | Thalassery | Non-Command | 3235 | 8.54 | 6.51 | 2.03 |
| **Total** | | **Non-Command** | **3235** | **8.22** | **6.43** | **1.79** |

| **District** | | **KASARGOD** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command /Non-command /Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Kanhangad | Non-Command | 3034 | 9.32 | 7.41 | 1.91 |
| 2 | Karadka | Non-Command | 3034 | 11.6 | 9.76 | 1.84 |
| 3 | Kasaragod | Non-Command | 3034 | 14.41 | 11.72 | 2.69 |
| 4 | Manjeswar | Non-Command | 3034 | 11.46 | 8.41 | 3.05 |
| 5 | Nileswaram | Non-Command | 3034 | 7.97 | 5.86 | 2.11 |
| 6 | Parappa | Non-Command | 3034 | 7.51 | 6.68 | 0.83 |
| | **Total** | **Non-Command** | **3034** | **10.38** | **8.31** | **2.07** |

| **District** | | **KOLLAM** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Anchal | Non-Command | 2222 | 8.1 | 5.88 | 2.22 |
| 2 | Chadayamangalam | Non-Command | 2222 | 7.85 | 6.63 | 1.22 |
| 3 | Chavara | Non-Command | 2222 | 3.32 | 2.54 | 0.78 |
| 4 | Chittumala | Non-Command | 2222 | 10.48 | 8.71 | 1.77 |
| 5 | Ithikkara | Non-Command | 2222 | 10.76 | 8.69 | 2.07 |
| 6 | Kottarakkara | Non-Command | 2222 | 10.78 | 8.93 | 1.85 |
| 7 | Mukhathala | Non-Command | 2222 | 7.17 | 5.69 | 1.48 |
| 8 | Oachira | Non-Command | 2222 | 4.22 | 3.04 | 1.18 |
| 9 | Pathanapuram | Non-Command | 2222 | 8.51 | 6.54 | 1.97 |
| 10 | Sasthamkotta | Non-Command | 2222 | 8.94 | 7.16 | 1.78 |
| 11 | Vettikkavala | Non-Command | 2222 | 6.7 | 4.64 | 2.06 |
| **Total** | | **Non-Command** | **2222** | **7.89** | **6.22** | **1.67** |

| **District** | | **KOTTAYAM** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Erattupetta | Non-Command | 2869 | 4.95 | 3.32 | 1.63 |
| 2 | Ettumanoor | Non-Command | 2869 | 5.89 | 3.92 | 1.97 |
| 3 | Kaduthuruthy | Non-Command | 2869 | 5.84 | 4.41 | 1.43 |
| 4 | Kanjirappally | Non-Command | 2869 | 6.61 | 4.79 | 1.82 |
| 5 | Lalam | Non-Command | 2869 | 6.21 | 4.5 | 1.71 |
| 6 | Madappally | Non-Command | 2869 | 7.71 | 5.71 | 2 |
| 7 | Pallom | Non-Command | 2869 | 6.15 | 4.65 | 1.5 |
| 8 | Pampady | Non-Command | 2869 | 5.52 | 3.88 | 1.64 |
| 9 | Uzhavoor | Non-Command | 2869 | 4.78 | 2.81 | 1.97 |
| 10 | Vaikom | Non-Command | 2869 | 3.54 | 2.09 | 1.45 |
| 11 | Vazhoor | Non-Command | 2869 | 5.66 | 4.46 | 1.2 |
| **Total** | | **Non-Command** | **2869** | **5.71** | **4.05** | **1.67** |

| **District** | | **KOZHIKODE** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Balussery | Non-Command | 3104 | 4.77 | 3.78 | 0.99 |
| 2 | Chelannur | Non-Command | 3104 | 5.53 | 3.56 | 1.97 |
| 3 | Koduvally | Non-Command | 3104 | 4.37 | 3.42 | 0.95 |
| 4 | Kozhikode | Non-Command | 3104 | 7.23 | 4.87 | 2.36 |
| 5 | Kunnamangalam | Non-Command | 3104 | 8.02 | 6.42 | 1.6 |
| 6 | Kunnummal | Non-Command | 3104 | 5.3 | 4.74 | 0.56 |
| 7 | Melady | Non-Command | 3104 | 4.5 | 2.89 | 1.61 |
| 8 | Panthalayani | Non-Command | 3104 | 4.71 | 3.03 | 1.68 |
| 9 | Perambra | Non-Command | 3104 | 5.47 | 4.39 | 1.08 |
| 10 | Thodannur | Non-Command | 3104 | 5.69 | 4.43 | 1.26 |
| 11 | Tuneri | Non-Command | 3104 | 5.7 | 4.41 | 1.29 |
| 12 | Vadakara | Non-Command | 3104 | 4.9 | 3.22 | 1.68 |
| **Total** | | **Non-Command** | **3104** | **5.57** | **4.18** | **1.40** |

| **District** | | **MALAPPURAM** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Areacode | Non-Command | 2471 | 8.64 | 7.44 | 1.2 |
| 2 | Kalikavu | Non-Command | 2471 | 6.42 | 5.18 | 1.24 |
| 3 | Kondotty | Non-Command | 2471 | 7 | 4.99 | 2.01 |
| 4 | Kuttippuram | Non-Command | 2471 | 8.49 | 6.99 | 1.5 |
| 5 | Malappuram | Non-Command | 2471 | 7.59 | 6.08 | 1.51 |
| 6 | Mankada | Non-Command | 2471 | 8.39 | 6.28 | 2.11 |
| 7 | Nilamboor | Non-Command | 2471 | 8.7 | 6.88 | 1.82 |
| 8 | Perinthalmanna | Non-Command | 2471 | 7.79 | 6.55 | 1.24 |
| 9 | Perumpadappu | Non-Command | 2471 | 7.01 | 4.64 | 2.37 |
| 10 | Ponnani | Non-Command | 2471 | 9.94 | 7.89 | 2.05 |
| 11 | Tanur | Non-Command | 2471 | 9.19 | 6.63 | 2.56 |
| 12 | Tirur | Non-Command | 2471 | 6.14 | 4.31 | 1.83 |
| 13 | Tirurangadi | Non-Command | 2471 | 9.77 | 8.12 | 1.65 |
| 14 | Vengara | Non-Command | 2471 | 13.57 | 11.43 | 2.14 |
| 15 | Wandoor | Non-Command | 2471 | 8.18 | 6.14 | 2.04 |
| | **Total** | **Non-Command** | **2471** | **8.11** | **6.32** | **1.78** |

| **District** | | **PALAKKAD** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Alathur | Non-Command | 1976 | 5 | 2.84 | 2.16 |
| 2 | Attappadi | Non-Command | 1976 | 6.65 | 5.4 | 1.25 |
| 3 | Chittur | Non-Command | 1976 | 6.58 | 4.33 | 2.25 |
| 4 | Kollengode | Non-Command | 1976 | 6.27 | 4.06 | 2.21 |
| 5 | Kuzhalmannam | Non-Command | 1976 | 5.91 | 3.48 | 2.43 |
| 6 | Malampuzha | Non-Command | 1976 | 5.55 | 3.42 | 2.13 |
| 7 | Mannarkkad | Non-Command | 1976 | 6.75 | 5.07 | 1.68 |
| 8 | Nenmara | Non-Command | 1976 | 5.73 | 3.86 | 1.87 |
| 9 | Ottappalam | Non-Command | 1976 | 7.71 | 5.72 | 1.99 |
| 10 | Palakkad | Non-Command | 1976 | 4.62 | 2.71 | 1.91 |
| 11 | Pattambi | Non-Command | 1976 | 7.38 | 5.12 | 2.26 |
| 12 | Sreekrishnapuram | Non-Command | 1976 | 7.04 | 5.71 | 1.33 |
| 13 | Thrithala | Non-Command | 1976 | 8.68 | 7.04 | 1.64 |
| | **Total** | **Non-Command** | **1976** | **6.45** | **4.52** | **1.93** |

| **District** | | **PATHANAMTHITTA** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/ Non-command/ Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Elanthoor | Non-Command | 2569 | 5.02 | 3.83 | 1.19 |
| 2 | Koipuram | Non-Command | 2569 | 6.23 | 5.13 | 1.1 |
| 3 | Konni | Non-Command | 2569 | 6.61 | 5.11 | 1.5 |
| 4 | Mallappally | Non-Command | 2569 | 4.85 | 3.94 | 0.91 |
| 5 | Pandalam | Non-Command | 2569 | 5.83 | 4.86 | 0.97 |
| 6 | Parakode | Non-Command | 2569 | 6.7 | 5.08 | 1.62 |
| 7 | Pulikeezh | Non-Command | 2569 | 4.28 | 3.1 | 1.18 |
| 8 | Ranni | Non-Command | 2569 | 4.79 | 3.84 | 0.95 |
| | **Total** | **Non-Command** | **2569** | **5.54** | **4.36** | **1.18** |

| **District** | | **THIRUVANANTHAPURAM** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No** | **Assessment Unit** | **Command /Non-command /Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Athiyannur | Non-Command | 1672 | 9.72 | 7.76 | 1.96 |
| 2 | Chirayinkil | Non-Command | 1672 | 8.34 | 6.1 | 2.24 |
| 3 | Kilimanoor | Non-Command | 1672 | 8.28 | 6.63 | 1.65 |
| 4 | Nedumangad | Non-Command | 1672 | 7.25 | 5.39 | 1.86 |
| 5 | Nemom | Non-Command | 1672 | 7.46 | 5.99 | 1.47 |
| 6 | Parassala | Non-Command | 1672 | 12.29 | 9.58 | 2.71 |
| 7 | Perumkadavila | Non-Command | 1672 | 6.99 | 5.19 | 1.8 |
| 8 | Pothencode | Non-Command | 1672 | 9.21 | 7.72 | 1.49 |
| 9 | Vamanapuram | Non-Command | 1672 | 7.61 | 5.16 | 2.45 |
| 10 | Varkala | Non-Command | 1672 | 14.94 | 12.46 | 2.48 |
| 11 | Vellanad | Non-Command | 1672 | 6.71 | 5.09 | 1.62 |
| | **TOTAL** | **Non-Command** | **1672** | **8.98** | **7.01** | **1.98** |

| **District** | | **THRISSUR** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command/Non-command/Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Anthikkad | Non-Command | 2521 | 5.95 | 4.77 | 1.18 |
| 2 | Chalakkudy | Non-Command | 2521 | 6.77 | 5.56 | 1.21 |
| 3 | Chavakkad | Non-Command | 2521 | 3.64 | 1.84 | 1.8 |
| 4 | Cherpu | Non-Command | 2521 | 10 | 7.95 | 2.05 |
| 5 | Chowannur | Non-Command | 2521 | 8.7 | 6.35 | 2.35 |
| 6 | Irinjalakkuda | Non-Command | 2521 | 7.31 | 5.82 | 1.49 |
| 7 | Kodakara | Non-Command | 2521 | 6.69 | 5.37 | 1.32 |
| 8 | Mala | Non-Command | 2521 | 7.96 | 5.24 | 2.72 |
| 9 | Mathilakom | Non-Command | 2521 | 2.87 | 1.72 | 1.15 |
| 10 | Mullassery | Non-Command | 2521 | 4.87 | 1.19 | 3.68 |
| 11 | Ollukkara | Non-Command | 2521 | 5.4 | 3.94 | 1.46 |
| 12 | Pazhayannur | Non-Command | 2521 | 6.41 | 4.92 | 1.49 |
| 13 | Puzhakkal | Non-Command | 2521 | 9.17 | 8.06 | 1.11 |
| 14 | Thalikkulam | Non-Command | 2521 | 3.43 | 2.18 | 1.25 |
| 15 | Vellangallur | Non-Command | 2521 | 8.88 | 7.43 | 1.45 |
| 16 | Wadakkancherry | Non-Command | 2521 | 8.34 | 5.74 | 2.6 |
| | **TOTAL** | **Non-Command** | **2521** | **6.65** | **4.88** | **1.77** |

| **District** | | **WAYANAD** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Command /Non-command /Poor GW Quality** | **Rainfall (mm)** | **Average Pre-monsoon Water level (mbgl)** | **Average Post-monsoon Water Level (mbgl)** | **Average Fluctuation (m)** |
| 1 | Kalpetta | Non-Command | 2376 | 6.42 | 5.66 | 0.76 |
| 2 | Mananthavady | Non-Command | 2376 | 8.03 | 5.83 | 2.2 |
| 3 | Panamaram | Non-Command | 2376 | 8.16 | 6.76 | 1.4 |
| 4 | Sulthanbathery | Non-Command | 2376 | 8.31 | 6.96 | 1.35 |
| | **Total** | **Non-Command** | **2376** | **7.73** | **6.30** | **1.43** |

## ANNEXURE III B (Contd.)

## DATA VARIABLES USED IN THE ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES OF KERALA (2017)

| District | | ALAPPUZHA | | | | |
|---|---|---|---|---|---|---|
| Assessment Year | | 2017 | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ Non-Command/ Poor Quality) | | No. of Structures | | |
| | | | Type of Structure | Irrigation | Domestic | Industrial |
| 1 | Ambalappuzha | Non-Command | DW | 15 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 220 | | |
| | | | STW | 381 | | |
| | | | *Others | 6130 | | |
| 2 | Aryad | Non-Command | DW | 12 | | |
| | | | DW with pump | 325 | | |
| | | | STW | 281 | | |
| | | | *Others | 6070 | | |
| 3 | Bharanikkavu | Non-Command | DW | 360 | | |
| | | | DW with pump | 610 | | |
| | | | STW | 76 | | |
| | | | *Others | 8543 | | |
| 4 | Champakkulam | Non-Command | DW | 102 | | |
| | | | DW with pump | 21 | | |
| | | | STW/BW | 26 | | |
| | | | *Others | 5671 | | |
| 5 | Chengannur | Non-Command | DW | 256 | | |
| | | | DW with pump | 1392 | | |
| | | | STW | 38 | | |
| | | | *Others | 8925 | | |
| 6 | Harippad | Non-Command | DW | 295 | | |
| | | | DW with pump | 825 | | |
| | | | STW | 355 | | |
| | | | *Others | 8313 | | |
| 7 | Kanjikkuzhy | Non-Command | DW | 12 | | |
| | | | DW with pump | 130 | | |
| | | | STW | 154 | | |
| | | | *Others | 7777 | | |
| 8 | Mavelikkara | Non-Command | DW | 362 | | |
| | | | DW with pump | 185 | | |
| | | | STW | 118 | | |
| | | | *Others | 7976 | | |
| 9 | Muthukulam | Non-Command | DW | 72 | | |
| | | | DW with pump | 358 | | |
| | | | STW | 292 | | |
| | | | *Others | 8173 | | |
| 10 | Pattanakkad | Non-Command | DW | 15 | | |
| | | | DW with pump | 68 | | |
| | | | STW | 125 | | |
| | | | *Others | 9609 | | |
| 11 | Thycattussery | Non-Command | DW | 29 | | |
| | | | DW with pump | 159 | | |
| | | | STW | 80 | | |
| | | | *Others | 4713 | | |
| 12 | Veliyanad | Non-Command | DW | 21 | | |
| | | | DW with pump | 235 | | |
| | | | STW | 1 | | |
| | | | *Others | 2061 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| District | | ERNAKULAM | | | | |
|---|---|---|---|---|---|---|
| Assessment Year | | 2017 | | No. of Structures | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ non-Command/ poor quality) | Type of Structure | Irrigation | Domestic | Industrial |
| 1 | Alangad | Non - Command | DW | 2 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 918 | | |
| | | | STW | 81 | | |
| | | | *Others | 5452 | | |
| 2 | Angamaly | Non - Command | DW | 4 | | |
| | | | DW with pump | 1662 | | |
| | | | STW | 142 | | |
| | | | *Others | 6729 | | |
| 3 | Edappally | Non - Command | DW | 63 | | |
| | | | DW with pump | 187 | | |
| | | | STW | 16 | | |
| | | | *Others | 4367 | | |
| 4 | Koovappady | Non - Command | DW | 3 | | |
| | | | DW with pump | 1886 | | |
| | | | STW | 72 | | |
| | | | *Others | 6976 | | |
| 5 | Kothamangalam | Non - Command | DW | 58 | | |
| | | | DW with pump | 1566 | | |
| | | | STW | 92 | | |
| | | | *Others | 8447 | | |
| 6 | Moovattupuzha | Non - Command | DW | 0 | | |
| | | | DW with pump | 2280 | | |
| | | | STW | 91 | | |
| | | | *Others | 6922 | | |
| 7 | Mulamthuruthy | Non - Command | DW | 7 | | |
| | | | DW with pump | 1114 | | |
| | | | STW | 415 | | |
| | | | *Others | 6626 | | |
| 8 | Palluruthy | Non - Command | DW | 3 | | |
| | | | DW with pump | 240 | | |
| | | | STW | 4 | | |
| | | | *Others | 2681 | | |
| 9 | Pampakkuda | Non - Command | DW | 21 | | |
| | | | DW with pump | 1586 | | |
| | | | STW | 58 | | |
| | | | *Others | 5191 | | |
| 10 | Parakkadavu | Non - Command | DW | 0 | | |
| | | | DW with pump | 1992 | | |
| | | | STW | 148 | | |
| | | | *Others | 7614 | | |

| **District** | | **ERNAKULAM** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | **No. of Structures** | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Type of Structure** | **Irrigation** | **Domestic** | **Industrial** |
| 11 | Paravoor | Non - Command | DW | 0 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 1155 | | |
| | | | STW | 11 | | |
| | | | *Others | 6716 | | |
| 12 | Vadavukodu | Non - Command | DW | 12 | | |
| | | | DW with pump | 1194 | | |
| | | | STW | 52 | | |
| | | | *Others | 4632 | | |
| 13 | Vazhakkulam | Non - Command | DW | 0 | | |
| | | | DW with pump | 2056 | | |
| | | | STW | 60 | | |
| | | | Others | 9105 | | |
| 14 | Vypeen | Non - Command | DW | 7 | | |
| | | | DW with pump | 125 | | |
| | | | STW | 0 | | |
| | | | Others | 460 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| **District** | | **IDUKKI** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | | **No. of Structures** | | |
| | | | **Type of Structure** | **Irrigation** | **Domestic** | **Industrial** |
| 1 | Adimali | Non-command | DW | 193 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 1052 | | |
| | | | STW | 650 | | |
| | | | *Others (pl. specify) | 6054 | | |
| 2 | Azhutha | Non-command | DW | 120 | | |
| | | | DW with pump | 331 | | |
| | | | STW | 850 | | |
| | | | Others (pl. specify) | 8755 | | |
| 3 | Devikulam | Non-command | DW | 160 | | |
| | | | DW with pump | 371 | | |
| | | | STW | 610 | | |
| | | | Others (pl. specify) | 7387 | | |
| 4 | Elam Desom | Non-command | DW | 377 | | |
| | | | DW with pump | 700 | | |
| | | | STW | 770 | | |
| | | | Others (pl. specify) | 6074 | | |
| 5 | Idukki | Non-command | DW | 203 | | |
| | | | DW with pump | 473 | | |
| | | | STW | 720 | | |
| | | | Others (pl. specify) | 6759 | | |
| 6 | Kattappana | Non-command | DW | 184 | | |
| | | | DW with pump | 1105 | | |
| | | | STW | 1655 | | |
| | | | Others (pl. specify) | 9338 | | |
| 7 | Nedumkandam | Non-command | DW | 197 | | |
| | | | DW with pump | 690 | | |
| | | | STW | 1855 | | |
| | | | Others (pl. specify) | 8159 | | |
| 8 | Thodupuzha | Non-command | DW | 301 | | |
| | | | DW with pump | 843 | | |
| | | | STW | 700 | | |
| | | | Others (pl. specify) | 3729 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| **District** | | **KANNUR** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | | **No.of Structures** | | |
| | | | **Type of Structure** | **Irrigation** | **Domestic** | **Industrial** |
| 1 | Edakkad | Non-command | DW | 42 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 967 | | |
| | | | STW | 66 | | |
| | | | *Others (pl. specify) | 5017 | | |
| 2 | Irikkur | Non-command | DW | 62 | | |
| | | | DW with pump | 985 | | |
| | | | STW | 290 | | |
| | | | Others (pl. specify) | 12005 | | |
| 3 | Iritty | Non-command | DW | 112 | | |
| | | | DW with pump | 1320 | | |
| | | | STW | 9 | | |
| | | | Others (pl. specify) | 14688 | | |
| 4 | Kallyasseri | Non-command | DW | 25 | | |
| | | | DW with pump | 1100 | | |
| | | | STW | 118 | | |
| | | | Others (pl. specify) | 10251 | | |
| 4 | Kannur | Non-command | DW | 12 | | |
| | | | DW with pump | 2514 | | |
| | | | STW | 58 | | |
| | | | Others (pl. specify) | 15004 | | |
| 5 | Kuthuparamba | Non-command | DW | 48 | | |
| | | | DW with pump | 955 | | |
| | | | STW | 136 | | |
| | | | Others (pl. specify) | 8286 | | |
| 6 | Panur | Non-command | DW | 20 | | |
| | | | DW with pump | 764 | | |
| | | | STW | 98 | | |
| | | | Others (pl. specify) | 6843 | | |
| 6 | Payyannur | Non-command | DW | 48 | | |
| | | | DW with pump | 698 | | |
| | | | STW | 262 | | |
| | | | Others (pl. specify) | 7060 | | |
| 7 | Peravoor | Non-command | DW | 96 | | |
| | | | DW with pump | 1200 | | |
| | | | STW | 119 | | |
| | | | Others (pl. specify) | 8464 | | |
| 8 | Taliparamba | Non-command | DW | 28 | | |
| | | | DW with pump | 658 | | |
| | | | STW | 201 | | |
| | | | Others (pl. specify) | 16825 | | |
| 9 | Thalassery | Non-command | DW | 18 | | |
| | | | DW with pump | 674 | | |
| | | | STW | 31 | | |
| | | | Others (pl. specify) | 6282 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| **District** | | **KASARGOD** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | | **No.of Structures** | | |
| | | | **Type of Structure** | **Irrigation** | **Domestic** | **Industrial** |
| 1 | Kanhangad | Non-command | DW | 130 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 2700 | | |
| | | | STW | 451 | | |
| | | | *Others (pl. specify) | 7573 | | |
| 2 | Karadka | Non-command | DW | 725 | | |
| | | | DW with pump | 7750 | | |
| | | | STW | 397 | | |
| | | | *Others (pl. specify) | 6507 | | |
| 3 | Kasaragod | Non-command | DW | 552 | | |
| | | | DW with pump | 4802 | | |
| | | | STW | 541 | | |
| | | | Others (pl. specify) | 8307 | | |
| 4 | Manjeswar | Non-command | DW | 1145 | | |
| | | | DW with pump | 6325 | | |
| | | | STW | 309 | | |
| | | | Others (pl. specify) | 7474 | | |
| 5 | Nileswaram | Non-command | DW | 79 | | |
| | | | DW with pump | 1895 | | |
| | | | STW | 321 | | |
| | | | Others (pl. specify) | 7539 | | |
| 6 | Parappa | Non-command | DW | 345 | | |
| | | | DW with pump | 6485 | | |
| | | | STW | 361 | | |
| | | | Others (pl. specify) | 8610 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| District | | KOLLAM | | | | |
|---|---|---|---|---|---|---|
| Assessment Year | | 2017 | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ non-Command/ poor quality) | | No.of Structures | | |
| | | | Structure | Irrigation | Domestic | Industrial |
| 1 | Anchal | Non-command | DW | 344 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 742 | | |
| | | | STW | 36 | | |
| | | | *Others (pl. specify) | 14415 | | |
| 2 | Chadayamangalam | Non-command | DW | 365 | | |
| | | | DW with pump | 740 | | |
| | | | STW | 47 | | |
| | | | Others (pl. specify) | 13049 | | |
| 3 | Chavara | Non-command | DW | 0 | | |
| | | | DW with pump | 279 | | |
| | | | STW | 102 | | |
| | | | Others (pl. specify) | 8952 | | |
| 4 | Chittumala | Non-command | DW | 433 | | |
| | | | DW with pump | 882 | | |
| | | | STW | 119 | | |
| | | | Others (pl. specify) | 9523 | | |
| 5 | Ithikkara | Non-command | DW | 205 | | |
| | | | DW with pump | 510 | | |
| | | | STW | 55 | | |
| | | | Others (pl. specify) | 8530 | | |
| 6 | Kottarakkara | Non-command | DW | 195 | | |
| | | | DW with pump | 566 | | |
| | | | STW | 107 | | |
| | | | Others (pl. specify) | 9916 | | |
| 7 | Mukhathala | Non-command | DW | 161 | | |
| | | | DW with pump | 417 | | |
| | | | STW | 126 | | |
| | | | Others (pl. specify) | 11403 | | |
| 8 | Oachira | Non-command | DW | 89 | | |
| | | | DW with pump | 577 | | |
| | | | STW | 92 | | |
| | | | Others (pl. specify) | 13414 | | |
| 9 | Pathanapuram | Non-command | DW | 289 | | |
| | | | DW with pump | 859 | | |
| | | | STW | 88 | | |
| | | | Others (pl. specify) | 9929 | | |
| 10 | Sasthamkotta | Non-command | DW | 271 | | |
| | | | DW with pump | 580 | | |
| | | | STW | 73 | | |
| | | | Others (pl. specify) | 10111 | | |
| 11 | Vettikkavala | Non-command | DW | 97 | | |
| | | | DW with pump | 660 | | |
| | | | STW | 89 | | |
| | | | Others (pl. specify) | 11344 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| **District** | | **KOTTAYAM** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | | **No.of Structures** | | |
| | | | **Type of Structure** | **Irrigation** | **Domestic** | **Industrial** |
| 1 | Erattupetta | Non-command | DW | 32 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 691 | | |
| | | | STW | 54 | | |
| | | | *Others (pl. specify) | 5768 | | |
| 2 | Ettumanoor | Non-command | DW | 89 | | |
| | | | DW with pump | 275 | | |
| | | | STW | 46 | | |
| | | | Others (pl. specify) | 10049 | | |
| 3 | Kaduthuruthy | Non-command | DW | 12 | | |
| | | | DW with pump | 1198 | | |
| | | | STW | 59 | | |
| | | | Others (pl. specify) | 7722 | | |
| 4 | Kanjirappally | Non-command | DW | 15 | | |
| | | | DW with pump | 689 | | |
| | | | STW | 107 | | |
| | | | Others (pl. specify) | 9916 | | |
| 5 | Lalam | Non-command | DW | 21 | | |
| | | | DW with pump | 348 | | |
| | | | STW | 84 | | |
| | | | Others (pl. specify) | 4838 | | |
| 6 | Madappally | Non-command | DW | 162 | | |
| | | | DW with pump | 670 | | |
| | | | STW | 50 | | |
| | | | Others (pl. specify) | 10049 | | |
| 7 | Pallom | Non-command | DW | 24 | | |
| | | | DW with pump | 346 | | |
| | | | STW | 123 | | |
| | | | Others (pl. specify) | 12906 | | |
| 8 | Pampady | Non-command | DW | 112 | | |
| | | | DW with pump | 45 | | |
| | | | STW | 232 | | |
| | | | Others (pl. specify) | 6262 | | |
| 9 | Uzhavoor | Non-command | DW | 210 | | |
| | | | DW with pump | 456 | | |
| | | | STW | 67 | | |
| | | | Others (pl. specify) | 6953 | | |
| 10 | Vaikom | Non-command | DW | 10 | | |
| | | | DW with pump | 482 | | |
| | | | STW | 30 | | |
| | | | Others (pl. specify) | 4779 | | |
| 11 | Vazhoor | Non-command | DW | 159 | | |
| | | | DW with pump | 475 | | |
| | | | STW | 68 | | |
| | | | Others (pl. specify) | 5805 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| District | | KOZHIKODE | | | | |
|---|---|---|---|---|---|---|
| Assessment Year | | 2017 | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ non-Command/ poor quality) | | No.of Structures | | |
| | | | Structure | Irrigation | Domestic | Industrial |
| 1 | Balussery | Non-command | DW | 0 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 1607 | | |
| | | | STW | 182 | | |
| | | | *Others (pl. specify) | 10682 | | |
| 2 | Chelannur | Non-command | DW | 0 | | |
| | | | DW with pump | 692 | | |
| | | | STW | 76 | | |
| | | | Others (pl. specify) | 9160 | | |
| 3 | Koduvally | Non-command | DW | 0 | | |
| | | | DW with pump | 1031 | | |
| | | | STW | 112 | | |
| | | | Others (pl. specify) | 11208 | | |
| 4 | Kozhikode | Non-command | DW | 0 | | |
| | | | DW with pump | 873 | | |
| | | | STW | 15 | | |
| | | | Others (pl. specify) | 11118 | | |
| 5 | Kunnamangalam | Non-command | DW | 0 | | |
| | | | DW with pump | 1604 | | |
| | | | STW | 94 | | |
| | | | Others (pl. specify) | 14353 | | |
| 6 | Kunnummal | Non-command | DW | 0 | | |
| | | | DW with pump | 637 | | |
| | | | STW | 67 | | |
| | | | Others (pl. specify) | 8160 | | |
| 7 | Melady | Non-command | DW | 0 | | |
| | | | DW with pump | 570 | | |
| | | | STW | 15 | | |
| | | | Others (pl. specify) | 5233 | | |
| 8 | Panthalayani | Non-command | DW | 0 | | |
| | | | DW with pump | 470 | | |
| | | | STW | 36 | | |
| | | | Others (pl. specify) | 4410 | | |
| 9 | Perambra | Non-command | DW | 0 | | |
| | | | DW with pump | 816 | | |
| | | | STW | 98 | | |
| | | | Others (pl. specify) | 7212 | | |
| 10 | Thodannur | Non-command | DW | 0 | | |
| | | | DW with pump | 227 | | |
| | | | STW | 44 | | |
| | | | Others (pl. specify) | 5404 | | |
| 11 | Tuneri | Non-command | DW | 0 | | |
| | | | DW with pump | 520 | | |
| | | | STW | 37 | | |
| | | | Others (pl. specify) | 5666 | | |
| 12 | Vadakara | Non-command | DW | 0 | | |
| | | | DW with pump | 297 | | |
| | | | STW | 41 | | |
| | | | Others (pl. specify) | 4754 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| District | | MALAPPURAM | | | | |
|---|---|---|---|---|---|---|
| Assessment Year | | 2017 | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ non-Command/ poor quality) | Type of Structure | No.of Structures | | |
| | | | | Irrigation | Domestic | Industrial |
| 1 | Areacode | Non-command | DW | 10 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 1125 | | |
| | | | STW | 106 | | |
| | | | *Others (pl. specify) | 9880 | | |
| 2 | Kalikavu | Non-command | DW | 15 | | |
| | | | DW with pump | 812 | | |
| | | | STW | 58 | | |
| | | | Others (pl. specify) | 7396 | | |
| 3 | Kondotty | Non-command | DW | 125 | | |
| | | | DW with pump | 1098 | | |
| | | | STW | 468 | | |
| | | | Others (pl. specify) | 8917 | | |
| 4 | Kuttippuram | Non-command | DW | 1325 | | |
| | | | DW with pump | 1265 | | |
| | | | STW | 86 | | |
| | | | Others (pl. specify) | 8369 | | |
| 5 | Malappuram | Non-command | DW | 16 | | |
| | | | DW with pump | 901 | | |
| | | | STW | 418 | | |
| | | | Others (pl. specify) | 8478 | | |
| 6 | Mankada | Non-command | DW | 0 | | |
| | | | DW with pump | 895 | | |
| | | | STW | 619 | | |
| | | | Others (pl. specify) | 6044 | | |
| 7 | Nilamboor | Non-command | DW | 0 | | |
| | | | DW with pump | 565 | | |
| | | | STW | 15 | | |
| | | | Others (pl. specify) | 8609 | | |
| 8 | Perinthalmanna | Non-command | DW | 715 | | |
| | | | DW with pump | 812 | | |
| | | | STW | 1086 | | |
| | | | Others (pl. specify) | 8650 | | |
| 9 | Perumpadappu | Non-command | DW | 0 | | |
| | | | DW with pump | 990 | | |
| | | | STW | 1521 | | |
| | | | Others (pl. specify) | 36877 | | |
| 10 | Ponnani | Non-command | DW | 10 | | |
| | | | DW with pump | 524 | | |
| | | | STW | 15 | | |
| | | | Others (pl. specify) | 4296 | | |
| 11 | Tanur | Non-command | DW | 0 | | |
| | | | DW with pump | 1225 | | |
| | | | STW | 146 | | |
| | | | Others (pl. specify) | 8349 | | |
| 12 | Tirur | Non-command | DW | 0 | | |
| | | | DW with pump | 1550 | | |
| | | | STW | 43 | | |
| | | | Others (pl. specify) | 9794 | | |
| 13 | Tirurangadi | Non-command | DW | 0 | | |
| | | | DW with pump | 855 | | |
| | | | STW | 27 | | |
| | | | Others (pl. specify) | 6867 | | |

| **District** | | **MALAPPURAM** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Type of Structure** | **No.of Structures** | | |
| | | | | **Irrigation** | **Domestic** | **Industrial** |
| 14 | Vengara | Non-command | DW | 0 | | |
| | | | DW with pump | 765 | | |
| | | | STW | 0 | | |
| | | | Others (pl. specify) | 7397 | | |
| 15 | Wandoor | Non-command | DW | 12 | | |
| | | | DW with pump | 476 | | |
| | | | STW | 81 | | |
| | | | Others (pl. specify) | 8124 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| **District** | | **PALAKKAD** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Type of Structure** | **No.of Structures** | | |
| | | | | **Irrigation** | **Domestic** | **Industrial** |
| 1 | Alathur | Non-command | DW | 17 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 4910 | | |
| | | | STW | 22 | | |
| | | | *Others (pl. specify) | 12687 | | |
| 2 | Attappadi | Non-command | DW | 2 | | |
| | | | DW with pump | 1837 | | |
| | | | STW | 78 | | |
| | | | Others (pl. specify) | 992 | | |
| 3 | Chittur | Non-command | DW | 0 | | |
| | | | DW with pump | 378 | | |
| | | | STW | 1144 | | |
| | | | Others (pl. specify) | 8701 | | |
| 4 | Kollengode | Non-command | DW | 0 | | |
| | | | DW with pump | 2810 | | |
| | | | STW | 307 | | |
| | | | Others (pl. specify) | 7512 | | |
| 5 | Kuzhalmannam | Non-command | DW | 40 | | |
| | | | DW with pump | 1597 | | |
| | | | STW | 144 | | |
| | | | Others (pl. specify) | 8414 | | |
| 6 | Malampuzha | Non-command | DW | 60 | | |
| | | | DW with pump | 2288 | | |
| | | | STW | 8823 | | |
| | | | Others (pl. specify) | 10657 | | |
| 7 | Mannarkkad | Non-command | DW | 5 | | |
| | | | DW with pump | 1002 | | |
| | | | STW | 88 | | |
| | | | Others (pl. specify) | 12254 | | |
| 8 | Nenmara | Non-command | DW | 20 | | |
| | | | DW with pump | 2701 | | |
| | | | STW | 139 | | |
| | | | Others (pl. specify) | 8065 | | |
| 9 | Ottappalam | Non-command | DW | 198 | | |
| | | | DW with pump | 1788 | | |
| | | | STW | 51 | | |
| | | | Others (pl. specify) | 9014 | | |
| 10 | Palakkad | Non-command | DW | 0 | | |
| | | | DW with pump | 1541 | | |
| | | | STW | 96 | | |
| | | | Others (pl. specify) | 9001 | | |
| 11 | Pattambi | Non-command | DW | 0 | | |
| | | | DW with pump | 4322 | | |
| | | | STW | 126 | | |
| | | | Others (pl. specify) | 10728 | | |
| 12 | Sreekrishnapuram | Non-command | DW | 0 | | |
| | | | DW with pump | 1692 | | |
| | | | STW | 53 | | |
| | | | Others (pl. specify) | 8447 | | |
| 13 | Thrithala | Non-command | DW | 0 | | |
| | | | DW with pump | 1138 | | |
| | | | STW | 107 | | |
| | | | Others (pl. specify) | 9130 | | |
| | | | STW: Shallow tube wells and bore wells,<br>* Others: Irrigation through domestic wells | | | |

| **District** | | **PATHANAMTHITTA** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Type of Structure** | **No.of Structures** | | |
| | | | | **Irrigation** | **Domestic** | **Industrial** |
| 1 | Elanthoor | Non-command | DW | 50 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 603 | | |
| | | | STW | 44 | | |
| | | | Others (pl. specify) | 6873 | | |
| 2 | Koipuram | Non-command | DW | 296 | | |
| | | | DW with pump | 574 | | |
| | | | STW | 38 | | |
| | | | Others (pl. specify) | 7747 | | |
| 3 | Konni | Non-command | DW | 145 | | |
| | | | DW with pump | 459 | | |
| | | | STW | 91 | | |
| | | | Others (pl. specify) | 9978 | | |
| 4 | Mallappally | Non-command | DW | 626 | | |
| | | | DW with pump | 344 | | |
| | | | STW | 66 | | |
| | | | Others (pl. specify) | 7470 | | |
| 5 | Pandalam | Non-command | DW | 268 | | |
| | | | DW with pump | 1278 | | |
| | | | STW | 86 | | |
| | | | Others (pl. specify) | 8420 | | |
| 6 | Parakode | Non-command | DW | 608 | | |
| | | | DW with pump | 1583 | | |
| | | | STW | 101 | | |
| | | | Others (pl. specify) | 10061 | | |
| 7 | Pulikeezh | Non-command | DW | 10 | | |
| | | | DW with pump | 474 | | |
| | | | STW | 55 | | |
| | | | Others (pl. specify) | 5400 | | |
| 8 | Ranni | Non-command | DW | 620 | | |
| | | | DW with pump | 351 | | |
| | | | STW | 107 | | |
| | | | Others (pl. specify) | 8226 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| **District** | | **THIRUVANANTHAPURAM** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Type of Structure** | **No.of Structures** | | |
| | | | | **Irrigation** | **Domestic** | **Industrial** |
| 1 | Athiyannur | Non-command | DW | 245 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 785 | | |
| | | | STW | 55 | | |
| | | | Others (pl. specify) | 8955 | | |
| 2 | Chirayinkil | Non-command | DW | 12 | | |
| | | | DW with pump | 265 | | |
| | | | STW | 53 | | |
| | | | Others (pl. specify) | 7545 | | |
| 3 | Kilimanoor | Non-command | DW | 76 | | |
| | | | DW with pump | 182 | | |
| | | | STW | 418 | | |
| | | | Others (pl. specify) | 10410 | | |
| 4 | Nedumangad | Non-command | DW | 0 | | |
| | | | DW with pump | 201 | | |
| | | | STW | 224 | | |
| | | | Others (pl. specify) | 18697 | | |
| 5 | Nemom | Non-command | DW | 0 | | |
| | | | DW with pump | 718 | | |
| | | | STW | 48 | | |
| | | | Others (pl. specify) | 8316 | | |
| 6 | Parassala | Non-command | DW | 25 | | |
| | | | DW with pump | 978 | | |
| | | | STW | 35 | | |
| | | | Others (pl. specify) | 9690 | | |
| 7 | Perumkadavila | Non-command | DW | 15 | | |
| | | | DW with pump | 598 | | |
| | | | STW | 95 | | |
| | | | Others (pl. specify) | 10243 | | |
| 8 | Pothencode | Non-command | DW | 15 | | |
| | | | DW with pump | 695 | | |
| | | | STW | 44 | | |
| | | | Others (pl. specify) | 10595 | | |
| 9 | Vamanapuram | Non-command | DW | 25 | | |
| | | | DW with pump | 653 | | |
| | | | STW | 56 | | |
| | | | Others (pl. specify) | 11613 | | |
| 10 | Varkala | Non-command | DW | 21 | | |
| | | | DW with pump | 398 | | |
| | | | STW | 13 | | |
| | | | Others (pl. specify) | 7257 | | |
| 11 | Vellanad | Non-command | DW | 612 | | |
| | | | DW with pump | 741 | | |
| | | | STW | 14 | | |
| | | | Others (pl. specify) | 12489 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| District | | THRISSUR | | | | |
|---|---|---|---|---|---|---|
| Assessment Year | | 2017 | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ non-Command/ poor quality) | Structure | No.of Structures | | |
| | | | | Irrigation | Domestic | Industrial |
| 1 | Anthikkad | Non-command | DW | 0 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 2895 | | |
| | | | STW | 15 | | |
| | | | *Others (pl. specify) | 6769 | | |
| 2 | Chalakkudy | Non-command | DW | 15 | | |
| | | | DW with pump | 3998 | | |
| | | | STW | 38 | | |
| | | | Others (pl. specify) | 7394 | | |
| 3 | Chavakkad | Non-command | DW | 0 | | |
| | | | DW with pump | 2365 | | |
| | | | STW | 800 | | |
| | | | Others (pl. specify) | 12010 | | |
| 4 | Cherpu | Non-command | DW | 0 | | |
| | | | DW with pump | 3568 | | |
| | | | STW | 66 | | |
| | | | Others (pl. specify) | 4585 | | |
| 5 | Chowannur | Non-command | DW | 12 | | |
| | | | DW with pump | 4125 | | |
| | | | STW | 307 | | |
| | | | Others (pl. specify) | 8902 | | |
| 6 | Irinjalakkuda | Non-command | DW | 0 | | |
| | | | DW with pump | 2452 | | |
| | | | STW | 529 | | |
| | | | Others (pl. specify) | 4719 | | |
| 7 | Kodakara | Non-command | DW | 0 | | |
| | | | DW with pump | 4823 | | |
| | | | STW | 56 | | |
| | | | Others (pl. specify) | 10352 | | |
| 9 | Mala | Non-command | DW | 0 | | |
| | | | DW with pump | 6425 | | |
| | | | STW | 3 | | |
| | | | Others (pl. specify) | 7371 | | |
| 10 | Mathilakom | Non-command | DW | 0 | | |
| | | | DW with pump | 2851 | | |
| | | | STW | 900 | | |
| | | | Others (pl. specify) | 19152 | | |
| 11 | Mullassery | Non-command | DW | 15 | | |
| | | | DW with pump | 2152 | | |
| | | | STW | 550 | | |
| | | | Others (pl. specify) | 9003 | | |
| 12 | Ollukkara | Non-command | DW | 0 | | |
| | | | DW with pump | 1452 | | |
| | | | STW | 278 | | |
| | | | Others (pl. specify) | 7028 | | |
| 13 | Pazhayannur | Non-command | DW | 0 | | |
| | | | DW with pump | 2896 | | |
| | | | STW | 182 | | |
| | | | Others (pl. specify) | 7992 | | |
| 14 | Puzhakkal | Non-command | DW | 0 | | |
| | | | DW with pump | 3758 | | |
| | | | STW | 105 | | |
| | | | Others (pl. specify) | 8111 | | |

| **District** | | **THRISSUR** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Structure** | **No.of Structures** | | |
| | | | | **Irrigation** | **Domestic** | **Industrial** |
| 15 | Thalikkulam | Non-command | DW | 0 | | |
| | | | DW with pump | 1825 | | |
| | | | STW | 1010 | | |
| | | | Others (pl. specify) | 10051 | | |
| 16 | Vellangallur | Non-command | DW | 0 | | |
| | | | DW with pump | 2152 | | |
| | | | STW | 114 | | |
| | | | Others (pl. specify) | 10384 | | |
| 17 | Vadakkancherry | Non-command | DW | 15 | | |
| | | | DW with pump | 3485 | | |
| | | | STW | 241 | | |
| | | | Others (pl. specify) | 5785 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

| **District** | | **WAYANAD** | | | | |
|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | | **No.of Structures** | | |
| | | | **Structure** | **Irrigation** | **Domestic** | **Industrial** |
| 1 | Kalpetta | Non-command | DW | 0 | Domestic Extraction Computed on the basis of projected population, per capita requirement & fractional load on ground water | Industrial Extraction data provided by Dept. of Industries, Government of Kerala |
| | | | DW with pump | 286 | | |
| | | | STW | 69 | | |
| | | | Others (pl. specify) | 9672 | | |
| 2 | Mananthavady | Non-command | DW | 41 | | |
| | | | DW with pump | 138 | | |
| | | | STW | 25 | | |
| | | | Others (pl. specify) | 8429 | | |
| 3 | Panamaram | Non-command | DW | 15 | | |
| | | | DW with pump | 166 | | |
| | | | STW | 53 | | |
| | | | Others (pl. specify) | 8464 | | |
| 3 | Sulthanbathery | Non-command | DW | 25 | | |
| | | | DW with pump | 286 | | |
| | | | STW | 391 | | |
| | | | Others (pl. specify) | 8502 | | |
| | | | STW: Shallow tube wells and bore wells<br>* Others: Irrigation through domestic wells | | | |

# ANNEXURE III C

# PARAMETERS USED IN THE ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES OF KERALA (2017)

| State | KERALA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District | ALAPPUZHA | | | | | | | | | | | |
| Assessment Year | 2017 | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ Non-Command/ Poor Quality) | Specific Yield (in fraction) | | Rainfall Infiltration Factor (in fraction) | | Season-wise Unit Extraction (ha m) | | | | | | |
| | | | Formation | Value | Formation | Value | Structure | Irrigation | | Domestic | | Industrial | |
| | | | | | | | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Ambalappuzha | Non-Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | 4.095 | 4.095 |
| | | | | | | | STW | 0.02 | 0.08 | | | | |
| | | | | | | | *Others (pl. specify) | 0 | 0.007 | | | | |
| 2 | Aryad | Non-Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.016 | 0.064 | | | | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | 0.000 | 0.000 |
| | | | | | | | STW | 0.02 | 0.08 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.07 | | | | |
| 3 | Bharanikkavu | Non-Command | Alluvium | 0.11 | Alluvium | 0.09 | DW | 0.016 | 0.064 | | | | |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | 0.000 | 0.000 |
| | | | | | | | STW | 0.04 | 0.16 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |
| 4 | Champakkulam | Non-Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | 0.010 | 0.010 |
| | | | | | | | STW | 0.04 | 0.16 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |
| 5 | Chengannur | Non-Command | Alluvium | 0.15 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | 0.750 | 0.750 |
| | | | | | | | STW | 0.04 | 0.16 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |
| 6 | Harippad | Non-Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.016 | 0.064 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 0.015 | 0.015 |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |
| 7 | Kanjikkuzhy | Non-Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 0.000 | 0.000 |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **ALAPPUZHA** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ Non-Command/ Poor Quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | **Formation** | **Value** | **Formation** | **Value** | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | | | | | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| 8 | Mavelikkara | Non-Command | Alluvium | 0.14 | Alluvium | 0.10 | DW | 0.016 | 0.064 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 0.375 | 0.375 |
| | | | | | | | STW | 0.04 | 0.16 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |
| 9 | Muthukulam | Non-Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 49.235 | 49.235 |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |
| 10 | Pattanakkad | Non-Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | 34.185 | 34.185 |
| | | | | | | | STW | 0.03 | 0.12 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.010 | | | | |
| 11 | Thycattussery | Non-Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | 0.450 | 0.450 |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |
| 12 | Veliyanad | Non-Command | Alluvium | 0.16 | Alluvium | 0.09 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | 0.000 | 0.000 |
| | | | | | | | STW | 0.04 | 0.16 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.01 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **ERNAKULAM** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | **Formation** | **Value** | **Formation** | **Value** | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| 1 | Alangad | Non - Command | Laterite | 0.08 | Laterite | 0.08 | DW | 0.024 | 0.096 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 23.435 | 23.435 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.007 | | | | |
| 2 | Angamaly | Non - Command | Laterite | 0.06 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 23.018 | 23.018 |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 3 | Edappally | Non - Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.024 | 0.096 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 5.444 | 5.444 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 4 | Koovappady | Non - Command | Laterite | 0.05 | Laterite | 0.06 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.06 | 0.240 | | | 6.315 | 6.315 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.030 | | | | |
| 5 | Kothamangalam | Non - Command | Laterite | 0.04 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.060 | 0.240 | | | 1.200 | 1.200 |
| | | | | | | | STW | 0.080 | 0.320 | | | | |
| | | | | | | | Others (pl. specify) | | 0.020 | | | | |

| **State** | **KERALA** |
|---|---|
| **District** | **ERNAKULAM** |
| **Assessment Year** | **2017** |

| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | **Formation** | **Value** | **Formation** | **Value** | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| | | | | | | | | | | | | | |
| 6 | Moovattupuzha | Non - Command | Laterite | 0.04 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 4.170 | 4.170 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.007 | | | | |
| 7 | Mulamthuruthy | Non - Command | Laterite | 0.03 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 5.119 | 5.119 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.020 | | | | |
| 8 | Palluruthy | Non - Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 4.639 | 4.639 |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 9 | Pampakkuda | Non - Command | Laterite | 0.04 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 2.574 | 2.574 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 10 | Parakkadavu | Non - Command | Laterite | 0.05 | Laterite | 0.076 | DW | 0.024 | 0.096 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 4.050 | 4.050 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 11 | Paravoor | Non - Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.024 | 0.096 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 7.200 | 7.200 |
| | | | | | | | STW | 0.2 | 0.8 | | | | |

| State | KERALA |
|---|---|
| District | ERNAKULAM |
| Assessment Year | 2017 |

| Sl. No. | Assessment Unit | Sub-unit (Command/ non-Command/ poor quality) | Specific Yield (in fraction) | | Rainfall Infiltration Factor (in fraction) | | Season-wise Unit Extraction (ha m) | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | Structure | Irrigation | | Domestic | | Industrial |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 12 | Vadavukodu | Non - Command | Laterite | 0.047 | Laterite | 0.075 | DW | 0.012 | 0.048 | | | | |
| | | | | | | | DW with pump | 0.08 | 0032 | | | 1.905 | 1.905 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.007 | | | | |
| 13 | Vazhakkulam | Non - Command | Laterite | 0.05 | Laterite | 0.076 | DW | 0.024 | 0.096 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 3.255 | 3.255 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 14 | Vypeen | Non - Command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.04 | | | | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | 0.000 | 0.000 |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.007 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **IDUKKI** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command / non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | **Formation** | **Value** | **Formation** | **Value** | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| 1 | Adimali | Non-command | Crystalline | 0.015 | Crystalline | 0.06 | DW | 0.012 | 0.048 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.575 | 0.575 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | *Others (pl. specify) | | 0.03 | | | | |
| 2 | Azhutha | Non-command | Crystalline | 0.015 | Crystalline | 0.08 | DW | 0.012 | 0.048 | | | 3.040 | 3.040 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 3 | Devikulam | Non-command | Crystaline | 0.015 | Crystaline | 0.06 | DW | 0.016 | 0.064 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.05 | 0.2 | | | | |
| | | | | | | | STW | 0 | 0 | | | | |
| | | | | | | | Others (pl. specify) | | 0.01 | | | | |
| 4 | Elam Desom | Non-command | Crysttalline | 0.019 | Crysttalline | 0.08 | DW | 0.012 | 0.048 | | | 0.540 | 0.540 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 5 | Idukki | Non-command | Crystallines | 0.015 | Crystallines | 0.08 | DW | 0.012 | 0.048 | | | 0.180 | 0.180 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 6 | Kattappana | Non-command | Crystallines | 0.019 | Crystallines | 0.07 | DW | 0.012 | 0.048 | | | 0.660 | 0.660 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.01 | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **IDUKKI** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command / non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | **Formation** | **Value** | **Formation** | **Value** | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | | | | | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| 7 | Nedumkandam | Non-command | Crystallines | 0.015 | Crystallines | 0.08 | DW | 0.012 | 0.048 | | | 0.590 | 0.590 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.01 | | | | |
| 8 | Thodupuzha | Non-command | Crystallines | 0.02 | Crystallines | 0.08 | DW | 0.012 | 0.048 | | | 0.755 | 0.755 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KANNUR** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command / non-Command / poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Edakkad | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.016 | 0.064 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.1 | 0.40 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | *Others (pl. specify) | | 0.010 | | | | |
| 2 | Irikkur | Non-command | Laterite | 0.02 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 3 | Iritty | Non-command | Laterite | 0.02 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 4 | Kallyasseri | Non-command | Laterite | 0.039 | Laterite | 0.08 | DW | 0.016 | 0.064 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.020 | | | | |
| 5 | Kannur | Non-command | Laterite | 0.09 | Laterite | 0.08 | DW | 0.016 | 0.064 | | | 5.070 | 5.070 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.01 | | | | |
| 6 | Kuthuparamba | Non-command | Laterite | 0.025 | Laterite | 0.06 | DW | 0.016 | 0.064 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KANNUR** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command / non-Command / poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 7 | Panur | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 8 | Payyannur | Non-command | Laterite | 0.057 | Laterite | 0.078 | DW | 0.016 | 0.064 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 9 | Peravoor | Non-command | Laterite | 0.02 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 10 | Taliparamba | Non-command | Laterite | 0.039 | Laterite | 0.077 | DW | 0.016 | 0.064 | | | 2.999 | 2.999 |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 11 | Thalassery | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 2.100 | 2.100 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KASARGOD** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command / non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Kanhangad | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.855 | 0.855 |
| | | | | | | | DW with pump | 0.1 | 0.4 | | | | |
| | | | | | | | STW | 0.15 | 0.6 | | | | |
| | | | | | | | *Others (pl. specify) | | 0.03 | | | | |
| 2 | Karadka | Non-command | Laterite | 0.03 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 1.740 | 1.740 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.15 | 0.60 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 3 | Kasaragod | Non-command | Laterite | 0.031 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 0.743 | 0.743 |
| | | | | | | | DW with pump | 0.100 | 0.400 | | | | |
| | | | | | | | STW | 0.15 | 0.60 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 4 | Manjeswar | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 0.860 | 0.860 |
| | | | | | | | DW with pump | 0.100 | 0.400 | | | | |
| | | | | | | | STW | 0.15 | 0.60 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 5 | Nileswaram | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.016 | 0.064 | | | 1.900 | 1.900 |
| | | | | | | | DW with pump | 0.100 | 0.400 | | | | |
| | | | | | | | STW | 0.15 | 0.60 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 6 | Parappa | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.855 | 0.855 |
| | | | | | | | DW with pump | | | | | | |
| | | | | | | | STW | | | | | | |
| | | | | | | | Others (pl. specify) | | | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| State | | KERALA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District | | KOLLAM | | | | | | | | | | | |
| Assessment Year | | 2017 | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command / non-Command/ poor quality) | Specific Yield (in fraction) | | Rainfall Infiltration Factor (in fraction) | | Season-wise Unit Extraction (ha m) | | | | | | |
| | | | | | | | Structure | Irrigation | | Domestic | | Industrial | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Anchal | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.045 | 0.045 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | *Others (pl. specify) | | 0.03 | | | | |
| 2 | Chadayamangalam | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.608 | 0.608 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 3 | Chavara | Non-command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.024 | 0.096 | | | 0.435 | 0.435 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 4 | Chittumala | Non-command | Laterite | 0.04 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 5 | Ithikkara | Non-command | Alluvium | 0.11 | Alluvium | 0.09 | DW | 0.012 | 0.048 | | | 0.653 | 0.653 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 6 | Kottarakkara | Non-command | Alluvium | 0.025 | Alluvium | 0.06 | DW | 0.012 | 0.048 | | | 0.690 | 0.690 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 7 | Mukhathala | Non-command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | 0.390 | 0.390 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |

| **State** | | **KERALA** | | | | | | | | | | | | |
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| **District** | | **KOLLAM** | | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command / non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon | |
| 8 | Oachira | Non-command | Alluvium | 0.16 | Alluvium | 0.10 | DW | 0.012 | 0.048 | | | 0.045 | 0.045 | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 9 | Pathanapuram | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.225 | 0.225 | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 10 | Sasthamkotta | Non-command | Laterite | 0.04 | Laterite | 0.06 | DW | 0.012 | 0.048 | | | 0.120 | 0.120 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 11 | Vettikkavala | Non-command | Laterite | 0.025 | Laterite | 0.06 | DW | 0.012 | 0.048 | | | 0.090 | 0.090 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | | |

| State | KERALA | | | | | | | | | | | | |
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| District | KOTTAYAM | | | | | | | | | | | | |
| Assessment Year | 2017 | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ non-Command/ poor quality) | Specific Yield (in fraction) | | Rainfall Infiltration Factor (in fraction) | | Season-wise Unit Extraction (ha m) | | | | | | |
| | | | | | | | Structure | Irrigation | | Domestic | | Industrial | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Erattupetta | Non-command | Lateriite | 0.03 | Lateriite | 0.07 | DW | 0.012 | 0.048 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | *Others (pl. specify) | | 0.03 | | | | |
| 2 | Ettumanoor | Non-command | Laterite | 0.08 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 3 | Kaduthuruthy | Non-command | Laterite | 0.04 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 4 | Kanjirappally | Non-command | Laterite | 0.04 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 5 | Lalam | Non-command | Laterite | 0.029 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 6 | Madappally | Non-command | Alluvial | 0.084 | Alluvial | 0.09 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 7 | Pallom | Non-command | Laterite | 0.079 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
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| **District** | | **KOTTAYAM** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | **Formation** | **Value** | **Formation** | **Value** | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| 8 | Pampady | Non-command | Laterite | 0.03 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 9 | Uzhavoor | Non-command | Laterite | 0.03 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.05 | | | | |
| 10 | Vaikom | Non-command | Alluvial | 0.12 | Alluvial | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.05 | | | | |
| 11 | Vazhoor | Non-command | Laterite | 0.03 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KOZHIKODE** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | **Formation** | **Value** | **Formation** | **Value** | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| | | | | | | | | | | | | | |
| 1 | Balussery | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | *Others (pl. specify) | | 0.02 | | | | |
| 2 | Chelannur | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 3 | Koduvally | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 4 | Kozhikode | Non-command | Laterite | 0.052 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 0.515 | 0.515 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.01 | | | | |
| 5 | Kunnamangalam | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.01 | | | | |
| 6 | Kunnummal | Non-command | Laterite | 0.019 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KOZHIKODE** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | **Formation** | **Value** | **Formation** | **Value** | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** |
| | | | | | | | | | | | | | |
| 7 | Melady | Non-command | Alluvial | 0.16 | Alluvial | 0.10 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.05 | 0.2 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.01 | | | | |
| 8 | Panthalayani | Non-command | Alluvial | 0.16 | Alluvial | 0.10 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 9 | Perambra | Non-command | Laterite | 0.03 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 10 | Thodannur | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 11 | Tuneri | Non-command | Laterite | 0.025 | Laterite | 0.06 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 12 | Vadakara | Non-command | Laterite | 0.063 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.14 | 0.46 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **MALAPPURAM** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Areacode | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | *Others (pl. specify) | | 0.03 | | | | |
| 2 | Kalikavu | Non-command | Laterite | 0.025 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 3 | Kondotty | Non-command | Laterite | 0.025 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 4 | Kuttippuram | Non-command | Laterite | 0.052 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 5 | Malappuram | Non-command | Laterite | 0.03 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 6 | Mankada | Non-command | Laterite | 0.04 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **MALAPPURAM** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 7 | Nilamboor | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 8 | Perinthalmanna | Non-command | Laterite | 0.015 | Laterite | 0.072 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 9 | Perumpadappu | Non-command | Alluvial | 0.16 | Alluvial | 0.10 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.007 | | | | |
| 10 | Ponnani | Non-command | Alluvial | 0.106 | Alluvial | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 11 | Tanur | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 12 | Thriurangadi | Non-command | Alluvial | 0.03 | Alluvial | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 13 | Tirur | Non-command | Laterite | 0.03 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 14 | Vengara | Non-command | Laterite | 0.04 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |

| **State** | | **KERALA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **MALAPPURAM** | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 15 | Wandoor | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| **State** | | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **PALAKKAD** | | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | | |
| | | | **Formation** | **Value** | **Formation** | **Value** | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | |
| 1 | Alathur | Non-command | Weath. Crystalline | 0.06 | Weath. Crystalline | 0.06 | DW | 0.012 | 0.048 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.000 | 0.000 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | | |
| | | | | | | | *Others (pl. specify) | 0 | 0.03 | | | | | |
| 2 | Attappadi | Non-command | Weath .Crystallines | 0.03 | Weath. Crystallines | 0.11 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0..06 | 0.24 | | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.02 | | | | | |
| 3 | Chittur | Non-command | Weath .Crystallines | 0.03 | Weath. Crystallines | 0.08 | DW | 0.024 | 0.096 | | | 29.030 | 29.030 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.03 | | | | | |
| 4 | Kollengode | Non-command | Weath. Crystallines | 0.03 | Weath. Crystallines | 0.07 | DW | 0.024 | 0.096 | | | 0.850 | 0.850 | |
| | | | | | | | DW with pump | 0.108 | 0.432 | | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.05 | | | | | |
| 5 | Kuzhalmannam | Non-command | Weath Crystallines | 0.03 | Weath Crystallines | 0.08 | DW | 0.024 | 0.096 | | | 36.000 | 36.000 | |
| | | | | | | | DW with pump | 0.108 | 0.432 | | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.05 | | | | | |
| 6 | Malampuzha | Non-command | Crystalline | 0.015 | Crystalline | 0.05 | DW | 0.012 | 0.048 | | | 129.720 | 129.720 | |
| | | | | | | | DW with pump | 0.108 | 0.432 | | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.05 | | | | | |
| 7 | Mannarkkad | Non-command | Weath Crystallines | 0.03 | Weath. Crystallines | 0.08 | DW | 0.012 | 0.048 | | | 1.175 | 1.175 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.03 | | | | | |

| State | KERALA | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District | PALAKKAD | | | | | | | | | | | | |
| Assessment Year | 2017 | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command/ non-Command/ poor quality) | Specific Yield (in fraction) | | Rainfall Infiltration Factor (in fraction) | | Season-wise Unit Extraction (ha m) | | | | | | |
| | | | Formation | Value | Formation | Value | Structure | Irrigation | | Domestic | | Industrial | |
| | | | | | | | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 8 | Nenmara | Non-command | Weath. Gneisses | 0.03 | Weath. Gneisses | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.03 | | | | |
| 9 | Ottappalam | Non-command | Weath .Crystallines | 0.025 | Weath. Crystallines | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.03 | | | | |
| 10 | Palakkad | Non-command | Laterite | 0.02 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 7.300 | 7.300 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.03 | | | | |
| 11 | Pattambi | Non-command | Laterite | 0.03 | Laterite | 0.10 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.03 | | | | |
| 12 | Sreekrishnapuram | Non-command | Laterite | 0.03 | Laterite | 0.09 | DW | 0.012 | 0.048 | | | 36.000 | 36.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.03 | | | | |
| 13 | Thrithala | Non-command | Laterite | 0.025 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | 0 | 0.03 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| **District** | | **PATHANAMTHITTA** | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Assessment Year** | | **2017** | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command/ non-Command/ poor quality)** | **Specific Yield (in fraction** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | Formation | Value | Formation | Value | **Structure** | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Elanthoor | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 2 | Koipuram | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 3 | Konni | Non-command | Laterite | 0.025 | Laterite | 0.075 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 4 | Mallappally | Non-command | Alluvium | 0.025 | Alluvial | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 5 | Pandalam | Non-command | Laterite | 0.075 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 6 | Parakode | Non-command | Laterite | 0.038 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 7 | Pulikeezh | Non-command | Alluvium | 0.15 | Alluvial | 0.10 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.2 | 0.8 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 8 | Ranni | Non-command | Laterite | 0.03 | Laterite | 0.076 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |

| State | | KERALA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District | | THIRUVANANTHAPURAM | | | | | | | | | | | |
| Assessment Year | | 2017 | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command / non-Command / poor quality) | Specific Yield (in fraction) | | Rainfall Infiltration Factor (in fraction) | | Season-wise Unit Extraction (ha m) | | | | | | |
| | | | Formation | Value | Formation | Value | Structure | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Athiyannur | Non-command | Laterite | 0.07 | Laterite | 0.09 | DW | 0.012 | 0.048 | Computed on the basis of projected population, per capita requirement | | 0.016 | 0.016 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.01 | | | | |
| 2 | Chirayinkil | Non-command | Laterite | 0.05 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.049 | 0.049 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 3 | Kilimanoor | Non-command | Laterite | 0.03 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 4 | Nedumangad | Non-command | Laterite | 0.04 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 5 | Nemom | Non-command | Laterite | 0.05 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 6 | Parassala | Non-command | Laterite | 0.09 | Laterite | 0.09 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 7 | Perumkadavila | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 8 | Pothencode | Non-command | Alluvium | 0.10 | Alluvium | 0.09 | DW | 0.012 | 0.048 | | | 1.085 | 1.085 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |

| State | | KERALA | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District | | THIRUVANANTHAPURAM | | | | | | | | | | | |
| Assessment Year | | 2017 | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command / non-Command / poor quality) | Specific Yield (in fraction) | | Rainfall Infiltration Factor (in fraction) | | Season-wise Unit Extraction (ha m) | | | | | | |
| | | | Formation | Value | Formation | Value | Structure | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| | | | | | | | Others (pl. specify) | | 0.03 | & fractional load on ground water | | | |
| 9 | Vamanapuram | Non-command | Laterite | 0.03 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 10 | Varkala | Non-command | Laterite | 0.066 | Laterite | 0.08 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 11 | Vellanad | Non-command | Laterite | 0.03 | Laterite | 0.07 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

| State | KERALA | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| District | THRISSUR | | | | | | | | | | | | |
| Assessment Year | 2017 | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Sub-unit (Command / non-Command/ poor quality) | Specific Yield (in fraction) | | Rainfall Infiltration Factor (in fraction) | | Season-wise Unit Extraction (ha m) | | | | | | |
| | | | Formation | Value | Formation | Value | Structure | Irrigation | | Domestic | | Industrial | |
| | | | | | | | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Anthikkad | Non-command | Alluvial | 0.10 | Alluvial | 0.09 | DW | 0.024 | 0.096 | | | 0.972 | 0.972 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | *Others (pl. specify) | | 0.02 | | | | |
| 2 | Chalakkudy | Non-command | Weatered Granite | 0.028 | Weatered Granite | 0.075 | DW | 0.012 | 0.048 | | | 5.400 | 5.400 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 3 | Chavakkad | Non-command | Alluvial | 0.16 | Alluvial | 0.10 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.04 | 0.16 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 4 | Cherpu | Non-command | Weath. Granite | 0.06 | Weath. Granite | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 5 | Chowannur | Non-command | Laterite | 0.06 | Laterite | 0.09 | DW | 0.012 | 0.048 | | | 0.420 | 0.420 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.007 | | | | |
| 6 | Iringalakkuda | Non-command | Weath. Granite | 0.045 | Weath. Granite | 0.085 | DW | 0.024 | 0.096 | | | 0.370 | 0.370 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 7 | Kodakara | Non-command | Weath. Granite | 0.03 | Weath. Granite | 0.08 | DW | 0.024 | 0.096 | | | 1.900 | 1.900 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 8 | Mala | Non-command | Laterite | 0.045 | Laterite | 0.09 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |

Computed on the basis of projected population, per capita requirement & fractional load on ground water

| **State** | | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **THRISSUR** | | | | | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command / non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | | |
| | | | **Formation** | **Value** | **Formation** | **Value** | | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | **Monsoon** | **Non-monsoon** | |
| 9 | Mathilakom | Non-command | Alluvial | 0.16 | Alluvial | 0.10 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | | |
| | | | | | | | STW | 0.04 | 0.16 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 10 | Mullassery | Non-command | Alluvial | 0.15 | Alluvial | 0.10 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | | |
| | | | | | | | STW | 0.04 | 0.16 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 11 | Ollukkara | Non-command | Weath. Granite | 0.027 | Weath. Granite | 0.075 | DW | 0.024 | 0.096 | | | 1.800 | 1.800 | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 12 | Pazhayannur | Non-command | Laterite | 0.028 | Laterite | 0.076 | DW | 0.012 | 0.048 | | | 0.000 | 0.000 | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 13 | Puzhakkal | Non-command | Laterite | 0.07 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 5.400 | 5.400 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | | |
| 14 | Thalikkulam | Non-command | Alluvial | 0.16 | Alluvial | 0.10 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 | |
| | | | | | | | DW with pump | 0.06 | 0.24 | | | | | |
| | | | | | | | STW | 0.06 | 0.24 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 15 | Vellangallur | Non-command | Laterite | 0.066 | Laterite | 0.08 | DW | 0.024 | 0.096 | | | 0.000 | 0.000 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |
| 16 | Vadakkancherry | Non-command | Laterite | 0.025 | Laterite | 0.07 | DW | 0.024 | 0.096 | | | 3.205 | 3.205 | |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | | |
| | | | | | | | STW | 0.08 | 0.32 | | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **WAYANAD** | | | | | | | | | | | | |
| **Assessment Year** | **2017** | | | | | | | | | | | | |
| **Sl. No.** | **Assessment Unit** | **Sub-unit (Command / non-Command/ poor quality)** | **Specific Yield (in fraction)** | | **Rainfall Infiltration Factor (in fraction)** | | **Season-wise Unit Extraction (ha m)** | | | | | | |
| | | | | | | | **Structure** | **Irrigation** | | **Domestic** | | **Industrial** | |
| | | | Formation | Value | Formation | Value | | Monsoon | Non-monsoon | Monsoon | Non-monsoon | Monsoon | Non-monsoon |
| 1 | Kalpetta | Non-command | Weath. Granite | 0.03 | Weath. Granite | 0.08 | DW | 0.016 | 0.064 | Computed on the basis of projected population, per capita requirement & fractional load on ground water | | 36.000 | 36.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.02 | | | | |
| 2 | Mananthavady | Non-command | Weat. Granite | 0.03 | Weat. Granite | 0.08 | DW | 0.016 | 0.064 | | | 36.000 | 36.000 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.04 | | | | |
| 3 | Panamaram | Non-command | Weath. Granite | 0.03 | Weath. Granite | 0.08 | DW | 0.016 | 0.064 | | | 43.200 | 43.200 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| 4 | Sulthan Bathery | Non-command | Weath. Granite | 0.03 | Weath. Granite | 0.08 | DW | 0.016 | 0.064 | | | 43.200 | 43.200 |
| | | | | | | | DW with pump | 0.08 | 0.32 | | | | |
| | | | | | | | STW | 0.1 | 0.4 | | | | |
| | | | | | | | Others (pl. specify) | | 0.03 | | | | |
| | | | | | | | * Others: Irrigation through domestic wells<br>STW: Shallow Tube wells and Bore wells | | | | | | |

# ANNEXURE III D

# ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES OF KERALA (2017)

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **ALAPPUZHA** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Ambalappuzha | Non-command | 1209.33 | 0.00 | 362.41 | 470.00 | 2041.75 | 204.18 | 1837.57 |
| 2 | Aryad | Non-command | 1963.63 | 6.33 | 461.41 | 230.00 | 2661.37 | 133.07 | 2528.30 |
| 3 | Bharanikkavu | Non-command | 1824.71 | 17.45 | 546.83 | 2180.00 | 4568.99 | 456.90 | 4112.09 |
| 4 | Champakkulam | Non-command | 2430.02 | 0.00 | 728.23 | 1003.00 | 4161.25 | 416.13 | 3745.13 |
| 5 | Chengannur | Non-command | 2918.26 | 0.00 | 788.79 | 1110.00 | 4817.05 | 240.85 | 4576.20 |
| 6 | Harippad | Non-command | 1807.00 | 35.43 | 541.52 | 950.00 | 3333.95 | 333.40 | 3000.55 |
| 7 | Kanjikkuzhy | Non-command | 1933.00 | 0.00 | 579.28 | 550.00 | 3062.29 | 306.23 | 2756.06 |
| 8 | Mavelikkara | Non-command | 1762.92 | 6.33 | 528.31 | 1990.00 | 4287.57 | 428.76 | 3858.81 |
| 9 | Muthukulam | Non-command | 2855.07 | 21.98 | 612.84 | 900.00 | 4389.89 | 219.50 | 4170.40 |
| 10 | Pattanakkad | Non-command | 2536.67 | 2.00 | 571.82 | 78.00 | 3188.49 | 159.42 | 3029.06 |
| 11 | Thycattussery | Non-command | 2540.61 | 6.47 | 744.76 | 230.00 | 3521.85 | 176.09 | 3345.76 |
| 12 | Veliyanad | Non-command | 2083.60 | 0.00 | 624.42 | 1178.00 | 3886.01 | 388.60 | 3497.41 |
| | **TOTAL (ha.m)** | **Non-command** | **25864.83** | **95.99** | **7090.63** | **10869.00** | **43920.45** | **3463.11** | **40457.33** |
| | **TOTAL (MCM)** | **Non-command** | **258.65** | **0.96** | **70.91** | **108.69** | **439.20** | **34.63** | **404.57** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **ERNAKULAM** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5)+(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Alangad | Non-command | 1322.22 | 19.99 | 279.75 | 688.50 | 2310.46 | 231.05 | 2079.41 |
| 2 | Angamaly | Non-command | 3313.35 | 35.71 | 701.03 | 1627.50 | 5677.58 | 567.76 | 5109.83 |
| 3 | Edappally | Non-command | 3217.02 | 4.25 | 680.65 | 513.36 | 4415.28 | 441.53 | 3973.75 |
| 4 | Koovappady | Non-command | 4275.80 | 28.44 | 904.66 | 2590.00 | 7798.90 | 779.89 | 7019.01 |
| 5 | Kothamangalam | Non-command | 3226.02 | 23.85 | 682.55 | 500.00 | 4432.42 | 443.24 | 3989.18 |
| 6 | Moovattupuzha | Non-command | 2922.91 | 47.60 | 618.42 | 400.00 | 3988.94 | 398.89 | 3590.04 |
| 7 | Mulamthuruthy | Non-command | 2290.35 | 30.66 | 484.59 | 243.60 | 3049.20 | 304.92 | 2744.28 |
| 8 | Palluruthy | Non-command | 1332.86 | 0.00 | 282.00 | 0.00 | 1614.86 | 161.49 | 1453.38 |
| 9 | Pampakkuda | Non-command | 2630.77 | 32.94 | 556.61 | 1091.20 | 4311.52 | 431.15 | 3880.37 |
| 10 | Parakkadavu | Non-command | 1809.52 | 42.80 | 382.85 | 262.01 | 2497.18 | 249.72 | 2247.47 |
| 11 | Paravoor | Non-command | 1536.07 | 23.65 | 325.00 | 128.20 | 2012.92 | 201.29 | 1811.62 |
| 12 | Vadavukodu | Non-command | 2608.51 | 24.96 | 551.90 | 2780.00 | 5965.36 | 596.54 | 5368.83 |
| 13 | Vazhakkulam | Non-command | 2943.73 | 42.32 | 622.83 | 2710.00 | 6318.88 | 631.89 | 5686.99 |
| 14 | Vypeen | Non-command | 904.53 | 2.52 | 191.38 | 10.89 | 1109.31 | 110.93 | 998.38 |
| | **TOTAL (ha.m)** | **Non-command** | **34333.66** | **359.69** | **7264.20** | **13545.26** | **55502.81** | **5550.28** | **49952.53** |
| | **TOTAL (MCM)** | **Non-command** | **343.34** | **3.60** | **72.64** | **135.45** | **555.03** | **55.50** | **499.53** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **IDUKKI** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Adimali | Non-command | 2591.83 | 34.62 | 553.32 | 183.88 | 3363.65 | 336.37 | 3027.28 |
| 2 | Azhutha | Non-command | 2370.46 | 23.98 | 506.06 | 215.00 | 3115.50 | 311.55 | 2803.95 |
| 3 | Devikulam | Non-command | 1961.35 | 12.90 | 418.72 | 60.32 | 2453.30 | 245.33 | 2207.97 |
| 4 | Elam Desom | Non-command | 1386.67 | 30.53 | 296.04 | 270.00 | 1983.23 | 198.32 | 1784.91 |
| 5 | Idukki | Non-command | 2197.67 | 24.47 | 469.17 | 158.00 | 2849.32 | 284.93 | 2564.39 |
| 6 | Kattappana | Non-command | 1602.90 | 50.23 | 342.20 | 553.00 | 2548.32 | 254.83 | 2293.49 |
| 7 | Nedumkandam | Non-command | 1738.68 | 0.00 | 371.19 | 193.00 | 2302.87 | 230.29 | 2072.58 |
| 8 | Thodupuzha | Non-command | 1493.93 | 31.76 | 318.93 | 221.00 | 2065.62 | 206.56 | 1859.06 |
| | **TOTAL (ha.m)** | **Non-command** | **15343.49** | **208.49** | **3275.63** | **1854.21** | **20681.82** | **2068.18** | **18613.64** |
| | **TOTAL (MCM)** | **Non-command** | **153.43** | **2.08** | **32.76** | **18.54** | **206.82** | **20.68** | **186.14** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KANNUR** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Edakkad | Non-command | 1402.04 | 0.00 | 0.00 | 1498.19 | 2900.23 | 290.02 | 2610.21 |
| 2 | Iritty | Non-command | 5172.18 | 0.00 | 0.00 | 358.21 | 5530.40 | 553.04 | 4977.36 |
| 3 | Irikkur | Non-command | 5956.98 | 0.00 | 0.00 | 2355.05 | 8312.03 | 831.20 | 7480.83 |
| 4 | Kallyasseri | Non-command | 2567.71 | 0.00 | 0.00 | 252.83 | 2820.54 | 282.05 | 2538.49 |
| 5 | Kannur | Non-command | 2270.28 | 0.00 | 0.00 | 414.00 | 2684.28 | 268.43 | 2415.85 |
| 6 | Kuthuparamba | Non-command | 2026.76 | 0.00 | 0.00 | 171.21 | 2197.97 | 219.80 | 1978.17 |
| 7 | Panur | Non-command | 1156.83 | 0.00 | 0.00 | 115.91 | 1272.74 | 127.27 | 1145.47 |
| 8 | Payyannur | Non-command | 6002.79 | 0.00 | 0.00 | 233.43 | 6236.22 | 623.62 | 5612.60 |
| 9 | Peravoor | Non-command | 3503.28 | 0.00 | 0.00 | 198.84 | 3702.11 | 370.21 | 3331.90 |
| 10 | Taliparamba | Non-command | 6990.71 | 0.00 | 0.00 | 907.28 | 7897.99 | 789.80 | 7108.19 |
| 11 | Thalassery | Non-command | 1889.19 | 0.00 | 0.00 | 394.87 | 2284.06 | 228.41 | 2055.65 |
| | **TOTAL (ha.m)** | **Non-command** | **38938.74** | **0.00** | **0.00** | **6899.83** | **45838.56** | **4583.85** | **41254.71** |
| | **TOTAL (MCM)** | **Non-command** | **389.39** | **0.00** | **0.00** | **69.00** | **458.39** | **45.84** | **412.55** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KASARGOD** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Kanhangad | Non-command | 3788.65 | 82.82 | 0.00 | 540.70 | 4412.17 | 441.22 | 3970.95 |
| 2 | Karadka | Non-command | 4607.45 | 172.79 | 0.00 | 1016.96 | 5797.20 | 579.72 | 5217.48 |
| 3 | Kasaragod | Non-command | 4004.54 | 142.55 | 0.00 | 855.80 | 5002.89 | 500.29 | 4502.60 |
| 4 | Manjeswar | Non-command | 5229.13 | 174.29 | 0.00 | 1007.62 | 6411.04 | 641.10 | 5769.94 |
| 5 | Nileswaram | Non-command | 3108.03 | 58.80 | 0.00 | 383.51 | 3550.34 | 355.03 | 3195.31 |
| 6 | Parappa | Non-command | 5581.35 | 141.57 | 0.00 | 853.72 | 6576.63 | 657.66 | 5918.97 |
| | **TOTAL (ha.m)** | **Non-command** | **26319.15** | **772.81** | **0.00** | **4658.31** | **31750.27** | **3175.03** | **28575.25** |
| | **TOTAL (MCM)** | **Non-command** | **263.19** | **7.73** | **0.00** | **46.58** | **317.50** | **31.75** | **285.75** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KOLLAM** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Anchal | Non-command | 5384.82 | 16.41 | 2217.83 | 423.00 | 8042.06 | 804.21 | 7237.86 |
| 2 | Chadayamangalam | Non-command | 2420.97 | 16.60 | 997.12 | 351.00 | 3785.69 | 378.57 | 3407.12 |
| 3 | Chavara | Non-command | 1560.32 | 6.23 | 428.43 | 90.00 | 2084.97 | 208.50 | 1876.47 |
| 4 | Chittumala | Non-command | 1869.15 | 24.59 | 513.23 | 130.61 | 2537.58 | 253.76 | 2283.82 |
| 5 | Ithikkara | Non-command | 1759.78 | 9.09 | 647.26 | 206.98 | 2623.11 | 131.16 | 2491.95 |
| 6 | Kottarakkara | Non-command | 1293.95 | 14.05 | 532.93 | 482.00 | 2322.92 | 232.29 | 2090.63 |
| 7 | Mukhathala | Non-command | 2041.95 | 8.63 | 841.01 | 455.02 | 3346.61 | 334.66 | 3011.95 |
| 8 | Oachira | Non-command | 2425.05 | 9.61 | 665.87 | 225.00 | 3325.53 | 332.55 | 2992.98 |
| 9 | Pathanapuram | Non-command | 2221.19 | 15.07 | 914.83 | 305.00 | 3456.10 | 345.61 | 3110.49 |
| 10 | Sasthamkotta | Non-command | 1243.49 | 13.57 | 512.15 | 642.00 | 2411.21 | 241.12 | 2170.09 |
| 11 | Vettikkavala | Non-command | 1647.52 | 15.27 | 678.56 | 570.00 | 2911.35 | 291.14 | 2620.21 |
| | **TOTAL (ha.m)** | **Non-command** | **23868.19** | **149.12** | **8949.21** | **3880.61** | **36847.12** | **3553.56** | **33293.56** |
| | **TOTAL (MCM)** | **Non-command** | **238.68** | **1.49** | **89.49** | **38.81** | **368.47** | **35.54** | **332.94** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KOTTAYAM** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Erattupetta | Non-command | 2007.03 | 14.73 | 499.62 | 102.38 | 2623.76 | 262.38 | 2361.38 |
| 2 | Ettumanoor | Non-command | 2131.47 | 6.46 | 530.60 | 480.00 | 3148.53 | 314.85 | 2833.67 |
| 3 | Kaduthuruthy | Non-command | 2470.79 | 24.88 | 615.07 | 1760.00 | 4870.74 | 487.07 | 4383.67 |
| 4 | Kanjirappally | Non-command | 3338.88 | 15.43 | 831.17 | 136.09 | 4321.57 | 432.16 | 3889.41 |
| 5 | Lalam | Non-command | 2136.32 | 8.28 | 531.81 | 440.00 | 3116.41 | 311.64 | 2804.77 |
| 6 | Madappally | Non-command | 4023.75 | 16.39 | 667.77 | 550.00 | 5257.90 | 525.79 | 4732.11 |
| 7 | Pallom | Non-command | 3491.39 | 8.84 | 869.13 | 1500.00 | 5869.36 | 586.94 | 5282.42 |
| 8 | Pampady | Non-command | 2188.51 | 0.00 | 544.80 | 90.00 | 2823.31 | 282.33 | 2540.98 |
| 9 | Uzhavoor | Non-command | 2492.43 | 10.76 | 620.46 | 920.00 | 4043.64 | 404.36 | 3639.28 |
| 10 | Vaikom | Non-command | 1731.20 | 10.27 | 430.96 | 1000.00 | 3172.43 | 317.24 | 2855.18 |
| 11 | Vazhoor | Non-command | 1871.88 | 0.00 | 465.98 | 30.00 | 2367.86 | 236.79 | 2131.07 |
| | **TOTAL (ha.m)** | **Non-command** | **27883.63** | **116.03** | **6607.36** | **7008.47** | **41615.49** | **4161.55** | **37453.94** |
| | **TOTAL (MCM)** | **Non-command** | **278.84** | **1.16** | **66.07** | **70.08** | **416.15** | **41.62** | **374.54** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KOZHIKODE** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Ballussery | Non-command | 2091.72 | 35.78 | 315.48 | 278.61 | 2721.59 | 272.16 | 2449.43 |
| 2 | Chelannur | Non-command | 2078.68 | 11.90 | 313.51 | 124.15 | 2528.24 | 252.82 | 2275.42 |
| 3 | Koduvally | Non-command | 4092.30 | 17.71 | 617.21 | 159.08 | 4886.29 | 488.63 | 4397.66 |
| 4 | Kozhikode | Non-command | 2451.21 | 13.32 | 369.70 | 127.92 | 2962.15 | 296.22 | 2665.93 |
| 5 | Kunnamangalam | Non-command | 2547.61 | 25.94 | 384.23 | 186.51 | 3144.29 | 314.43 | 2829.86 |
| 6 | Kunnummal | Non-command | 2253.31 | 10.56 | 339.85 | 108.67 | 2712.38 | 271.24 | 2441.14 |
| 7 | Melady | Non-command | 1800.44 | 7.88 | 271.55 | 58.54 | 2138.40 | 213.84 | 1924.56 |
| 8 | Panthalayani | Non-command | 3165.82 | 7.77 | 318.32 | 92.41 | 3584.31 | 358.43 | 3225.88 |
| 9 | Perambra | Non-command | 3067.11 | 14.20 | 462.59 | 151.17 | 3695.07 | 369.51 | 3325.56 |
| 10 | Thodannur | Non-command | 1450.70 | 4.29 | 218.80 | 68.33 | 1742.11 | 174.21 | 1567.90 |
| 11 | Tuneri | Non-command | 1477.32 | 8.36 | 222.81 | 81.08 | 1789.56 | 178.96 | 1610.61 |
| 12 | Vadakara | Non-command | 1857.54 | 11.22 | 186.77 | 53.01 | 2108.54 | 210.85 | 1897.68 |
| | **TOTAL (ha.m)** | **Non-command** | **28333.75** | **168.91** | **4020.81** | **1489.48** | **34012.94** | **3401.29** | **30611.65** |
| | **TOTAL (MCM)** | **Non-command** | **283.34** | **1.69** | **40.21** | **14.89** | **340.13** | **34.01** | **306.12** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **MALAPPURAM** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Areacode | Non-command | 3668.26 | 24.65 | 607.41 | 554.00 | 4854.32 | 485.43 | 4368.89 |
| 2 | Kalikavu | Non-command | 3609.07 | 17.45 | 597.61 | 609.00 | 4833.12 | 483.31 | 4349.81 |
| 3 | Kondotty | Non-command | 2409.20 | 31.70 | 398.93 | 609.00 | 3448.82 | 344.88 | 3103.94 |
| 4 | Kuttippuram | Non-command | 2641.61 | 31.00 | 437.41 | 256.00 | 3366.01 | 336.60 | 3029.41 |
| 5 | Malappuram | Non-command | 2665.85 | 19.83 | 441.42 | 467.80 | 3594.91 | 359.49 | 3235.42 |
| 6 | Mankada | Non-command | 1972.09 | 30.28 | 326.55 | 401.50 | 2730.42 | 273.04 | 2457.38 |
| 7 | Nilamboor | Non-command | 3225.87 | 11.60 | 534.15 | 499.84 | 4271.46 | 427.15 | 3844.32 |
| 8 | Perinthalmanna | Non-command | 3619.52 | 40.21 | 599.34 | 1419.30 | 5678.37 | 567.84 | 5110.53 |
| 9 | Perumpadappu | Non-command | 1635.20 | 42.62 | 180.51 | 348.98 | 2207.31 | 220.73 | 1986.57 |
| 10 | Ponnani | Non-command | 2152.40 | 10.81 | 237.60 | 650.00 | 3050.82 | 305.08 | 2745.73 |
| 11 | Thanur | Non-command | 2121.58 | 27.42 | 351.30 | 382.20 | 2882.50 | 288.25 | 2594.25 |
| 12 | Thriurangadi | Non-command | 1846.98 | 24.11 | 305.83 | 580.00 | 2756.93 | 275.69 | 2481.23 |
| 13 | Tirur | Non-command | 1922.07 | 17.64 | 318.26 | 300.00 | 2557.97 | 255.80 | 2302.18 |
| 14 | Vengara | Non-command | 1920.35 | 15.30 | 317.98 | 431.40 | 2685.03 | 268.50 | 2416.53 |
| 15 | Wandoor | Non-command | 1980.24 | 11.18 | 327.90 | 1044.00 | 3363.32 | 336.33 | 3026.98 |
| | **TOTAL (ha.m)** | **Non-command** | **37390.30** | **355.78** | **5982.19** | **8553.02** | **52281.29** | **5228.13** | **47053.16** |
| | **TOTAL (MCM)** | **Non-command** | **373.90** | **3.56** | **59.82** | **85.53** | **522.81** | **52.28** | **470.53** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **PALAKKAD** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5) +(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Alathur | Non-command | 2026.95 | 98.69 | 415.01 | 5573 | 8113.65 | 811.37 | 7302.28 |
| 2 | Attappadi | Non-command | 3537.93 | 37.92 | 724.38 | 168.52 | 4468.75 | 446.88 | 4021.87 |
| 3 | Chittur | Non-command | 1632.81 | 196.16 | 556.98 | 3910 | 6295.95 | 629.6 | 5666.35 |
| 4 | Kollengode | Non-command | 2008.14 | 74.86 | 411.16 | 5260 | 7754.16 | 775.42 | 6978.74 |
| 5 | Kuzhalmannam | Non-command | 1660.84 | 43.05 | 340.05 | 5867 | 7910.94 | 791.09 | 7119.85 |
| 6 | Malampuzha | Non-command | 1469.18 | 58.28 | 300.81 | 1513 | 3341.27 | 334.13 | 3007.14 |
| 7 | Mannarkkad | Non-command | 2553.24 | 21.38 | 522.77 | 952 | 4049.39 | 404.94 | 3644.45 |
| 8 | Nenmara | Non-command | 2070.69 | 43.36 | 423.97 | 349.67 | 2887.69 | 288.77 | 2598.92 |
| 9 | Ottappalam | Non-command | 3049.04 | 37.37 | 624.28 | 610 | 4320.69 | 432.07 | 3888.62 |
| 10 | Palakkad | Non-command | 1789.99 | 32.74 | 366.5 | 4539 | 6728.23 | 672.82 | 6055.41 |
| 11 | Pattambi | Non-command | 2689.92 | 67.35 | 550.75 | 523.73 | 3831.75 | 383.17 | 3448.58 |
| 12 | Sreekrishnapuram | Non-command | 2220.14 | 34.9 | 454.57 | 654 | 3363.61 | 336.36 | 3027.25 |
| 13 | Thrithala | Non-command | 1984.39 | 24.9 | 406.3 | 233.66 | 2649.25 | 264.93 | 2384.32 |
| | **TOTAL (ha.m)** | **Non-command** | **28693.26** | **770.96** | **6097.53** | **30153.58** | **65715.33** | **6571.55** | **59143.78** |
| | **TOTAL (MCM)** | **Non-command** | **286.93** | **7.71** | **60.98** | **301.54** | **657.15** | **65.72** | **591.44** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **PATHANAMTHITTA** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4) +(5)+(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Elanthoor | Non-command | 1257.48 | 12.87 | 501.15 | 583.00 | 2354.49 | 235.45 | 2119.04 |
| 2 | Koipuram | Non-command | 1464.06 | 13.13 | 583.48 | 113.09 | 2173.75 | 217.38 | 1956.37 |
| 3 | Konni | Non-command | 3603.53 | 11.44 | 1313.14 | 400.00 | 5328.10 | 532.81 | 4795.29 |
| 4 | Mallappally | Non-command | 1825.25 | 10.08 | 727.42 | 160.00 | 2722.74 | 272.27 | 2450.47 |
| 5 | Pandalam | Non-command | 1378.11 | 28.08 | 549.22 | 820.00 | 2775.42 | 277.54 | 2497.87 |
| 6 | Parakode | Non-command | 4397.26 | 35.50 | 1068.25 | 1240.00 | 6741.01 | 674.10 | 6066.91 |
| 7 | Pulikeezh | Non-command | 1516.30 | 10.61 | 462.77 | 119.95 | 2109.63 | 105.48 | 2004.15 |
| 8 | Ranni | Non-command | 2856.84 | 10.49 | 1138.55 | 97.59 | 4103.47 | 410.35 | 3693.12 |
| | **TOTAL (ha.m)** | **Non-command** | **18298.81** | **132.19** | **6343.97** | **3533.64** | **28308.61** | **2725.38** | **25583.23** |
| | **TOTAL (MCM)** | **Non-command** | **182.99** | **1.32** | **63.44** | **35.34** | **283.09** | **27.25** | **255.83** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **THIRUVANANTHAPURAM** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4)+(5)+(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Athiyannur | Non-command | 1018.37 | 24.50 | 298.40 | 83.00 | 1424.27 | 142.43 | 1281.84 |
| 2 | Chirayinkil | Non-command | 1103.37 | 6.40 | 323.31 | 340.00 | 1773.08 | 177.31 | 1595.77 |
| 3 | Kilimanoor | Non-command | 2047.08 | 22.01 | 599.83 | 400.00 | 3068.92 | 306.89 | 2762.03 |
| 4 | Nedumangad | Non-command | 1453.70 | 15.30 | 425.96 | 198.00 | 2092.96 | 209.30 | 1883.67 |
| 5 | Nemom | Non-command | 3949.31 | 27.58 | 1157.22 | 100.00 | 5234.11 | 523.41 | 4710.70 |
| 6 | Parassala | Non-command | 1145.79 | 27.80 | 335.74 | 176.22 | 1685.55 | 168.56 | 1516.99 |
| 7 | Perumkadavila | Non-command | 1959.28 | 25.03 | 861.16 | 850.00 | 3695.47 | 369.55 | 3325.92 |
| 8 | Pothencode | Non-command | 955.44 | 26.69 | 293.88 | 234.00 | 1510.01 | 75.50 | 1434.51 |
| 9 | Vamanapuram | Non-command | 2272.87 | 25.66 | 876.80 | 300.00 | 3475.33 | 173.77 | 3301.56 |
| 10 | Varkala | Non-command | 1252.35 | 15.20 | 366.96 | 200.00 | 1834.51 | 183.45 | 1651.06 |
| 11 | Vellanad | Non-command | 2441.35 | 30.49 | 1063.32 | 155.81 | 3690.97 | 184.55 | 3506.42 |
| | **TOTAL (ha.m)** | **Non-command** | **19598.91** | **246.64** | **6602.58** | **3037.03** | **29485.17** | **2514.70** | **26970.47** |
| | **TOTAL (MCM)** | **Non-command** | **195.99** | **2.47** | **66.03** | **30.37** | **294.85** | **25.15** | **269.70** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **THRISSUR** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4)+(5)+(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Anthikkad | Non-command | 2113.40 | 58.20 | 271.87 | 2120.00 | 4563.46 | 228.17 | 4335.29 |
| 2 | Chalakkudy | Non-command | 2865.35 | 80.77 | 434.88 | 1580.00 | 4960.99 | 496.10 | 4464.89 |
| 3 | Chavakkad | Non-command | 2989.38 | 43.48 | 302.47 | 301.92 | 3637.25 | 363.72 | 3273.52 |
| 4 | Cherpu | Non-command | 1358.17 | 54.84 | 206.13 | 1930.00 | 3549.14 | 354.91 | 3194.23 |
| 5 | Chowannur | Non-command | 2857.49 | 68.05 | 433.69 | 880.00 | 4239.23 | 423.92 | 3815.30 |
| 6 | Iringalakkuda | Non-command | 2062.26 | 47.36 | 312.99 | 1162.00 | 3584.62 | 358.46 | 3226.15 |
| 7 | Kodakara | Non-command | 3345.90 | 73.47 | 507.81 | 880.00 | 4807.18 | 480.72 | 4326.46 |
| 8 | Mala | Non-command | 2299.32 | 96.44 | 348.97 | 2090.00 | 4834.73 | 483.47 | 4351.26 |
| 9 | Mathilakom | Non-command | 2941.05 | 51.77 | 446.37 | 308.32 | 3747.50 | 374.75 | 3372.75 |
| 10 | Mullassery | Non-command | 1925.43 | 37.83 | 194.82 | 960.00 | 3118.08 | 311.81 | 2806.27 |
| 11 | Ollukkara | Non-command | 2893.90 | 25.95 | 439.21 | 182.13 | 3541.20 | 354.12 | 3187.08 |
| 12 | Pazhayannur | Non-command | 3809.40 | 46.17 | 578.16 | 360.59 | 4794.32 | 479.43 | 4314.88 |
| 13 | Puzhakkal | Non-command | 3220.26 | 77.26 | 488.74 | 3000.00 | 6786.27 | 678.63 | 6107.64 |
| 14 | Thalikkulam | Non-command | 1862.81 | 42.53 | 200.32 | 220.55 | 2326.20 | 116.31 | 2209.89 |
| 15 | Vellangallur | Non-command | 1757.30 | 44.91 | 266.71 | 610.00 | 2678.92 | 267.89 | 2411.02 |
| 16 | Vadakkancherry | Non-command | 2999.77 | 74.57 | 455.28 | 527.84 | 4057.46 | 405.75 | 3651.71 |
| | **TOTAL (ha.m)** | **Non-command** | **41301.19** | **923.56** | **5888.42** | **17113.35** | **65226.52** | **6178.17** | **59048.35** |
| | **TOTAL (MCM)** | **Non-command** | **413.01** | **9.24** | **58.88** | **171.13** | **652.27** | **61.78** | **590.48** |

| **State** | | **KERALA** | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| **District** | | **WAYANAD** | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | |
| **Sl. No.** | **Assessment Unit/ District** | **Command / Non-Command** | **Recharge from rainfall during monsoon season** | **Recharge from other sources during monsoon season** | **Recharge from rainfall during non-monsoon season** | **Recharge from other sources during non-monsoon season** | **Total Annual Ground Water Recharge [(4)+(5)+(6)+(7)]** | **Total Natural Discharges** | **Annual Extractable Ground Water Recharge [(8)-(9)]** |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 1 | Kalpetta | Non-command | 7251.31 | 7.45 | 0.00 | 134.37 | 7393.12 | 739.31 | 6653.81 |
| 2 | Mananthavady | Non-command | 7198.70 | 3.55 | 0.00 | 174.35 | 7376.60 | 737.66 | 6638.94 |
| 3 | Panamaram | Non-command | 4083.43 | 4.71 | 0.00 | 143.27 | 4231.41 | 423.14 | 3808.27 |
| 4 | Sulthanbathery | Non-command | 6501.30 | 15.60 | 0.00 | 218.80 | 6735.69 | 673.57 | 6062.12 |
| | **TOTAL (ha.m)** | **Non-command** | **25034.74** | **31.29** | **0.00** | **670.79** | **25736.83** | **2573.68** | **23163.14** |
| | **TOTAL (MCM)** | **Non-command** | **250.35** | **0.31** | **0.00** | **6.71** | **257.37** | **25.74** | **231.63** |

## ANNEXURE III D (Contd.)

## ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES OF KERALA (2017).

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **ALAPPUZHA** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ha.m)** | **Current Annual Ground Water Extraction (Ha.m)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Ambalappuzha | Non-command | 1837.57 | 147.91 | 8.19 | 619.231 | 775.331 | 624.86 | 1056.61 | 42.19 |
| 2 | Aryad | Non-command | 2528.30 | 308.66 | 0 | 1368.312 | 1676.972 | 1380.76 | 838.88 | 66.33 |
| 3 | Bharanikkavu | Non-command | 4112.09 | 434.43 | 0 | 763.898 | 1198.328 | 770.85 | 2906.81 | 29.14 |
| 4 | Champakkulam | Non-command | 3745.13 | 74.33 | 0 | 497.772 | 572.102 | 502.29 | 3168.51 | 15.28 |
| 5 | Chengannur | Non-command | 4576.20 | 808.21 | 0 | 870.457 | 1678.667 | 876.87 | 2891.12 | 36.68 |
| 6 | Harippad | Non-command | 3000.55 | 791.73 | 82.36 | 652.656 | 1526.746 | 657.21 | 1469.25 | 50.88 |
| 7 | Kanjikkuzhy | Non-command | 2756.06 | 284.49 | 0 | 746.654 | 1031.144 | 753.45 | 1718.12 | 37.41 |
| 8 | Mavelikkara | Non-command | 3858.81 | 206.32 | 0 | 792.806 | 999.126 | 799.26 | 2853.23 | 25.89 |
| 9 | Muthukulam | Non-command | 4170.40 | 521.25 | 98.47 | 1055.365 | 1675.085 | 1064.97 | 2485.71 | 40.17 |
| 10 | Pattanakkad | Non-command | 3029.06 | 136.14 | 68.37 | 957.564 | 1162.074 | 966.28 | 1858.28 | 38.36 |
| 11 | Thycattussery | Non-command | 3345.76 | 176.57 | 0.9 | 685.67 | 863.14 | 691.91 | 2476.38 | 25.80 |
| 12 | Veliyanad | Non-command | 3497.41 | 92.57 | 0 | 413.471 | 506.041 | 417.24 | 2987.61 | 14.47 |
| | **TOTAL (ha.m)** | | **40457.33** | **3982.61** | **258** | **9424** | **13665** | **9505.93** | **26710.50** | **33.78** |
| | **TOTAL (MCM)** | | **404.57** | **39.83** | **2.58** | **94.24** | **136.65** | **95.06** | **267.10** | **33.78** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **ERNAKULAM** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Alangad | Non-command | 2079.41 | 437.88 | 46.87 | 943.41 | 1428.17 | 971.99 | 622.67 | 68.68 |
| 2 | Angamaly | Non-command | 5109.83 | 848.82 | 46.035 | 962.505 | 1857.36 | 993.45 | 3221.53 | 36.35 |
| 3 | Edappally | Non-command | 3973.75 | 172.32 | 10.888 | 2067.237 | 2250.445 | 2221.66 | 1568.88 | 56.63 |
| 4 | Koovappady | Non-command | 7019.01 | 778.14 | 12.63 | 845.905 | 1636.675 | 900.92 | 5327.32 | 23.32 |
| 5 | Kothamangalam | Non-command | 3989.18 | 645.90 | 2.4 | 1104.535 | 1752.835 | 1190.46 | 2150.42 | 43.94 |
| 6 | Moovattupuzha | Non-command | 3590.04 | 1090.44 | 8.34 | 1104.535 | 2203.315 | 1184.52 | 1306.74 | 61.37 |
| 7 | Mulamthuruthy | Non-command | 2744.28 | 745.74 | 10.238 | 1110.448 | 1866.426 | 1189.01 | 799.29 | 68.01 |
| 8 | Palluruthy | Non-command | 1453.38 | 151.40 | 9.277 | 151.353 | 312.03 | 162.42 | 1130.28 | 21.47 |
| 9 | Pampakkuda | Non-command | 3880.37 | 762.68 | 5.148 | 644.374 | 1412.202 | 690.75 | 2421.79 | 36.39 |
| 10 | Parakkadavu | Non-command | 2247.47 | 1008.28 | 8.1 | 761.704 | 1778.084 | 814.52 | 416.57 | 79.12 |
| 11 | Paravoor | Non-command | 1811.62 | 607.32 | 14.4 | 216.302 | 838.022 | 869.14 | 320.76 | 46.26 |
| 12 | Vadavukodu | Non-command | 5368.83 | 531.54 | 3.81 | 827.273 | 1362.627 | 889.62 | 3943.85 | 25.38 |
| 13 | Vazhakkulam | Non-command | 5686.99 | 1028.50 | 6.51 | 1529.027 | 2564.037 | 1644.79 | 3007.19 | 45.09 |
| 14 | Vypeen | Non-command | 998.38 | 53.64 | 0 | 579.018 | 632.658 | 625.32 | 319.42 | 63.37 |
| | **TOTAL (ha.m)** | | **49952.53** | **8862.61** | **185** | **12848** | **21895** | **14348.58** | **26556.69** | **43.83** |
| | **TOTAL (MCM)** | | **499.53** | **88.63** | **1.85** | **128.48** | **218.95** | **143.49** | **265.57** | **43.83** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **IDUKKI** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Adimali | Non-command | 3027.28 | 874.00 | 1.15 | 543.422 | 1418.572 | 543.42 | 1608.71 | 46.86 |
| 2 | Azhutha | Non-command | 2803.95 | 742.25 | 6.08 | 563.06 | 1311.39 | 563.06 | 1492.57 | 46.77 |
| 3 | Devikulam | Non-command | 2207.97 | 258.05 | 0 | 490.553 | 748.603 | 490.55 | 1459.37 | 33.90 |
| 4 | Elam Desom | Non-command | 1784.91 | 792.84 | 1.08 | 523.257 | 1317.177 | 523.26 | 467.73 | 73.80 |
| 5 | Idukki | Non-command | 2564.39 | 692.15 | 0.36 | 468.918 | 1161.428 | 468.92 | 1402.96 | 45.29 |
| 6 | Kattappana | Non-command | 2293.49 | 1097.92 | 1.32 | 768.274 | 1867.514 | 768.27 | 425.98 | 81.43 |
| 7 | Nedumkandam | Non-command | 2072.58 | 1111.41 | 1.18 | 634.272 | 1746.862 | 634.27 | 325.72 | 84.28 |
| 8 | Thodupuzha | Non-command | 1859.06 | 727.13 | 1.51 | 565.857 | 1294.497 | 565.86 | 564.57 | 69.63 |
| | **TOTAL (ha.m)** | | **18613.64** | **6295.75** | **13** | **4557.61** | **10866** | **4557.61** | **7747.61** | **58.38** |
| | **TOTAL (MCM)** | | **186.14** | **62.96** | **0.13** | **45.58** | **108.66** | **45.58** | **77.48** | **58.38** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KANNUR** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Edakkad | Non-command | 2610.21 | 670.37 | 0 | 196.43 | 866.8 | 210.09 | 1729.75 | 33.21 |
| 2 | Iritty | Non-command | 4977.36 | 1162.88 | 0 | 1034.06 | 2036.67 | 1279.65 | 2534.82 | 40.92 |
| 3 | Irikkur | Non-command | 7480.83 | 1002.61 | 0 | 1196.417 | 2359.297 | 1105.99 | 5372.22 | 31.54 |
| | Kallyasseri | Non-command | 2538.49 | 706.02 | 0 | 701.95 | 1407.97 | 750.78 | 1081.69 | 55.46 |
| 5 | Kannur | Non-command | 2415.85 | 1185.60 | 10.14 | 754.92 | 1950.66 | 797.30 | 422.81 | 80.74 |
| 6 | Kuthuparamba | Non-command | 1978.18 | 715.06 | 0 | 616.563 | 1331.623 | 659.46 | 603.66 | 67.32 |
| 7 | Panur | Non-command | 1145.47 | 483.26 | 0 | 545.836 | 1029.096 | 583.81 | 78.40 | 89.84 |
| 8 | Payyannur | Non-command | 5612.60 | 695.64 | 0 | 1260.617 | 1956.257 | 1348.32 | 3568.64 | 34.85 |
| 9 | Peravoor | Non-command | 3331.90 | 921.10 | 0 | 700.942 | 1622.042 | 749.70 | 1661.10 | 48.68 |
| 10 | Taliparamba | Non-command | 7108.19 | 936.49 | 5.999 | 1649.924 | 2592.413 | 1764.71 | 4400.99 | 36.47 |
| 11 | Thalassery | Non-command | 2055.65 | 409.08 | 4.2 | 1219.261 | 1632.541 | 1304.08 | 338.29 | 79.42 |
| | **TOTAL (ha.m)** | | **41254.71** | **8888.11** | **20** | **9877** | **18785** | **10553.89** | **21792.37** | **45.54** |
| | **TOTAL (MCM)** | | **412.55** | **88.88** | **0.20** | **98.77** | **187.85** | **105.54** | **217.92** | **45.54** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KASARGOD** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4) *100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Kanhangad | Non-command | 3970.95 | 1883.54 | 1.71 | 1199.029 | 3084.279 | 1334.35 | 751.35 | 77.67 |
| 2 | Karadka | Non-command | 5217.48 | 3585.89 | 3.479 | 690.713 | 4280.082 | 766.17 | 861.94 | 82.03 |
| 3 | Kasaragod | Non-command | 4502.60 | 3017.05 | 1.485 | 1379.437 | 4397.972 | 1535.60 | 0.00 | 97.68 |
| 4 | Manjeswar | Non-command | 5769.94 | 3633.93 | 1.72 | 1174.18 | 4809.83 | 1306.69 | 827.60 | 83.36 |
| 5 | Nileswaram | Non-command | 3195.31 | 1326.85 | 3.8 | 890.717 | 2221.367 | 988.71 | 875.95 | 69.52 |
| 6 | Parappa | Non-command | 5918.97 | 3003.50 | 1.71 | 958.842 | 3964.052 | 1066.72 | 1847.05 | 66.97 |
| | **TOTAL (ha.m)** | | **28575.24** | **16450.76** | **14** | **6293** | **22758** | **6998.24** | **5163.88** | **79.64** |
| | **TOTAL (MCM)** | | **285.75** | **164.51** | **0.14** | **62.93** | **227.58** | **69.98** | **51.64** | **79.64** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KOLLAM** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Anchal | Non-command | 7237.86 | 760.69 | 0.09 | 323.44 | 1084.22 | 1127.30 | 5349.78 | 14.98 |
| 2 | Chadayamangalam | Non-command | 3407.12 | 592.98 | 1.215 | 1009.743 | 1603.938 | 1032.43 | 1780.49 | 47.08 |
| 3 | Chavara | Non-command | 1876.47 | 303.54 | 0.87 | 974.734 | 1279.144 | 998.63 | 573.43 | 68.17 |
| 4 | Chittumala | Non-command | 2283.82 | 491.84 | 12.2 | 1056.706 | 1560.746 | 1068.91 | 710.87 | 68.34 |
| 5 | Ithikkara | Non-command | 2491.95 | 355.80 | 0.00 | 1136.48 | 1492.28 | 1165.36 | 970.79 | 59.88 |
| 6 | Kottarakkara | Non-command | 2090.63 | 479.22 | 1.38 | 851.546 | 1332.146 | 873.18 | 736.85 | 63.72 |
| 7 | Mukhathala | Non-command | 3011.95 | 400.62 | 0.78 | 1801.379 | 2202.779 | 2500.50 | 110.05 | 73.13 |
| 8 | Oachira | Non-command | 2992.98 | 460.52 | 0.09 | 1049.05 | 1509.66 | 1075.70 | 1456.66 | 50.44 |
| 9 | Pathanapuram | Non-command | 3110.49 | 500.02 | 0.45 | 944.613 | 1445.083 | 968.61 | 1641.41 | 46.46 |
| 10 | Sasthamkotta | Non-command | 2170.09 | 473.58 | 0.24 | 998.036 | 1471.856 | 1023.39 | 672.88 | 67.82 |
| 11 | Vettikkavala | Non-command | 2620.21 | 532.30 | 0.18 | 951.944 | 1484.424 | 976.13 | 1111.61 | 56.65 |
| | **TOTAL (ha.m)** | | **33293.56** | **5351.11** | **17** | **11098** | **16466** | **12810.14** | **15114.81** | **49.46** |
| | **TOTAL (MCM)** | | **332.94** | **53.51** | **0.17** | **110.98** | **164.66** | **128.10** | **151.15** | **49.46** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **KOTTAYAM** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Erattupetta | Non-command | 2361.38 | 467.56 | 0 | 585.663 | 1053.223 | 597.12 | 1296.70 | 44.60 |
| 2 | Ettumanoor | Non-command | 2833.67 | 330.12 | 0 | 915.718 | 1245.838 | 933.63 | 1569.92 | 43.97 |
| 3 | Kaduthuruthy | Non-command | 4383.67 | 652.06 | 0 | 719.319 | 1371.379 | 732.44 | 2999.17 | 31.28 |
| 4 | Kanjirappally | Non-command | 3889.41 | 606.08 | 0 | 927.986 | 1534.066 | 946.15 | 2337.19 | 39.44 |
| 5 | Lalam | Non-command | 2804.77 | 310.80 | 0 | 560.688 | 871.488 | 571.66 | 1922.31 | 31.07 |
| 6 | Madappally | Non-command | 4732.11 | 629.19 | 0 | 1203.56 | 1832.75 | 1227.11 | 2875.81 | 38.73 |
| 7 | Pallom | Non-command | 5282.42 | 563.92 | 0 | 1391.57 | 1955.49 | 1416.95 | 3301.55 | 37.02 |
| 8 | Pampady | Non-command | 2540.98 | 282.18 | 0 | 603.511 | 885.691 | 1045.61 | 1213.19 | 34.86 |
| 9 | Uzhavoor | Non-command | 3639.28 | 562.75 | 0 | 736.794 | 1299.544 | 1045.61 | 2030.92 | 35.71 |
| 10 | Vaikom | Non-command | 2855.18 | 444.35 | 0 | 182.791 | 627.141 | 186.36 | 2224.47 | 21.97 |
| 11 | Vazhoor | Non-command | 2131.07 | 394.09 | 0 | 533.011 | 927.101 | 543.44 | 1193.54 | 43.50 |
| | **TOTAL (ha.m)** | | **37453.94** | **5243.10** | **0** | **8361** | **13604** | **9246.09** | **22964.75** | **36.32** |
| | **TOTAL (MCM)** | | **374.54** | **52.43** | **0.00** | **83.61** | **136.04** | **92.46** | **229.65** | **36.32** |

| **State** | | **KERALA** | | | | | | | | |
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| **District** | | **KOZHIKODE** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Balussery | Non-command | 2449.43 | 929.24 | 0 | 1145.528 | 2074.768 | 1263.39 | 256.81 | 84.70 |
| 2 | Chelannur | Non-command | 2275.42 | 421.20 | 0 | 1155.28 | 1576.48 | 1274.13 | 580.09 | 69.28 |
| 3 | Koduvally | Non-command | 4397.66 | 578.26 | 0 | 1542.012 | 2120.272 | 1689.07 | 2130.33 | 48.21 |
| 4 | Kozhikode | Non-command | 2665.93 | 488.76 | 1.03 | 1336.2 | 1825.99 | 1720.60 | 455.54 | 68.49 |
| 5 | Kunnamangalam | Non-command | 2829.86 | 662.33 | 0 | 1673.921 | 2336.251 | 1846.14 | 321.40 | 82.56 |
| 6 | Kunnummal | Non-command | 2441.14 | 374.40 | 0 | 1040.654 | 1415.054 | 1147.71 | 919.03 | 57.97 |
| 7 | Melady | Non-command | 1924.56 | 209.83 | 0 | 628.61 | 838.44 | 688.56 | 1026.17 | 43.57 |
| 8 | Panthalayani | Non-command | 3225.88 | 287.70 | 0 | 955.969 | 1243.669 | 1054.32 | 1883.86 | 38.55 |
| 9 | Perambra | Non-command | 3325.56 | 428.24 | 0 | 876.745 | 1304.985 | 966.95 | 1930.37 | 39.24 |
| 10 | Thodannur | Non-command | 1567.90 | 193.78 | 0 | 716.089 | 909.869 | 789.76 | 584.36 | 58.03 |
| 11 | Tuneri | Non-command | 1610.61 | 280.42 | 0 | 766.138 | 1046.558 | 844.96 | 485.23 | 64.98 |
| 12 | Vadakara | Non-command | 1897.68 | 224.30 | 0 | 844.993 | 1069.293 | 931.93 | 741.46 | 56.35 |
| | **TOTAL (ha.m)** | | **30611.65** | **5078.46** | **1** | **12682** | **17762** | **14217.51** | **11314.64** | **58.02** |
| | **TOTAL (MCM)** | | **306.12** | **50.78** | **0.01** | **126.82** | **177.62** | **142.18** | **113.15** | **58.02** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **MALAPPURAM** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Areacode | Non-command | 4368.89 | 740.00 | 0 | 2299.255 | 3039.255 | 2679.37 | 949.52 | 69.57 |
| 2 | Kalikavu | Non-command | 4349.81 | 570.78 | 0 | 1707.945 | 2278.725 | 2014.10 | 1764.93 | 52.39 |
| 3 | Kondotty | Non-command | 3103.94 | 901.41 | 0 | 1728.355 | 2629.765 | 2014.10 | 188.43 | 84.72 |
| 4 | Kuttippuram | Non-command | 3029.41 | 870.97 | 0 | 1489.573 | 2360.543 | 1756.58 | 401.86 | 77.92 |
| 5 | Malappuram | Non-command | 3235.42 | 566.22 | 0 | 1857.49 | 2423.71 | 2190.45 | 478.75 | 74.91 |
| 6 | Mankada | Non-command | 2457.38 | 726.48 | 0 | 979.683 | 1706.163 | 1155.29 | 575.61 | 69.43 |
| 7 | Nilamboor | Non-command | 3844.32 | 490.27 | 0 | 1282.436 | 1772.706 | 1512.31 | 1841.74 | 46.11 |
| 8 | Perinthalmanna | Non-command | 5110.53 | 1063.70 | 0 | 1881.01 | 2944.71 | 2218.18 | 1828.65 | 57.62 |
| 9 | Perumpadappu | Non-command | 1986.58 | 871.44 | 0 | 412.871 | 1284.311 | 486.88 | 628.26 | 64.65 |
| 10 | Ponnani | Non-command | 2745.73 | 431.00 | 0 | 1195.717 | 1626.717 | 1410.05 | 904.69 | 59.25 |
| 11 | Thanur | Non-command | 2594.25 | 798.87 | 0 | 1376.702 | 2175.572 | 1623.48 | 171.90 | 83.86 |
| 12 | Thriurangadi | Non-command | 2481.23 | 678.08 | 0 | 1370.769 | 2048.849 | 1616.47 | 186.68 | 82.57 |
| 13 | Tirur | Non-command | 2302.18 | 490.14 | 0 | 1299.802 | 1789.942 | 1717.50 | 94.53 | 77.75 |
| 14 | Vengara | Non-command | 2416.53 | 527.91 | 0 | 1401.455 | 1929.365 | 1652.66 | 235.95 | 79.84 |
| 15 | Wandoor | Non-command | 3026.99 | 386.00 | 0 | 1231.043 | 1617.043 | 1451.70 | 1189.28 | 53.42 |
| | **TOTAL (ha.m)** | | **47053.16** | **10113.27** | **0.00** | **21514.11** | **31627.38** | **25499.12** | **11440.78** | **67.22** |
| | **TOTAL (MCM)** | | **470.53** | **101.13** | **0.00** | **215.14** | **316.27** | **254.99** | **114.41** | **67.22** |

| **State** | | **KERALA** | | | | | | | | |
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| **District** | | **PALAKKAD** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Alathur | Non-command | 7302.28 | 2354.43 | 0 | 1408.915 | 3763.345 | 1555.36 | 3392.49 | 51.54 |
| 2 | Attappadi | Non-command | 4021.87 | 778.16 | 0 | 281.672 | 1059.832 | 310.95 | 2932.76 | 26.35 |
| 3 | Chittur | Non-command | 5666.36 | 4603.13 | 150 | 1167.65 | 5920.78 | 1139.01 | 0.00 | 104.49 |
| 4 | Kollengode | Non-command | 6978.75 | 1722.46 | 1.7 | 687.711 | 2411.871 | 757.49 | 4497.10 | 34.56 |
| 5 | Kuzhalmannam | Non-command | 7119.85 | 1197.46 | 72 | 917.619 | 2187.079 | 941 | 4909.39 | 30.72 |
| 6 | Malampuzha | Non-command | 3007.148 | 1606.75 | 259.44 | 1072.24 | 2938.43 | 1088.32 | 52.64 | 97.72 |
| 7 | Mannarkkad | Non-command | 3644.45 | 795.12 | 2.35 | 1405.46 | 2202.93 | 1549.19 | 1297.79 | 60.45 |
| 8 | Nenmara | Non-command | 2598.911 | 1028.4 | 0 | 650.58 | 1678.98 | 718.202 | 852.31 | 64.60 |
| 9 | Ottappalam | Non-command | 3888.63 | 1017.9 | 0.00 | 1156.39 | 2174.29 | 1276.58 | 1594.15 | 55.91 |
| 10 | Palakkad | Non-command | 6055.406 | 924.83 | 14.61 | 1510.13 | 2449.567 | 1652.484 | 3463.48 | 40.45 |
| 11 | Pattambi | Non-command | 3448.569 | 1668.84 | 0 | 1137.26 | 2806.1 | 1255.466 | 524.26 | 81.37 |
| 12 | Sreekrishnapuram | Non-command | 3027.25 | 951.41 | 72 | 938.51 | 1961.916 | 964.05 | 1039.79 | 64.81 |
| 13 | Thrithala | Non-command | 2384.32 | 771.9 | 0 | 1055.41 | 1827.311 | 1224.72 | 387.70 | 76.64 |
| | **TOTAL (ha.m)** | | **59143.794** | **19420.79** | **572** | **13390** | **33382** | **14432.822** | **24943.86** | **56.44** |
| | **TOTAL (MCM)** | | **591.44** | **194.21** | **5.72** | **133.90** | **328.10** | **144.33** | **249.44** | **56.44** |

| **State** | | **KERALA** | | | | | | | | |
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| **District** | | **PATHANAMTHITTA** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Elanthoor | Non-command | 2119.04 | 394.86 | 0 | 444.88 | 839.737 | 444.88 | 1279.30 | 39.63 |
| 2 | Koipuram | Non-command | 1956.37 | 417.50 | 0 | 578.20 | 995.698 | 578.20 | 960.67 | 50.90 |
| 3 | Konni | Non-command | 4795.29 | 428.26 | 0 | 762.92 | 1191.177 | 762.92 | 3604.11 | 24.84 |
| 4 | Mallappally | Non-command | 2450.47 | 350.96 | 0 | 566.09 | 917.051 | 566.09 | 1533.42 | 37.42 |
| 5 | Pandalam | Non-command | 2497.87 | 730.08 | 0 | 643.19 | 1373.267 | 643.19 | 1124.60 | 54.98 |
| 6 | Parakode | Non-command | 6066.91 | 911.30 | 0 | 1065.36 | 1976.66 | 1065.36 | 4090.25 | 32.58 |
| 7 | Pulikeezh | Non-command | 2004.15 | 320.20 | 0 | 672.89 | 993.085 | 672.89 | 1011.06 | 49.55 |
| 8 | Ranni | Non-command | 3693.12 | 374.22 | 0 | 787.64 | 1161.856 | 787.64 | 2531.26 | 31.46 |
| | **TOTAL (ha.m)** | | **25583.23** | **3927.38** | **0** | **5521** | **9449** | **5521.17** | **16134.68** | **36.93** |
| | **TOTAL (MCM)** | | **255.83** | **39.27** | **0.00** | **55.21** | **94.49** | **55.21** | **161.35** | **36.93** |

| State | | KERALA | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| District | | THIRUVANANTHAPURAM | | | | | | | | |
| Assessment Year | | 2017 | | | | | | | | |
| Sl. No. | Assessment Unit/ Block | Command / Non-Command | Annual Extractable GroundWater Recharge (Ham) | Current Annual Ground Water Extraction (Ham) | | | | Annual Groundwater Allocation for Domestic use as on 2025 | Net Ground Water Availability for future use (4-5-6-9) | Stage of Ground Water Extraction (%) (8/4)*100 |
| | | | | Irrigation Use | Industrial Use | Domestic Use | Total Extraction (5+6+7) | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Athiyannur | Non-command | 1281.84 | 361.75 | 0.033 | 777.84 | 1139.623 | 803.57 | 116.48 | 88.91 |
| 2 | Chirayinkil | Non-command | 1595.77 | 337.31 | 0.098 | 988.005 | 1325.413 | 1020.69 | 237.67 | 83.06 |
| 3 | Kilimanoor | Non-command | 2762.03 | 452.76 | 0 | 1072.224 | 1524.984 | 1107.69 | 1201.58 | 55.21 |
| 4 | Nedumangad | Non-command | 1883.67 | 543.94 | 0 | 1057.468 | 1601.408 | 1092.45 | 247.28 | 85.02 |
| 5 | Nemom | Non-command | 4710.70 | 514.30 | 0 | 2750.26 | 3264.56 | 2841.23 | 1355.17 | 69.30 |
| 6 | Parassala | Non-command | 1516.99 | 599.60 | 0 | 643.466 | 1243.066 | 664.75 | 252.64 | 81.94 |
| 7 | Perumkadavila | Non-command | 3325.92 | 585.39 | 0 | 1008.861 | 1594.251 | 1042.24 | 1698.30 | 47.93 |
| 8 | Pothencode | Non-command | 1434.51 | 614.35 | 2.17 | 641.631 | 1258.151 | 662.85 | 155.14 | 87.71 |
| 9 | Vamanapuram | Non-command | 3301.56 | 517.36 | 0 | 966.228 | 1483.588 | 998.19 | 1786.01 | 44.94 |
| 10 | Varkala | Non-command | 1651.06 | 314.00 | 0 | 837.437 | 1151.437 | 865.14 | 471.92 | 69.74 |
| 11 | Vellanad | Non-command | 3506.42 | 588.50 | 0.00 | 1040.82 | 1629.32 | 1075.25 | 1842.67 | 46.47 |
| | **TOTAL (ha.m)** | | **26970.46** | **5429.26** | **2** | **11784** | **17216** | **12174.05** | **9364.85** | **63.83** |
| | **TOTAL (MCM)** | | **269.70** | **54.29** | **0.02** | **117.84** | **172.16** | **121.74** | **93.65** | **63.83** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **THRISSUR** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Anthikkad | Non-command | 4335.29 | 1299.38 | 1.944 | 659.366 | 1960.69 | 703.00 | 2330.97 | 45.23 |
| 2 | Chalakkudy | Non-command | 4464.89 | 1763.18 | 10.8 | 916.248 | 2690.228 | 965.91 | 1725.01 | 60.25 |
| 3 | Chavakkad | Non-command | 3273.52 | 1229.80 | 0 | 900.007 | 2129.807 | 955.19 | 1088.53 | 65.06 |
| 4 | Cherpu | Non-command | 3194.23 | 1188.50 | 0 | 473.675 | 1662.175 | 504.93 | 1500.79 | 52.04 |
| 5 | Chowannur | Non-command | 3815.30 | 1423.33 | 0.84 | 1473.082 | 2897.256 | 1562.56 | 828.57 | 75.94 |
| 6 | Iringalakkuda | Non-command | 3226.15 | 1041.58 | 0.74 | 723.221 | 1765.541 | 770.20 | 1413.63 | 54.73 |
| 7 | Kodakara | Non-command | 4326.46 | 1676.34 | 3.8 | 892.497 | 2572.637 | 947.58 | 1698.74 | 59.46 |
| 8 | Mala | Non-command | 4351.26 | 2076.12 | 0 | 729.522 | 2805.642 | 777.66 | 1497.48 | 64.48 |
| 9 | Mathilakom | Non-command | 3372.75 | 1418.34 | 0 | 1320.618 | 2738.958 | 1407.75 | 546.66 | 81.21 |
| 10 | Mullassery | Non-command | 2806.27 | 936.56 | 0 | 431.789 | 1368.349 | 460.28 | 1409.43 | 48.76 |
| 11 | Ollukkara | Non-command | 3187.08 | 659.56 | 3.6 | 788.986 | 1452.146 | 837.44 | 1686.48 | 45.56 |
| 12 | Pazhayannur | Non-command | 4314.88 | 1083.24 | 0.00 | 833.71 | 1916.95 | 888.72 | 2342.92 | 44.43 |
| 13 | Puzhakkal | Non-command | 6107.64 | 1788.53 | 10.8 | 533.612 | 2332.942 | 558.02 | 3750.29 | 38.20 |
| 14 | Thalikkulam | Non-command | 2209.89 | 1051.52 | 0 | 610.734 | 1662.254 | 651.03 | 507.34 | 75.22 |
| 15 | Vellangallur | Non-command | 2411.02 | 1105.88 | 6.41 | 833.273 | 2446.683 | 584.11 | 714.62 | 101.48 |
| 16 | Vadakkancherry | Non-command | 3651.71 | 1607.00 | 0 | 547.96 | 1653.84 | 881.85 | 1162.87 | 45.29 |
| | **TOTAL (ha.m)** | | **59048.35** | **21348.86** | **39** | **12668** | **34056** | **13456.22** | **24204.34** | **57.67** |
| | **TOTAL (MCM)** | | **590.48** | **213.49** | **0.39** | **126.68** | **340.56** | **134.56** | **242.04** | **57.67** |

| **State** | | **KERALA** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | | **WAYANAD** | | | | | | | | |
| **Assessment Year** | | **2017** | | | | | | | | |
| **Sl. No.** | **Assessment Unit/ Block** | **Command / Non-Command** | **Annual Extractable GroundWater Recharge (Ham)** | **Current Annual Ground Water Extraction (Ham)** | | | | **Annual Groundwater Allocation for Domestic use as on 2025** | **Net Ground Water Availability for future use (4-5-6-9)** | **Stage of Ground Water Extraction (%) (8/4)*100** |
| | | | | **Irrigation Use** | **Industrial Use** | **Domestic Use** | **Total Extraction (5+6+7)** | | | |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
| 1 | Kalpetta | Non-command | 6653.8 | 342.3 | 72 | 1058.515 | 1472.855 | 1090.3 | 5149.2 | 22.1 |
| 2 | Mananthavady | Non-command | 6638.9 | 408.1 | 72 | 980.31 | 1460.45 | 1009.7 | 5149.1 | 22.0 |
| 3 | Panamaram | Non-command | 3808.3 | 348.0 | 86.4 | 828.262 | 1262.682 | 853.1 | 2520.7 | 33.2 |
| 4 | Sulthanbathery | Non-command | 6062.1 | 567.0 | 86.4 | 828.262 | 1481.622 | 853.1 | 4555.7 | 24.4 |
| | **TOTAL (ha.m)** | | **23163.1** | **1665.5** | **316.80** | **3695.35** | **5677.61** | **3806.2** | **17374.7** | **24.5** |
| | **TOTAL (MCM)** | | **231.6** | **16.7** | **3.2** | **37.0** | **56.8** | **38.1** | **173.7** | **24.5** |

# ANNEXURE III E

# ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES OF KERALA - ASSESSMENT UNIT WISE CATEGORIZATION (2017)

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **ALAPPUZHA** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe / Semi-critical / Critical / Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Ambalappuzha | 6890.00 | 6890.00 | 42.19 | Safe |
| 2 | Aryad | 8772.00 | 8772.00 | 66.33 | Safe |
| 3 | Bharanikkavu | 12995.00 | 12995.00 | 29.14 | Safe |
| 4 | Champakkulam | 15383.00 | 15383.00 | 15.28 | Safe |
| 5 | Chengannur | 14996.00 | 14996.00 | 36.68 | Safe |
| 6 | Harippad | 11439.00 | 11439.00 | 50.88 | Safe |
| 7 | Kanjikkuzhy | 11013.00 | 11013.00 | 37.41 | Safe |
| 8 | Mavelikkara | 10044.00 | 10044.00 | 25.89 | Safe |
| 9 | Muthukulam | 11651.00 | 11651.00 | 40.17 | Safe |
| 10 | Pattanakkad | 10871.00 | 10871.00 | 38.36 | Safe |
| 11 | Thycattussery | 14159.00 | 14159.00 | 25.80 | Safe |
| 12 | Veliyanad | 13190.00 | 13190.00 | 14.47 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **ERNAKULAM** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Alangad | 7331.00 | 7331.00 | 68.68 | Safe |
| 2 | Angamaly | 23197.00 | 21197.00 | 36.35 | Safe |
| 3 | Edappally | 16053.00 | 16053.00 | 56.63 | Safe |
| 4 | Koovappady | 38560.00 | 35560.00 | 16.65 | Safe |
| 5 | Kothamangalam | 82997.00 | 22997.00 | 33.89 | Safe |
| 6 | Moovattupuzha | 21480.00 | 19980.00 | 61.37 | Safe |
| 7 | Mulamthuruthy | 16327.00 | 16327.00 | 68.01 | Safe |
| 8 | Palluruthy | 6651.00 | 6651.00 | 21.47 | Safe |
| 9 | Pampakkuda | 18740.00 | 17740.00 | 36.39 | Safe |
| 10 | Parakkadavu | 11881.00 | 11881.00 | 79.12 | Semi-critical |
| 11 | Paravoor | 7665.00 | 7665.00 | 46.26 | Safe |
| 12 | Vadavukodu | 18595.00 | 18595.00 | 25.38 | Safe |
| 13 | Vazhakkulam | 19328.00 | 19328.00 | 45.09 | Safe |
| 14 | Vypeen | 5642.00 | 5642.00 | 63.37 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **IDUKKI** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Adimali | 51914.00 | 21200.00 | 46.86 | Safe |
| 2 | Azhutha | 107442.00 | 14542.00 | 46.77 | Safe |
| 3 | Devikulam | 96343.00 | 16043.00 | 33.90 | Safe |
| 4 | Elam Desom | 18722.00 | 9722.00 | 73.80 | Semi critical |
| 5 | Idukki | 73482.00 | 13482.00 | 45.29 | Safe |
| 6 | Kattappana | 37238.00 | 11238.00 | 81.43 | Semi Critical |
| 7 | Nedumkandam | 34190.00 | 12190.00 | 84.28 | Semi Critical |
| 8 | Thodupuzha | 16474.00 | 10474.00 | 69.63 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **KANNUR** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Edakkad | 8948.00 | 8948.00 | 41.53 | Safe |
| 2 | Irikkur | 42709.00 | 31509.00 | 27.23 | Safe |
| 3 | Iritty | 41290.00 | 36290.00 | 47.40 | Safe |
| 4 | Kallyasseri | 14339.00 | 14339.00 | 60.41 | Safe |
| 5 | Kannur | 12678.00 | 12678.00 | 85.00 | Semi-critical |
| 6 | Kuthuparamba | 18235.00 | 12935.00 | 67.32 | Safe |
| 7 | Panur | 7383.00 | 7383.00 | 89.84 | Semi-critical |
| 8 | Payyannur | 39212.00 | 34212.00 | 34.85 | Safe |
| 9 | Peravoor | 42542.00 | 21342.00 | 48.68 | Safe |
| 10 | Taliparamba | 57403.00 | 40703.00 | 36.47 | Safe |
| 11 | Thalassery | 12057.00 | 12057.00 | 79.42 | Semi-critical |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **KASARGOD** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Kanhangad | 24508.00 | 24008.00 | 77.67 | Semi critical |
| 2 | Karadka | 37247.00 | 25547.00 | 82.03 | Semi critical |
| 3 | Kasaragod | 25876.00 | 25376.00 | 97.68 | Critical |
| 4 | Manjeswar | 34136.00 | 33136.00 | 83.36 | Semi-critical |
| 5 | Nileswaram | 19695.00 | 19695.00 | 69.52 | Safe |
| 6 | Parappa | 54668.00 | 35368.00 | 66.97 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **KOLLAM** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Anchal | 94622.00 | 64622.00 | 14.98 | Safe |
| 2 | Chadayamangalam | 24903.00 | 24903.00 | 47.08 | Safe |
| 3 | Chavara | 7490.00 | 7490.00 | 68.17 | Safe |
| 4 | Chittumala | 12125.00 | 12125.00 | 68.34 | Safe |
| 5 | Ithikkara | 12573.00 | 12573.00 | 59.88 | Safe |
| 6 | Kottarakkara | 13310.00 | 13310.00 | 63.72 | Safe |
| 7 | Mukhathala | 14703.00 | 14703.00 | 73.13 | Semi-critical |
| 8 | Oachira | 11641.00 | 11641.00 | 50.44 | Safe |
| 9 | Pathanapuram | 27995.00 | 19992.00 | 46.46 | Safe |
| 10 | Sasthamkotta | 12791.00 | 12791.00 | 67.82 | Safe |
| 11 | Vettikkavala | 16947.00 | 16947.00 | 56.65 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **KOTTAYAM** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Erattupetta | 28251.00 | 15251.00 | 44.60 | Safe |
| 2 | Ettumanoor | 14172.00 | 14172.00 | 43.97 | Safe |
| 3 | Kaduthuruthy | 18775.00 | 18775.00 | 31.28 | Safe |
| 4 | Kanjirappally | 24200.00 | 22200.00 | 39.44 | Safe |
| 5 | Lalam | 18939.00 | 18939.00 | 31.07 | Safe |
| 6 | Madappally | 15854.00 | 15854.00 | 38.73 | Safe |
| 7 | Pallom | 23214.00 | 23214.00 | 37.02 | Safe |
| 8 | Pampady | 16630.00 | 16630.00 | 34.86 | Safe |
| 9 | Uzhavoor | 22096.00 | 22096.00 | 35.71 | Safe |
| 10 | Vaikom | 13155.00 | 13155.00 | 21.97 | Safe |
| 11 | Vazhoor | 14224.00 | 14224.00 | 43.50 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **KOZHIKODE** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Balussery | 27853.00 | 13953.00 | 84.70 | Semi-critical |
| 2 | Chelannur | 13866.00 | 13866.00 | 69.28 | Safe |
| 3 | Koduvally | 39048.00 | 27298.00 | 48.21 | Safe |
| 4 | Kozhikode | 16351.00 | 16351.00 | 68.49 | Safe |
| 5 | Kunnamangalam | 33794.00 | 16994.00 | 82.56 | Semi-critical |
| 6 | Kunnummal | 26252.00 | 13152.00 | 57.97 | Safe |
| 7 | Melady | 8407.00 | 8407.00 | 43.57 | Safe |
| 8 | Panthalayani | 9855.00 | 9855.00 | 38.55 | Safe |
| 9 | Perambra | 27502.00 | 17902.00 | 39.24 | Safe |
| 10 | Thodannur | 9677.00 | 9677.00 | 58.03 | Safe |
| 11 | Tuneri | 14397.00 | 11497.00 | 64.98 | Safe |
| 12 | Vadakara | 7228.00 | 7228.00 | 56.35 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **MALAPPURAM** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Areacode | 33357.00 | 28357.00 | 69.57 | Safe |
| 2 | Kalikavu | 68912.00 | 24412.00 | 52.39 | Safe |
| 3 | Kondotty | 18624.00 | 18624.00 | 84.72 | Semi critical |
| 4 | Kuttippuram | 17868.00 | 17868.00 | 77.92 | Semi critical |
| 5 | Malappuram | 18032.00 | 18032.00 | 74.91 | Semi critical |
| 6 | Mankada | 15245.00 | 15245.00 | 69.43 | Safe |
| 7 | Nilamboor | 62120.00 | 21820.00 | 46.11 | Safe |
| 8 | Perinthalmanna | 28203.00 | 27203.00 | 57.62 | Safe |
| 9 | Perumpadappu | 5899.00 | 5899.00 | 64.65 | Safe |
| 10 | Ponnani | 9706.00 | 9706.00 | 59.25 | Safe |
| 11 | Tanur | 12756.00 | 12756.00 | 83.86 | Semi-critical |
| 12 | Thriurangadi | 13001.00 | 13001.00 | 82.57 | Semi-critical |
| 13 | Tirur | 11105.00 | 11105.00 | 77.75 | Semi-critical |
| 14 | Vengara | 14845.00 | 14845.00 | 79.84 | Semi-critical |
| 15 | Wandoor | 25308.00 | 15308.00 | 53.42 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **PALAKKAD** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Alathur | 31447.00 | 23447.00 | 51.54 | Safe |
| 2 | Attappadi | 70323.00 | 70323.00 | 26.35 | Safe |
| 3 | Chittur | 31468.00 | 31468.00 | 104.49 | **Over Exploited** |
| 4 | Kollengode | 21411.00 | 19911.00 | 34.98 | Safe |
| 5 | Kuzhalmannam | 19212.00 | 19212.00 | 30.72 | Safe |
| 6 | Malampuzha | 40394.00 | 20394.00 | 97.71 | Critical |
| 7 | Mannarkkad | 45535.00 | 29535.00 | 60.45 | Safe |
| 8 | Nenmara | 79847.00 | 23953.00 | 64.60 | Safe |
| 9 | Ottappalam | 27306.00 | 27306.00 | 60.16 | Safe |
| 10 | Palakkad | 20706.00 | 20706.00 | 40.45 | Safe |
| 11 | Pattambi | 20744.00 | 20744.00 | 81.37 | Semi-critical |
| 12 | Sreekrishnapuram | 22013.00 | 22013.00 | 64.81 | Safe |
| 13 | Thrithala | 17216.00 | 17216.00 | 76.64 | Semi- critical |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **PATHANAMTHITTA** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Elanthoor | 10622.00 | 10622.00 | 39.63 | Safe |
| 2 | Koipuram | 12367.00 | 12367.00 | 50.90 | Safe |
| 3 | Konni | 86477.00 | 25977.00 | 24.84 | Safe |
| 4 | Mallappally | 15418.00 | 15418.00 | 37.42 | Safe |
| 5 | Pandalam | 11641.00 | 11641.00 | 54.98 | Safe |
| 6 | Parakode | 27152.00 | 27152.00 | 32.58 | Safe |
| 7 | Pulikeezh | 6866.00 | 6866.00 | 49.55 | Safe |
| 8 | Ranni | 92132.00 | 24132.00 | 31.46 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **THIRUVANANTHAPURAM** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Athiyannur | 7629.00 | 7629.00 | 88.91 | Semi-critical |
| 2 | Chirayinkil | 10151.00 | 10151.00 | 83.06 | Semi-critical |
| 3 | Kilimanoor | 17977.00 | 17977.00 | 55.21 | Safe |
| 4 | Nedumangad | 15603.00 | 15603.00 | 85.02 | Semi-critical |
| 5 | Nemom | 33727.00 | 33727.00 | 69.30 | Safe |
| 6 | Parassala | 8221.00 | 8221.00 | 81.94 | Semi-critical |
| 7 | Perumkadavila | 28538.00 | 27038.00 | 47.93 | Safe |
| 8 | Pothencode | 7415.00 | 7415.00 | 87.71 | Semi-critical |
| 9 | Vamanapuram | 42115.00 | 42115.00 | 44.94 | Safe |
| 10 | Varkala | 10209.00 | 10209.00 | 69.74 | Safe |
| 11 | Vellanad | 37212.00 | 29212.00 | 46.47 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **THRISSUR** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Anthikkad | 9904.00 | 9904.00 | 45.23 | Safe |
| 2 | Chalakkudy | 61069.00 | 20369.00 | 60.25 | Safe |
| 3 | Chavakkad | 9917.00 | 9917.00 | 65.06 | Safe |
| 4 | Cherpu | 8448.00 | 8448.00 | 52.04 | Safe |
| 5 | Chowannur | 17774.00 | 17774.00 | 75.94 | Semi-critical |
| 6 | Iringalakkuda | 12073.00 | 12073.00 | 54.73 | Safe |
| 7 | Kodakara | 29812.00 | 20812.00 | 59.46 | Safe |
| 8 | Mala | 12713.00 | 12713.00 | 64.48 | Safe |
| 9 | Mathilakom | 14635.00 | 14635.00 | 81.21 | Semi-critical |
| 10 | Mullassery | 6585.00 | 6585.00 | 48.76 | Safe |
| 11 | Ollukkara | 31572.00 | 31572.00 | 45.56 | Safe |
| 12 | Pazhayannur | 23695.00 | 23695.00 | 44.43 | Safe |
| 13 | Puzhakkal | 22892.00 | 22892.00 | 38.20 | Safe |
| 14 | Thalikkulam | 6568.00 | 6568.00 | 75.22 | Semi-critical |
| 15 | Vadakkancherry | 23659.00 | 18659.00 | 67.00 | Safe |
| 16 | Vellangallur | 11069.00 | 11069.00 | 68.59 | Safe |

| **State** | | **KERALA** | | | |
|---|---|---|---|---|---|
| **District** | | **WAYANAD** | | | |
| **Assessment Year** | | **2017** | | | |
| **Sl. No.** | **Assessment Unit** | **Total Geographical Area of Block (Ha)** | **Ground water recharge Worthy area (Ha)** | **Stage of Ground Water Extraction (%)** | **Category (Safe/ Semi-critical/ Critical/ Over-exploited)** |
| **1** | **2** | **3** | **4** | **5** | **6** |
| 1 | Kalpetta | 58351.00 | 41351.00 | 22.1 | Safe |
| 2 | Mananthavady | 66651.00 | 41051.00 | 22.0 | Safe |
| 3 | Panamaram | 35086.00 | 23286.00 | 33.2 | Safe |
| 4 | Sulthanbathery | 52974.00 | 37074.00 | 24.4 | Safe |

# ANNEXURE III F

## ASSESSMENT OF DYNAMIC GROUND WATER RESOURCES OF KERALA- ADMINISTRATIVE UNIT WISE CATEGORIZATION (2017)

| Sl. No | District | Total No. of Assess-ment Units | No. of Assessment Units Categorized as | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Over-exploited | | | Critical | | | Semi-critical | | | Safe | | |
| | | | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 1 | Alappuzha | 12 | 0 | - | | 0 | - | | 0 | - | | 12 | Ambalappuzha | |
| | | | | | | | | | | | | | Aryad | Iron, Fluoride (Deeper zone) |
| | | | | | | | | | | | | | Bharanikkavu | |
| | | | | | | | | | | | | | Champakkulam | |
| | | | | | | | | | | | | | Chengannur | |
| | | | | | | | | | | | | | Harippad | |
| | | | | | | | | | | | | | Kanjikkuzhy | Iron |
| | | | | | | | | | | | | | Mavelikkara | Iron |
| | | | | | | | | | | | | | Muthukulam | Iron, Nitrate |
| | | | | | | | | | | | | | Pattanakkad | Iron |
| | | | | | | | | | | | | | Thycattussery | Iron |
| | | | | | | | | | | | | | Veliyanad | |
| 2 | Ernakulam | 14 | 0 | - | | 0 | - | | 1 | Parakkadavu | Iron | 13 | Alangad | |
| | | | | | | | | | | | | | Angamaly | |
| | | | | | | | | | | | | | Edappally | Nitrate |
| | | | | | | | | | | | | | Koovappady | |
| | | | | | | | | | | | | | Kothamangalam | Iron |
| | | | | | | | | | | | | | Mulamthuruthy | Salinity |
| | | | | | | | | | | | | | Muvattupuzha | |
| | | | | | | | | | | | | | Palluruthy | |
| | | | | | | | | | | | | | Pampakkuda | Iron |
| | | | | | | | | | | | | | Paravur | |
| | | | | | | | | | | | | | Vypeen | |
| | | | | | | | | | | | | | Vadavukodu | Iron |
| | | | | | | | | | | | | | Vazhakkulam | |
| 3 | Idukki | 8 | 0 | - | | 0 | - | | 3 | Kattappana | Nitrate | 5 | Adimali | |
| | | | | | | | | | | Nedumkandam | Iron | | Azhutha | |

| Sl. No | District | Total No. of Assess-ment Units | No. of Assessment Units Categorized as | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Over-exploited | | | Critical | | | Semi-critical | | | Safe | | |
| | | | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | | | | | | | | | | Elam Desom | Iron | | Devikulam | Nitrate |
| | | | | | | | | | | | | | Idukki | |
| | | | | | | | | | | | | | Thodupuzha | |
| 4 | Kannur | 11 | 0 | - | | 0 | - | | 3 | Kannur | | 8 | Edakkad | Nitrate |
| | | | | | | | | | | Panur | | | Irikkur | Iron |
| | | | | | | | | | | Thalasserry | | | Iritty | |
| | | | | | | | | | | | | | Kannur | |
| | | | | | | | | | | | | | Koothuparamba | |
| | | | | | | | | | | | | | Payyannur | Iron |
| | | | | | | | | | | | | | Peravoor | |
| | | | | | | | | | | | | | Taliparamba | |
| 5 | Kasargod | 6 | 0 | - | | 1 | Kasargod | Iron, Nitrate | 3 | Kanhangad | | 2 | Nileshvwaram | Iron |
| | | | | | | | | | | Karadka | Iron | | Parappa | |
| | | | | | | | | | | Manjeswar | Iron | | | |
| 6 | Kollam | 11 | 0 | - | | 0 | - | | 1 | Mukhathala | Iron | 10 | Anchal | Iron |
| | | | | | | | | | | | | | Chadayamangalam | Iron, Nitrate |
| | | | | | | | | | | | | | Chavara | Iron, Heavy metals |
| | | | | | | | | | | | | | Ithikkara | Iron, Nitrate |
| | | | | | | | | | | | | | Kottarakkara | Iron |
| | | | | | | | | | | | | | Chittumala | Iron |
| | | | | | | | | | | | | | Oachira | Iron, Nitrate |
| | | | | | | | | | | | | | Pathanapuram | Iron |
| | | | | | | | | | | | | | Sasthamkotta | Iron |
| | | | | | | | | | | | | | Vettikkavala | Iron |
| 7 | Kottayam | 11 | 0 | - | | 0 | - | | 0 | - | | 11 | Erattupetta | |
| | | | | | | | | | | | | | Ettumanoor | |
| | | | | | | | | | | | | | Kaduthuruthy | |
| | | | | | | | | | | | | | Kanjirappally | Nitrate |

| Sl. No | District | Total No. of Assess-ment Units | No. of Assessment Units Categorized as | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Over-exploited | | | Critical | | | Semi-critical | | | Safe | | |
| | | | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | | | | | | | | | | | | | Lalam | |
| | | | | | | | | | | | | | Madappally | |
| | | | | | | | | | | | | | Pallom | |
| | | | | | | | | | | | | | Pampady | |
| | | | | | | | | | | | | | Uzhavoor | |
| | | | | | | | | | | | | | Vaikom | Salinity |
| | | | | | | | | | | | | | Vazhoor | Iron |
| 8 | Kozhikode | 12 | 0 | - | | 0 | - | | 2 | Balussery | Iron | 10 | Chelannur | Iron |
| | | | | | | | | | | Kunnamangalam | Iron | | Koduvally | |
| | | | | | | | | | | | | | Kozhikode | Nitrate |
| | | | | | | | | | | | | | Kunnummal | |
| | | | | | | | | | | | | | Melady | |
| | | | | | | | | | | | | | Panthalayani | |
| | | | | | | | | | | | | | Perambra | Iron |
| | | | | | | | | | | | | | Thodannur | |
| | | | | | | | | | | | | | Tuneri | |
| | | | | | | | | | | | | | Vadakara | |
| 9 | Malappuram | 15 | 0 | - | | 0 | - | | 7 | Kondotty | Iron | 8 | Areacode | Iron |
| | | | | | | | | | | Tirurangadi | Iron | | Kalikavu | |
| | | | | | | | | | | Vengara | | | | |
| | | | | | | | | | | Kuttippuram | Iron, Nitrate | | | |
| | | | | | | | | | | Malappuram | Iron | | Mankada | Iron |
| | | | | | | | | | | Tanur | Iron | | Nilamboor | Nitrate |
| | | | | | | | | | | Tirur | Iron, Nitrate | | Perinthalmanna | Iron |
| | | | | | | | | | | | | | Ponnani | Salinity, Nitrate |
| | | | | | | | | | | | | | Wandoor | |
| 10 | Palakkad | 13 | 1 | Chittoor | Salinity, Nitrate, | 1 | Malampuzha | Fluoride | 2 | Pattambi | Iron | 9 | Alathur | |

| Sl. No | District | Total No. of Assess-ment Units | No. of Assessment Units Categorized as | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Over-exploited | | | Critical | | | Semi-critical | | | Safe | | |
| | | | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | | | | | Fluoride | | | | | | | | | Salinity |
| | | | | | | | | | | Thrithala | Iron | | Attappadi | Iron, Nitrate, Fluoride |
| | | | | | | | | | | | | | Kollengode | Nitrate, Fluoride |
| | | | | | | | | | | | | | Kuzhalmannam | Salinity, Iron |
| | | | | | | | | | | | | | Mannarkkad | Iron |
| | | | | | | | | | | | | | Nenmara | Iron |
| | | | | | | | | | | | | | Ottappalam | Nitrate |
| | | | | | | | | | | | | | Palakkad | Nitrate, Fluoride |
| | | | | | | | | | | | | | Sreekrishnapuram | Iron |
| 11 | Pathanamthitta | 8 | 0 | - | | 0 | - | | 0 | - | | 8 | Elanthoor | |
| | | | | | | | | | | | | | Koipuram | Iron |
| | | | | | | | | | | | | | Konni | Iron |
| | | | | | | | | | | | | | Mallappally | |
| | | | | | | | | | | | | | Pandalam | Iron |
| | | | | | | | | | | | | | Parakode | Iron |
| | | | | | | | | | | | | | Pulikeezh | |
| | | | | | | | | | | | | | Ranni | Iron |
| 12 | Thiruvananthapuram | 11 | 0 | - | | 0 | - | | 5 | Athiyanur | Nitrate | 6 | Kilimanoor | Iron, Nitrate |
| | | | | | | | | | | Nedumangad | Iron, Nitrate | | | |
| | | | | | | | | | | Parassala | Nitrate | | Nemom | Salinity, Iron, Nitrate |
| | | | | | | | | | | Chirayinkil | Iron, Nitrate | | Perumkadavila | Iron, Nitrate |
| | | | | | | | | | | Pothencode | Nitrate | | Vamanapuram | Iron, Nitrate |
| | | | | | | | | | | | | | Varkala | Iron, Nitrate |

| Sl. No | District | Total No. of Assess-ment Units | No. of Assessment Units Categorized as | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Over-exploited | | | Critical | | | Semi-critical | | | Safe | | |
| | | | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) | No | Name | Quality Problems encountered (in parts of the block) |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| | | | | | | | | | | | | | Vellanad | Iron |
| 13 | Thrissur | 16 | 0 | - | | 0 | - | | 3 | Mathilakam | Iron | 13 | Anthikkad | |
| | | | | | | | | | | Thalikkulam | Iron | | Chalakkudy | Iron |
| | | | | | | | | | | Chowannur | Iron | | Chavakkad | Iron |
| | | | | | | | | | | | | | Cherpu | Iron |
| | | | | | | | | | | | | | Irinjalakkuda | |
| | | | | | | | | | | | | | Kodakara | Iron |
| | | | | | | | | | | | | | Mala | Iron, Nitrate |
| | | | | | | | | | | | | | Mullassery | |
| | | | | | | | | | | | | | Ollukkara | Iron |
| | | | | | | | | | | | | | Pazhayannur | |
| | | | | | | | | | | | | | Puzhakkal | Iron, Nitrate |
| | | | | | | | | | | | | | Vellangallur | |
| | | | | | | | | | | | | | Wadakkanchery | |
| 14 | Wayanad | 4 | 0 | - | | 0 | - | | 0 | - | | 4 | Kalpetta | Iron |
| | | | | | | | | | | | | | Mananthavady | Iron, Nitrate |
| | | | | | | | | | | | | | Panamaram | |
| | | | | | | | | | | | | | Sulthanbathery | |
| | **KERALA STATE** | **152** | **1** | | | **2** | | | **30** | | | **119** | | |

# ANNEXURE III G

# ADDITIONAL POTENTIAL RECHARGE UNDER SPECIFIC CONDITIONS IN KERALA

| **Additional Potential Recharge under Specific Conditions in Kerala.(2017)** | | | | |
|---|---|---|---|---|
| **Sl.No** | **Assessment Unit/District** | **Potential Recharge in Water logged and Shallow Water table area (Ha.m)** | **Potential Recharge in flood prone area (Ha.m)** | **Total Annual Additional Potential Ground Water Recharge (Ha.m)** |
| **1** | **2** | **3** | **4** | **5** |
| **District: Alappuzha** | | | | |
| 1 | Ambalapuzha | 1653.6 | 0.00 | 1653.6 |
| 2 | Aryad | 2245.6 | 0.00 | 2245.6 |
| 3 | Bharanikkavu | 275.0 | 0.00 | 275.0 |
| 4 | Champakulam | 1440.0 | 0.00 | 1440.0 |
| 5 | Chengannur | 1550.0 | 0.00 | 1550.0 |
| 6 | Haripad | 2925.8 | 0.00 | 2925.8 |
| 7 | Kanjikuzhy | 2592.0 | 0.00 | 2592.0 |
| 8 | Mavelikara | 560.0 | 0.00 | 560.0 |
| 9 | Muthukulam | 960.0 | 0.00 | 960.0 |
| 10 | Pattanakkad | 4000.5 | 0.00 | 4000.5 |
| 11 | Thaikattussery | 4077.8 | 0.00 | 4077.8 |
| 12 | Veliyanad | 3840.0 | 0.00 | 3840.0 |
| **District Total** | | **26120.3** | **0.00** | **26120.3** |
| **District: Ernakulam** | | | | |
| 1 | Alangad | 488.6 | 0.00 | 488.6 |
| 2 | Edapally | 2688.0 | 0.00 | 2688.0 |
| 3 | Palluruthy | 1702.7 | 0.00 | 1702.7 |
| 4 | Paravur | 746.4 | 0.00 | 746.4 |
| 5 | Vypin | 792.0 | 0.00 | 792.0 |
| **District Total** | | **6417.7** | **0.00** | **6417.7** |
| **District: Kasaragod** | | | | |
| 1 | Kanhangad | 105.0 | 0.00 | 105.0 |
| 2 | Neeleswaram | 197.4 | 0.00 | 197.4 |
| **District Total** | | **302.4** | **0.00** | **302.4** |
| **District: Kollam** | | | | |
| 1 | Chavara | 784.0 | 0.00 | 784.0 |
| 2 | Oachira | 864.0 | 0.00 | 864.0 |
| 3 | Ithikkara | 145.2 | 0.00 | 145.2 |
| **District Total** | | **1793.2** | **0.00** | **1793.2** |
| **District: Kottayam** | | | | |
| 1 | Vaikaom | 504.0 | 0.00 | 504.0 |
| **District Total:** | | **504.0** | **0.00** | **504.0** |
| **District: Kozhikode** | | | | |
| 1 | Melady | 720.0 | 0.0 | 720.0 |
| 2 | Panthalayani | 240.0 | 0.00 | 240.0 |
| 3 | Vadakara | 60.0 | 0.00 | 60.0 |
| **District Total** | | **1020.0** | **0.00** | **1020.0** |
| **District:** | | | | |

| **Malappuram** | | | | |
|---|---|---|---|---|
| 1 | Ponnani | 165.0 | 0.00 | 165.0 |
| 2 | Tanur | 75.0 | 0.00 | 75.0 |
| 3 | Tirur | 90.0 | 0.00 | 90.0 |
| **District Total** | | **330.0** | **0.00** | **330.0** |
| **District: Pathanamthitta** | | | | |
| 1 | Pulikeezhu | 800.0 | 0.00 | 800.0 |
| **District Total** | | **800.0** | **0.00** | **800.0** |
| **District: Thrissur** | | | | |
| 1 | Chavakkad | 300.0 | 0.00 | 300.0 |
| 2 | Mathilakam | 450.0 | 0.00 | 450.0 |
| 3 | Mullassery | 150.0 | 0.00 | 150.0 |
| 4 | Thalikkulam | 416.0 | 0.00 | 416.0 |
| **District Total** | | **2116.0** | **0.00** | **2116.0** |
| **State Total** | | **38603.6** | **0.00** | **38603.6** |
| | | **386.04 MCM** | **0.00** | **386.4MCM** |

## ANNEXURE IV

# INSTORAGE GROUND WATER RESORUCES

| **State** | **KERALA** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **ALAPPUZHA** | | | | | | | | | |
| **Assessment Year -2017 (Non-Command)** | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (in storage,m) | Confined thickness (in storage,m) | Phreatic in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Ambalappuzha | 6890 | 4 | 31 | 115 | 0.016 | 0.002 | 3417.44 | 1584.7 | 5002.14 |
| 2 | Aryad | 8772 | 4 | 31 | 115 | 0.016 | 0.002 | 4350.912 | 2017.56 | 6368.47 |
| 3 | Bharanikkavu | 12995 | 10 | 30 | 110 | 0.016 | 0.002 | 6237.6 | 2858.9 | 9096.50 |
| 4 | Champakkulam | 15383 | 4 | 31 | 115 | 0.016 | 0.002 | 7629.968 | 3538.09 | 11168.06 |
| 5 | Chengannur | 14996 | 8 | 32 | 110 | 0.008 | 0.002 | 3838.976 | 3299.12 | 7138.10 |
| 6 | Harippad | 11439 | 4 | 31 | 115 | 0.016 | 0.002 | 5673.744 | 2630.97 | 8304.71 |
| 7 | Kanjikkuzhy | 11013 | 4 | 31 | 115 | 0.016 | 0.002 | 5462.448 | 2532.99 | 7995.44 |
| 8 | Mavelikkara | 10044 | 5 | 35 | 110 | 0.014 | 0.002 | 4921.56 | 2209.68 | 7131.24 |
| 9 | Muthukulam | 11651 | 4 | 31 | 115 | 0.016 | 0.002 | 5778.896 | 2679.73 | 8458.63 |
| 10 | Pattanakkad | 10871 | 4 | 31 | | 0.016 | 0.002 | 5392.016 | 0 | 5392.02 |
| 11 | Thycattussery | 14159 | 4 | 31 | | 0.016 | 0.002 | 7022.864 | 0 | 7022.86 |
| 12 | Veliyanad | 13190 | 4 | 31 | 115 | 0.016 | 0.002 | 6542.24 | 3033.7 | 9575.94 |
| **Total** | | **141403** | | | | | | ***66268.7*** | ***26385*** | ***92654.1*** |
| | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **ERNAKULAM** | | | | | | | | | | | | |
| **Assessment Year -2017 (Non-Command)** | | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (in storage,m) | Semi-confined thickness (in storage ,m) | Confined thickness (in storage ,m) | Phreatic in storage parameter | Semi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Alangad | 7331 | 5 | 30 | 35 | 80 | 0.008 | 0.004 | 0.002 | 1759.44 | 1026.34 | 1172.96 | 3958.74 |
| 2 | Angamaly | 21197 | 9 | 31 | 30 | 80 | 0.006 | 0.003 | 0.0015 | 3942.64 | 1907.73 | 2543.64 | 8394.01 |
| 3 | Edappally | 16053 | 5 | 30 | 30 | 0 | 0.032 | 0.016 | 0.008 | 15410.9 | 7705.44 | 0 | 23116.32 |
| 4 | Koovappady | 35560.5 | 10 | 25 | 35 | 80 | 0.01 | 0.005 | 0.0025 | 8890.13 | 6223.09 | 7112.1 | 22225.31 |
| 5 | Kothamangalam | 22997 | 10 | 25 | 35 | 80 | 0.008 | 0.004 | 0.002 | 4599.4 | 3219.58 | 3679.52 | 11498.50 |
| 6 | Moovattupuzha | 19980 | 10 | 30 | 30 | 80 | 0.005 | 0.0025 | 0.00125 | 2997 | 1498.5 | 1998 | 6493.50 |
| 7 | Mulamthuruthy | 16327 | 10 | 30 | 30 | 80 | 0.006 | 0.003 | 0.0015 | 2938.86 | 1469.43 | 1959.24 | 6367.53 |
| 8 | Palluruthy | 6651 | 5 | 30 | 0 | 0 | 0.032 | 0.016 | 0.008 | 6384.96 | 0 | 0 | 6384.96 |
| 9 | Pampakkuda | 17740 | 8 | 32 | 35 | 75 | 0.008 | 0.004 | 0.002 | 4541.44 | 2483.6 | 2661 | 9686.04 |
| 10 | Parakkadavu | 11881 | 8 | 32 | 30 | 75 | 0.01 | 0.005 | 0.0025 | 3801.92 | 1782.15 | 2227.69 | 7811.76 |
| 11 | Paravoor | 7665 | 5 | 30 | 0 | 0 | 0.032 | 0.016 | 0.008 | 7358.4 | 0 | 0 | 7358.40 |
| 12 | Vadavukodu | 18595 | 8 | 32 | 30 | 80 | 0.01 | 0.005 | 0.0025 | 5950.4 | 2789.25 | 3719 | 12458.65 |
| 13 | Vazhakkulam | 19328 | 10 | 25 | 35 | 80 | 0.01 | 0.005 | 0.0025 | 4832 | 3382.4 | 3865.6 | 12080.00 |
| 14 | Vypeen | 5642 | 5 | 30 | 0 | 0 | 0.032 | 0.016 | 0.008 | 5416.32 | 0 | 0 | 5416.32 |
| **Total** | | **226947.5** | | | | | | | | ***78824*** | ***33488*** | ***30939*** | ***143250.04*** |
| | | | | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **IDUKKI** | | | | | | | | | | | | |
| **Assessment Year- 2017 (Non-Command)** | | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (in storage,m) | Semi-confined thickness (in storage,m) | Confined thickness (in storage, m) | Phreatic in storage parameter | Semi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Adimali | 21200 | 8 | 27 | 35 | 80 | 0.004 | 0.002 | 0.001 | 2289.6 | 1484 | 1696 | 5469.6 |
| 2 | Arudai | 14542 | 7 | 33 | 35 | 75 | 0.004 | 0.002 | 0.001 | 1919.54 | 1017.94 | 1090.65 | 4028.134 |
| 3 | Devikulam | 16043 | 8 | 27 | 35 | 80 | 0.004 | 0.002 | 0.001 | 1732.64 | 1123.01 | 1283.44 | 4139.094 |
| 4 | Elam Desom | 18722 | 7 | 33 | 35 | 75 | 0.004 | 0.002 | 0.001 | 2471.3 | 1310.54 | 1404.15 | 5185.994 |
| 5 | Idukki | 13482 | 6 | 29 | 35 | 80 | 0.004 | 0.002 | 0.001 | 1563.91 | 943.74 | 1078.56 | 3586.212 |
| 6 | Kattappana | 11238 | 8 | 27 | 35 | 80 | 0.004 | 0.002 | 0.001 | 1213.7 | 786.66 | 899.04 | 2899.404 |
| 7 | Nedumkandam | 12190 | 8 | 27 | 35 | 80 | 0.004 | 0.002 | 0.001 | 1316.52 | 853.3 | 975.2 | 3145.02 |
| 8 | Thodupuzha | 10474 | 8 | 32 | 35 | 75 | 0.004 | 0.002 | 0.001 | 1340.67 | 733.18 | 785.55 | 2859.402 |
| **Total** | | **117891** | | | | | | | | **13848** | **8252.4** | **9212.6** | **31312.9** |
| | | | | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **KANNUR** | | | | | | | | | | | | |
| **Assessment** | **Year -2017 (Non-Command)** | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | phreatic aquifer thickness (in storage,m) | Semi-confined thickness (in storage, m) | Confined thickness (in storage, m) | Phreatic in storage parameter | Semi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Edakkad | 8948 | 8 | 32 | 35 | 75 | 0.008 | 0.004 | 0.002 | 2290.688 | 1252.72 | 1342.2 | 4885.608 |
| 2 | Irikkur | 36290 | 9 | 26 | 35 | 80 | 0.004 | 0.002 | 0.001 | 3774.16 | 2540.3 | 2903.2 | 9217.66 |
| 3 | Iritty | 31509 | 7 | 28 | 35 | 80 | 0.004 | 0.002 | 0.001 | 3529.008 | 2205.63 | 2520.72 | 8255.358 |
| 4 | Kallyasseri | 14339 | 7 | 33 | 30 | 80 | 0.008 | 0.004 | 0.002 | 3785.496 | 1720.68 | 2294.24 | 7800.416 |
| 5 | Kannur | 12678 | 8 | 32 | 30 | 80 | 0.012 | 0.006 | 0.003 | 4868.352 | 2282.04 | 3042.72 | 10193.112 |
| 6 | Kuthuparamba | 12935 | 10 | 30 | 30 | 80 | 0.006 | 0.003 | 0.0015 | 2328.3 | 1164.15 | 1552.2 | 5044.65 |
| 7 | Panur | 7383 | 8 | 27 | 35 | 80 | 0.006 | 0.003 | 0.0015 | 1196.046 | 775.215 | 885.96 | 2857.221 |
| 8 | Payyannur | 34212 | 7 | 28 | 35 | 80 | 0.012 | 0.006 | 0.003 | 11495.23 | 7184.52 | 8210.88 | 26890.632 |
| 9 | Peravoor | 21342 | 8 | 32 | 30 | 80 | 0.004 | 0.002 | 0.001 | 2731.776 | 1280.52 | 1707.36 | 5719.656 |
| 10 | Taliparamba | 40703 | 9 | 31 | 30 | 80 | 0.008 | 0.004 | 0.002 | 10094.34 | 4884.36 | 6512.48 | 21491.184 |
| 11 | Thalassery | 12057 | 8 | 32 | 30 | 80 | 0.008 | 0.004 | 0.002 | 3086.592 | 1446.84 | 1929.12 | 6462.552 |
| **Total** | | **232396** | | | | | | | | ***49180*** | ***26737*** | ***32901.08*** | ***108818*** |
| | | | | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **KASARGOD** | | | | | | | | | | | | |
| **Assessment Year -2017 (Non-Command)** | | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (in storage,m) | Semi-confined thickness (in storage,m) | Confined thickness (in storage,m) | Phreatic in storage parameter | Semi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Kanhangad | 24008 | 12 | 23 | 35 | 80 | 0.006 | 0.003 | 0.0015 | 3313.104 | 2520.84 | 2880.96 | 8714.9 |
| 2 | Karadka | 25547 | 18 | 22 | 30 | 80 | 0.006 | 0.003 | 0.0015 | 3372.204 | 2299.23 | 3065.64 | 8737.07 |
| 3 | Kasaragod | 25376 | 16 | 24 | 30 | 80 | 0.006 | 0.003 | 0.0015 | 3654.144 | 2283.84 | 3045.12 | 8983.1 |
| 4 | Manjeswar | 33136 | 14 | 26 | 30 | 80 | 0.006 | 0.003 | 0.0015 | 5169.216 | 2982.24 | 3976.32 | 12127.8 |
| 5 | Nileswaram | 19695 | 10 | 30 | 30 | 80 | 0.006 | 0.003 | 0.0015 | 3545.1 | 1772.55 | 2363.4 | 7681.05 |
| 6 | Parappa | 35368 | 12 | 28 | 30 | 80 | 0.006 | 0.003 | 0.0015 | 5941.824 | 3183.12 | 4244.16 | 13369.1 |
| **Total** | | **163130** | | | | | | | | ***24995.6*** | ***15042*** | ***19576*** | ***59613*** |
| | | | | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **KOLLAM** | | | | | | | | | | | | |
| **Assessment Year-2017 (Non-Command)** | | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (in storage,m) | Semi-confined thickness (in storage,m) | Confined thickness (in storage,m) | Phreatic in storage parameter | Semi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Anchal | 64622 | 10 | 25 | 35 | 80 | 0.003 | 0.0015 | 0.00075 | 4846.65 | 3392.66 | 3877.32 | 12116.63 |
| 2 | Chadayamangalam | 24903 | 10 | 35 | 30 | 80 | 0.003 | 0.0015 | 0.00075 | 2614.815 | 1120.64 | 1494.18 | 5229.63 |
| 3 | Chavara | 7490 | 5 | 30 | 40 | 50 | 0.016 | 0.008 | 0.004 | 3595.2 | 2396.8 | 1498.00 | 7490.00 |
| 4 | Chittumala | 12125 | 8 | 27 | 35 | 80 | 0.004 | 0.002 | 0.001 | 1309.5 | 848.75 | 970.00 | 3128.25 |
| 5 | Ithikkara | 12573 | 12 | 33 | 35 | 70 | 0.011 | 0.0055 | 0.00275 | 4563.999 | 2420.3 | 2420.30 | 9404.60 |
| 6 | Kottarakkara | 13310 | 10 | 30 | 35 | 75 | 0.003 | 0.0015 | 0.00075 | 1197.9 | 698.775 | 748.69 | 2645.36 |
| 7 | Mukhathala | 14703 | 8 | 32 | 30 | 80 | 0.016 | 0.008 | 0.004 | 7527.936 | 3528.72 | 4704.96 | 15761.62 |
| 8 | Oachira | 11641 | 4 | 36 | 40 | 50 | 0.016 | 0.008 | 0.004 | 6705.216 | 3725.12 | 2328.20 | 12758.54 |
| 9 | Pathanapuram | 19992 | 9 | 31 | 30 | 80 | 0.003 | 0.0015 | 0.00075 | 1859.256 | 899.64 | 1199.52 | 3958.42 |
| 10 | Sasthamkotta | 12791 | 8 | 27 | 35 | 80 | 0.004 | 0.002 | 0.001 | 1381.428 | 895.37 | 1023.28 | 3300.08 |
| 11 | Vettikkavala | 16947 | 9 | 31 | 30 | 80 | 0.003 | 0.0015 | 0.00075 | 1576.071 | 762.615 | 1016.82 | 3355.51 |
| **Total** | | **211097** | | | | | | | | ***37178*** | ***20689*** | ***21281.3*** | ***79148.62*** |
| | | | | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **KOTTAYAM** | | | | | | | | | | | | |
| **Assessment Year-2017 (Non Command)** | | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (in storage,m) | Semi-confined thickness (in storage,m) | Cconfined thickness (in storage,m) | Phreatic in storage parameter | Ssemi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Erattupetta | 15251 | 7 | 28 | 35 | 80 | 0.003 | 0.0015 | 0.00075 | 1281.084 | 800.678 | 915.06 | 2996.82 |
| 2 | Ettumanoor | 14172 | 8 | 32 | 35 | 75 | 0.008 | 0.004 | 0.002 | 3628.032 | 1984.08 | 2125.8 | 7737.91 |
| 3 | Kaduthuruthy | 18775 | 8 | 32 | 40 | 70 | 0.004 | 0.002 | 0.001 | 2403.2 | 1502 | 1314.25 | 5219.45 |
| 4 | Kanjirappally | 22200 | 8 | 27 | 35 | 80 | 0.004 | 0.002 | 0.001 | 2397.6 | 1554 | 1776 | 5727.6 |
| 5 | Lalam | 18939 | 10 | 25 | 35 | 80 | 0.003 | 0.0015 | 0.00075 | 1420.425 | 994.298 | 1136.34 | 3551.06 |
| 6 | Madappally | 15854 | 10 | 30 | 30 | 80 | 0.008 | 0.004 | 0.002 | 3804.96 | 1902.48 | 2536.64 | 8244.08 |
| 7 | Pallom | 23214 | 8 | 37 | 35 | 70 | 0.008 | 0.004 | 0.002 | 6871.344 | 3249.96 | 3249.96 | 13371.3 |
| 8 | Pampady | 16630 | 8 | 32 | 30 | 80 | 0.003 | 0.0015 | 0.00075 | 1596.48 | 748.35 | 997.8 | 3342.63 |
| 9 | Uzhavoor | 22096 | 8 | 27 | 35 | 80 | 0.003 | 0.0015 | 0.00075 | 1789.776 | 1160.04 | 1325.76 | 4275.58 |
| 10 | Vaikom | 13155 | 6 | 34 | 30 | 80 | 0.012 | 0.006 | 0.003 | 5367.24 | 2367.9 | 3157.2 | 10892.3 |
| 11 | Vazhoor | 14224 | 8 | 27 | 35 | 80 | 0.003 | 0.0015 | 0.00075 | 1152.144 | 746.76 | 853.44 | 2752.34 |
| **Total** | | **2E+05** | | | | | | | | ***31712.3*** | ***17011*** | ***19388.3*** | ***68111*** |
| | | | | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **KOZHIKODE** | | | | | | | | | |
| **Assessment Year-2017 (Non Command)** | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (instorage, m) | Semi-confined thickness (in storage,m) | Phreatic in storage parameter | Semi-confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Balussery | 13953 | 8 | 27 | 115 | 0.003 | 0.0015 | 1130.19 | 2406.89 | 3537.09 |
| 2 | Chelannur | 13866 | 7 | 33 | 110 | 0.003 | 0.0015 | 1372.73 | 2287.89 | 3660.62 |
| 3 | Koduvally | 27298 | 9 | 26 | 115 | 0.003 | 0.0015 | 2129.24 | 4708.91 | 6838.15 |
| 4 | Kozhikode | 16351 | 12 | 33 | 105 | 0.005 | 0.0025 | 2697.92 | 4292.14 | 6990.05 |
| 5 | Kunnamangalam | 16994 | 10 | 30 | 110 | 0.003 | 0.0015 | 1529.46 | 2804.01 | 4333.47 |
| 6 | Kunnummal | 13152 | 8 | 27 | 115 | 0.002 | 0.001 | 710.21 | 1512.48 | 2222.69 |
| 7 | Melady | 8407 | 8 | 32 | 110 | 0.016 | 0.008 | 4304.38 | 7398.16 | 11702.54 |
| 8 | Panthalayani | 9855 | 9 | 31 | 110 | 0.016 | 0.008 | 4888.08 | 8672.40 | 13560.48 |
| 9 | Perambra | 17902 | 8 | 27 | 115 | 0.003 | 0.0015 | 1450.06 | 3088.10 | 4538.16 |
| 10 | Thodannur | 9677 | 8 | 32 | 110 | 0.003 | 0.0015 | 928.99 | 1596.71 | 2525.70 |
| 11 | Tuneri | 11497 | 8 | 32 | 110 | 0.003 | 0.0015 | 1103.71 | 1897.01 | 3000.72 |
| 12 | Vadakara | 7228 | 8 | 32 | 110 | 0.006 | 0.003 | 1387.78 | 2385.24 | 3773.02 |
| **Total** | | **166180** | | | | | | **23632.8** | **43049.9** | **66682.68** |
| | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **MALAPPURAM** | | | | | | | | | | | | |
| **Assessment Year- 2017 (Non Command)** | | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (in storage,m) | Semi-confined thickness (in storage,m) | Confined thickness (in storage,m) | Phreatic in storage parameter | Semi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Areacode | 28357 | 8 | 27 | 35 | 80 | 0.006 | 0.003 | 0.0015 | 4593.834 | 2977.485 | 3402.84 | 10974.16 |
| 2 | Kalikavu | 24412 | 8 | 32 | 40 | 70 | 0.006 | 0.003 | 0.0015 | 4687.104 | 2929.44 | 2563.26 | 10179.80 |
| 3 | Kondotty | 18624 | 10 | 30 | 35 | 75 | 0.006 | 0.003 | 0.0015 | 3352.32 | 1955.52 | 2095.2 | 7403.04 |
| 4 | Kuttippuram | 17868 | 10 | 30 | 35 | 75 | 0.01 | 0.005 | 0.0025 | 5360.4 | 3126.9 | 3350.25 | 11837.55 |
| 5 | Malappuram | 18032 | 10 | 30 | 35 | 75 | 0.006 | 0.003 | 0.0015 | 3245.76 | 1893.36 | 2028.6 | 7167.72 |
| 6 | Mankada | 15245 | 10 | 30 | 35 | 75 | 0.008 | 0.004 | 0.002 | 3658.8 | 2134.3 | 2286.75 | 8079.85 |
| 7 | Nilamboor | 21820 | 8 | 27 | 35 | 80 | 0.006 | 0.003 | 0.0015 | 3534.84 | 2291.1 | 2618.4 | 8444.34 |
| 8 | Perinthalmanna | 27203 | 9 | 31 | 40 | 70 | 0.004 | 0.002 | 0.001 | 3373.172 | 2176.24 | 1904.21 | 7453.62 |
| 9 | Perumpadappu | 5899 | 8 | 32 | 60 | 50 | 0.032 | 0.016 | 0.008 | 6040.576 | 5663.04 | 2359.6 | 14063.22 |
| 10 | Ponnani | 9706 | 6 | 34 | 60 | 50 | 0.022 | 0.011 | 0.0055 | 7260.088 | 6405.96 | 2669.15 | 16335.20 |
| 11 | Tanur | 12756 | 6 | 34 | 60 | 50 | 0.006 | 0.003 | 0.0015 | 2602.224 | 2296.08 | 956.7 | 5855.00 |
| 12 | Tirur | 11105 | 10 | 30 | 60 | 50 | 0.006 | 0.003 | 0.0015 | 1998.9 | 1998.9 | 832.875 | 4830.68 |
| 13 | Tirurangadi | 13001 | 10 | 30 | 40 | 70 | 0.01 | 0.005 | 0.0025 | 3900.3 | 2600.2 | 2275.175 | 8775.68 |
| 14 | Vengara | 14845 | 10 | 25 | 40 | 75 | 0.008 | 0.004 | 0.002 | 2969 | 2375.2 | 2226.75 | 7570.95 |
| 15 | Wandoor | 15308 | 8 | 32 | 40 | 70 | 0.006 | 0.003 | 0.0015 | 2939.136 | 1836.96 | 1607.34 | 6383.44 |
| **Total** | | **254181** | | | | | | | | ***59516.454*** | ***42661*** | ***33177*** | ***135354*** |
| | | | | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **PALAKKAD** | | | | | | | | | |
| **Assessment** | **Year 2017 (Non-Command)** | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (instorage,m) | Semi-confined thickness (in storage, m) | Phreatic in storage parameter | Semi-confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Alathur | 25117 | 6 | 34 | 110 | 0.006 | 0.003 | 5123.868 | 8288.61 | 13412.48 |
| 2 | Attappadi | 22323 | 7 | 28 | 115 | 0.006 | 0.003 | 3750.264 | 7701.435 | 11451.70 |
| 3 | Chittur | 27595 | 10 | 40 | 100 | 0.006 | 0.003 | 6622.8 | 8278.5 | 14901.30 |
| 4 | Kollengode | 16322 | 8 | 37 | 105 | 0.006 | 0.003 | 3623.484 | 5141.43 | 8764.91 |
| 5 | Kuzhalmannam | 19212 | 7 | 33 | 110 | 0.006 | 0.003 | 3803.976 | 6339.96 | 10143.94 |
| 6 | Malampuzha | 26804 | 8 | 32 | 110 | 0.004 | 0.002 | 3430.912 | 5896.88 | 9327.79 |
| 7 | Mannarkkad | 32235 | 9 | 31 | 110 | 0.006 | 0.003 | 5995.71 | 10637.55 | 16633.26 |
| 8 | Nenmara | 22241 | 8 | 32 | 110 | 0.006 | 0.003 | 4270.272 | 7339.53 | 11609.80 |
| 9 | Ottappalam | 19775 | 7 | 38 | 105 | 0.004 | 0.002 | 3005.8 | 4152.75 | 7158.55 |
| 10 | Palakkad | 23248 | 7 | 33 | 110 | 0.004 | 0.002 | 3068.736 | 5114.56 | 8183.30 |
| 11 | Pattambi | 25699 | 9 | 36 | 105 | 0.006 | 0.003 | 5550.984 | 8095.185 | 13646.17 |
| 12 | Sreekrishnapuram | 21941 | 10 | 30 | 110 | 0.006 | 0.003 | 3949.38 | 7240.53 | 11189.91 |
| 13 | Thrithala | 17216 | 10 | 35 | 105 | 0.004 | 0.002 | 2410.24 | 3615.36 | 6025.60 |
| **Total** | | ***299728*** | | | | | | ***54606*** | ***87842*** | ***142449*** |
| | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **PATHANAMTHITTA** | | | | | | | | | |
| **Assessment Year 2017 (Non-Command)** | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (instorage,m) | Semi-confined thickness (in storage,m) | Phreatic in storage parameter | Semi-confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Elanthoor | 10622 | 8 | 32 | 110 | 0.003 | 0.0015 | 1019.712 | 1752.63 | 2772.34 |
| 2 | Koipuram | 12367 | 8 | 32 | 110 | 0.003 | 0.0015 | 1187.232 | 2040.555 | 3227.79 |
| 3 | Konni | 25977 | 8 | 27 | 115 | 0.003 | 0.0015 | 2104.137 | 4481.0325 | 6585.17 |
| 4 | Mallappally | 15418 | 9 | 26 | 115 | 0.003 | 0.0015 | 1202.604 | 2659.605 | 3862.21 |
| 5 | Pandalam | 11641 | 8 | 27 | 115 | 0.008 | 0.004 | 2514.456 | 5354.86 | 7869.32 |
| 6 | Parakode | 22642 | 8 | 27 | 115 | 0.004 | 0.002 | 2445.336 | 5207.66 | 7653.00 |
| 7 | Pulikeezh | 6866 | 6 | 39 | 105 | 0.015 | 0.0075 | 4016.61 | 5406.975 | 9423.59 |
| 8 | Ranni | 24132 | 9 | 26 | 115 | 0.003 | 0.0015 | 1882.296 | 4162.77 | 6045.07 |
| **Total** | | **129665** | | | | | | **16372.38** | **31066.088** | **47438.5** |
| | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **THIRUVANANTHAPURAM** | | | | | | | | | | | | |
| **Assessment Year 2017 (Non-Command)** | | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness (in storage,m) | Semi-confined thickness (in storage,m) | Confined thickness (in storage,m) | Phreatic in storage parameter | Semi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Athiyannur | 7629 | 15 | 35 | 25 | 75 | 0.004 | 0.002 | 0.001 | 1068.06 | 381.45 | 572.175 | 2021.69 |
| 2 | Chirayinkil | 10151 | 9 | 31 | 0 | 0 | 0.01 | 0.005 | 0.0025 | 3146.81 | 0 | 0 | 3146.81 |
| 3 | Kilimanoor | 17977 | 12 | 28 | 30 | 80 | 0.008 | 0.004 | 0.002 | 4026.848 | 2157.24 | 2876.32 | 9060.41 |
| 4 | Nedumangad | 15603 | 10 | 25 | 35 | 80 | 0.008 | 0.004 | 0.002 | 3120.6 | 2184.42 | 2496.48 | 7801.50 |
| 5 | Nemom | 33727 | 9 | 36 | 30 | 75 | 0.002 | 0.001 | 0.0005 | 2428.344 | 1011.81 | 1264.763 | 4704.92 |
| 6 | Parassala | 8221 | 15 | 25 | 30 | 80 | 0.012 | 0.006 | 0.003 | 2466.3 | 1479.78 | 1973.04 | 5919.12 |
| 7 | Perumkadavila | 27038 | 10 | 25 | 30 | 85 | 0.004 | 0.002 | 0.001 | 2703.8 | 1622.28 | 2298.23 | 6624.31 |
| 8 | Pothencode | 7415 | 9 | 26 | 35 | 80 | 0.02 | 0.008 | 0.004 | 3855.8 | 2076.2 | 2372.8 | 8304.80 |
| 9 | Vamanapuram | 27115 | 9 | 26 | 35 | 80 | 0.006 | 0.003 | 0.0015 | 4229.94 | 2847.075 | 3253.8 | 10330.82 |
| 10 | Varkala | 10209 | 12 | 38 | 50 | 50 | 0.01 | 0.005 | 0.0025 | 3879.42 | 2552.25 | 1276.125 | 7707.80 |
| 11 | Vellanad | 29212 | 10 | 25 | 30 | 85 | 0.006 | 0.003 | 0.0015 | 4381.8 | 2629.08 | 3724.53 | 10735.41 |
| **Total** | | ***194297*** | | | | | | | | ***35307.72*** | 18941.6 | 22108.3 | 76357.6 |
| | | | | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **THRISSUR** | | | | | | | | | |
| **Assessment** | **Year 2017 (Non-Command)** | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | phreatic aquifer thickness (instorage,m) | semi-confined thickness (in storage,m) | phreatic in storage parameter | semi-confined in storage parameter | phreatic instorage volume (Ha-m) | semi-confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Anthikkad | 9904 | 10 | 30 | 0 | 0.02 | 0.01 | 5942.4 | 0 | 5942.40 |
| 2 | Chalakkudy | 20369 | 8 | 27 | 115 | 0.006 | 0.003 | 3299.778 | 7027.305 | 10327.08 |
| 3 | Chavakkad | 9917 | 6 | 34 | 0 | 0.016 | 0.008 | 5394.848 | 0 | 5394.85 |
| 4 | Cherpu | 8448 | 10 | 35 | 105 | 0.012 | 0.006 | 3548.16 | 5322.24 | 8870.40 |
| 5 | Chowannur | 17774 | 10 | 35 | 105 | 0.006 | 0.003 | 3732.54 | 5598.81 | 9331.35 |
| 6 | Irinjalakkuda | 12073 | 9 | 31 | 110 | 0.01 | 0.003 | 3742.63 | 3984.09 | 7726.72 |
| 7 | Kodakara | 20812 | 8 | 32 | 110 | 0.006 | 0.003 | 3995.904 | 6867.96 | 10863.86 |
| 8 | Mala | 12713 | 8 | 37 | 105 | 0.01 | 0.003 | 4703.81 | 4004.595 | 8708.41 |
| 9 | Mathilakom | 14635 | 6 | 29 | 0 | 0.016 | 0.008 | 6790.64 | 0 | 6790.64 |
| 10 | Mullassery | 6585 | 8 | 27 | 0 | 0.016 | 0.008 | 2844.72 | 0 | 2844.72 |
| 11 | Ollukkara | 20572 | 8 | 32 | 110 | 0.006 | 0.003 | 3949.824 | 6788.76 | 10738.58 |
| 12 | Pazhayannur | 23695 | 8 | 27 | 115 | 0.006 | 0.003 | 3838.59 | 8174.775 | 12013.37 |
| 13 | Puzhakkal | 22892 | 10 | 35 | 105 | 0.007 | 0.0035 | 5608.54 | 8412.81 | 14021.35 |
| 14 | Thalikkulam | 6568 | 6 | 29 | 0 | 0.016 | 0.008 | 3047.552 | 0 | 3047.55 |
| 15 | Vadakkancherry | 18659 | 9 | 24 | 117 | 0.006 | 0.003 | 2686.896 | 6549.309 | 9236.21 |
| 16 | Vellangallur | 11069 | 10 | 35 | 0 | 0.014 | 0.007 | 5423.81 | 0 | 5423.81 |
| **Total** | | ***236685*** | | | | | | ***68550.6*** | ***62730.7*** | ***131281.3*** |
| | | | | | | | | | | |

| **State** | **KERALA** | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **District** | **WAYANAD** | | | | | | | | | | | | |
| **Assessment Year 2017 (Non-Command)** | | | | | | | | | | | | | |
| Sl. No. | Assessment Unit | Non-command area (Ha) | Maximum limit of fluctuation in phreatic aquifer (mbgl) | Phreatic aquifer thickness(in storage,m) | Semi-confined thickness (in storage,m) | Confined thickness (in storage,m) | Phreatic in storage parameter | Semi-confined in storage parameter | Confined in storage parameter | Phreatic instorage volume (Ha-m) | Semi-confined instorage volume (Ha-m) | Confined instorage volume (Ha-m) | Total In storage volume (Ha-m) |
| 1 | Kalpetta | 41351 | 10 | 20 | 50 | 70 | 0.006 | 0.003 | 0.0015 | 4962.12 | 6202.65 | 4341.86 | 15506.63 |
| 2 | Mananthavady | 41051 | 10 | 20 | 50 | 70 | 0.006 | 0.003 | 0.0015 | 4926.12 | 6157.65 | 4310.36 | 15394.13 |
| 3 | Panamaram | 23286 | 10 | 20 | 50 | 70 | 0.006 | 0.003 | 0.0015 | 2794.32 | 3492.9 | 2445.03 | 8732.25 |
| 4 | Sulthanbathery | 37074 | 10 | 20 | 50 | 70 | 0.006 | 0.003 | 0.0015 | 4448.88 | 5561.1 | 3892.77 | 13902.75 |
| **Total** | | ***142762*** | | | | | | | | ***17131*** | ***21414*** | ***14990*** | ***53535.8*** |
| | | | | | | | | | | | | | |

# ANNEXURE-V

# TOTAL GROUND WATER RESOURCE AVAILABILITY

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Alappuzha | Ambalappuzha | 1837.572 | 3417.44 | 5255.012 | 0 | 0 | 0 | 0 | 1584.70 | 1584.70 | 6839.71 |
| 2 | Alappuzha | Aryad | 2528.3 | 4350.912 | 6879.212 | 0 | 0 | 0 | 0 | 2017.56 | 2017.56 | 8896.77 |
| 3 | Alappuzha | Bharanikkavu | 4112.087 | 6237.6 | 10349.69 | 0 | 0 | 0 | 0 | 2858.90 | 2858.90 | 13208.59 |
| 4 | Alappuzha | Champakkulam | 3745.128 | 7629.968 | 11375.1 | 0 | 0 | 0 | 0 | 3538.09 | 3538.09 | 14913.19 |
| 5 | Alappuzha | Chengannur | 4576.199 | 3838.976 | 8415.175 | 0 | 0 | 0 | 0 | 3299.12 | 3299.12 | 11714.30 |
| 6 | Alappuzha | Harippad | 3000.553 | 5673.744 | 8674.297 | 0 | 0 | 0 | 0 | 2630.97 | 2630.97 | 11305.27 |
| 7 | Alappuzha | Kanjikkuzhy | 2756.057 | 5462.448 | 8218.505 | 0 | 0 | 0 | 0 | 2532.99 | 2532.99 | 10751.50 |
| 8 | Alappuzha | Mavelikkara | 3858.808 | 4921.56 | 8780.368 | 0 | 0 | 0 | 0 | 2209.68 | 2209.68 | 10990.05 |
| 9 | Alappuzha | Muthukulam | 4170.398 | 5778.896 | 9949.294 | 0 | 0 | 0 | 0 | 2679.73 | 2679.73 | 12629.02 |
| 10 | Alappuzha | Pattanakkad | 3029.062 | 5392.016 | 8421.078 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 8421.08 |
| 11 | Alappuzha | Thycattussery | 3345.757 | 7022.864 | 10368.62 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 10368.62 |
| 12 | Alappuzha | Veliyanad | 3497.412 | 6542.24 | 10039.65 | 0 | 0 | 0 | 0 | 3033.70 | 3033.70 | 13073.35 |
| | | | **40457.333** | **66268.66** | **106726** | **0** | **0** | **0** | **0** | **26385.44** | **26385.44** | **133111.437** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Ernakulam | Alangad | 2079.41 | 1759.44 | 3838.85 | 0 | 1026.34 | 1026.34 | 0 | 1172.96 | 1172.96 | 6038.15 |
| 2 | Ernakulam | Angamaly | 5109.83 | 3942.64 | 9052.47 | 0 | 1907.73 | 1907.73 | 0 | 2543.64 | 2543.64 | 13503.84 |
| 3 | Ernakulam | Edappally | 3973.75 | 15410.9 | 19384.6 | 0 | 7705.44 | 7705.44 | 0 | 0.00 | 0.00 | 27090.07 |
| 4 | Ernakulam | Koovappady | 7019.01 | 8890.13 | 15887.9 | 0 | 6223.09 | 6223.09 | 0 | 7112.10 | 7112.10 | 29223.10 |
| 5 | Ernakulam | Kothamangalam | 3989.18 | 4599.4 | 8570.25 | 0 | 3219.58 | 3219.58 | 0 | 3679.52 | 3679.52 | 15469.35 |
| 6 | Ernakulam | Moovattupuzha | 3590.04 | 2997 | 6587.04 | 0 | 1498.5 | 1498.5 | 0 | 1998.00 | 1998.00 | 10083.54 |
| 7 | Ernakulam | Mulamthuruthy | 2744.28 | 2938.86 | 5683.14 | 0 | 1469.43 | 1469.43 | 0 | 1959.24 | 1959.24 | 9111.81 |
| 8 | Ernakulam | Palluruthy | 1453.38 | 6384.96 | 7838.34 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 7838.34 |
| 9 | Ernakulam | Pampakkuda | 3880.37 | 4541.44 | 8421.81 | 0 | 2483.6 | 2483.6 | 0 | 2661.00 | 2661.00 | 13566.41 |
| 10 | Ernakulam | Parakkadavu | 2247.47 | 3801.92 | 6049.39 | 0 | 1782.15 | 1782.15 | 0 | 2227.69 | 2227.69 | 10059.22 |
| 11 | Ernakulam | Paravoor | 1811.62 | 7358.4 | 9170.02 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 9170.02 |
| 12 | Ernakulam | Vadavukodu | 5368.83 | 5950.4 | 11319.2 | 0 | 2789.25 | 2789.25 | 0 | 3719.00 | 3719.00 | 17827.48 |
| 13 | Ernakulam | Vazhakkulam | 5686.99 | 4832 | 10519 | 0 | 3382.4 | 3382.4 | 0 | 3865.60 | 3865.60 | 17766.99 |
| 14 | Ernakulam | Vypeen | 998.381 | 5416.32 | 6414.7 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 6414.70 |
| | | | **49952.5** | **78823.8** | **128737** | **0** | **33487.5** | **33487.5** | **0** | **30938.7475** | **30938.7475** | **193163.022** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Idukki | Adimali | 3027.28 | 2289.6 | 5316.88 | 0 | 1484 | 1484 | 0 | 1696.00 | 1696.00 | 8496.88 |
| 2 | Idukki | Azhutha | 2803.95 | 1919.54 | 4723.5 | 0 | 1017.94 | 1017.94 | 0 | 1090.65 | 1090.65 | 6832.09 |
| 3 | Idukki | Devikulam | 2207.97 | 1732.64 | 3940.62 | 0 | 1123.01 | 1123.01 | 0 | 1283.44 | 1283.44 | 6347.07 |
| 4 | Idukki | Elam Desom | 1784.91 | 2471.3 | 4256.22 | 0 | 1310.54 | 1310.54 | 0 | 1404.15 | 1404.15 | 6970.91 |
| 5 | Idukki | Idukki | 2564.39 | 1563.91 | 4128.3 | 0 | 943.74 | 943.74 | 0 | 1078.56 | 1078.56 | 6150.60 |
| 6 | Idukki | Kattappana | 2293.49 | 1213.7 | 3507.19 | 0 | 786.66 | 786.66 | 0 | 899.04 | 899.04 | 5192.89 |
| 7 | Idukki | Nedumkandam | 2072.58 | 1316.52 | 3389.1 | 0 | 853.3 | 853.3 | 0 | 975.20 | 975.20 | 5217.60 |
| 8 | Idukki | Thodupuzha | 1859.06 | 1340.67 | 3199.73 | 0 | 733.18 | 733.18 | 0 | 785.55 | 785.55 | 4718.46 |
| | | | **18613.6** | **13847.9** | **32461.5** | **0** | **8252.37** | **8252.37** | **0** | **9212.59** | **9212.59** | **49926.499** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Kannur | Edakkad | 2610.21 | 2290.67 | 5620.22 | 0 | 1252.72 | 1252.72 | 0 | 1342.20 | 1342.20 | 8215.14 |
| 2 | Kannur | Irikkur | 7480.83 | 3529.01 | 11009.8 | 0 | 2205.63 | 2205.63 | 0 | 2520.72 | 2520.72 | 15736.18 |
| 3 | Kannur | Iritty | 4977.36 | 3774.16 | 8751.52 | 0 | 2540.3 | 2540.3 | 0 | 2903.20 | 2903.20 | 14195.02 |
| 4 | Kannur | Kallyasseri | 2538.49 | 3785.5 | 6229.48 | 0 | 1720.68 | 1720.68 | 0 | 2294.24 | 2294.24 | 10244.40 |
| 5 | Kannur | Kannur | 2415.85 | 4364.35 | 6034.42 | 0 | 2045.79 | 2045.79 | 0 | 3042.72 | 3042.72 | 11122.93 |
| 6 | Kannur | Kuthuparamba | 1978.17 | 2328.3 | 4306.47 | 0 | 1164.15 | 1164.15 | 0 | 1552.20 | 1552.20 | 7022.82 |
| 7 | Kannur | Panur | 1145.47 | 1196.05 | 2341.51 | 0 | 775.215 | 775.215 | 0 | 885.96 | 885.96 | 4002.69 |
| 8 | Kannur | Payyannur | 5612.6 | 11495.2 | 17107.8 | 0 | 7184.52 | 7184.52 | 0 | 8210.88 | 8210.88 | 32503.23 |
| 9 | Kannur | Peravoor | 3331.9 | 2731.78 | 6063.68 | 0 | 1280.52 | 1280.52 | 0 | 1707.36 | 1707.36 | 9051.56 |
| 10 | Kannur | Taliparamba | 7108.19 | 10094.3 | 17202.5 | 0 | 4884.36 | 4884.36 | 0 | 6512.48 | 6512.48 | 28599.37 |
| 11 | Kannur | Thalassery | 2055.65 | 3086.59 | 5142.25 | 0 | 1446.84 | 1446.84 | 0 | 1929.12 | 1929.12 | 8518.21 |
| | | | **41254.7** | **48676** | **89809.7** | **0** | **26500.7** | **26500.7** | **0** | **32901.1** | **32901.08** | **149211.546** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Kasargod | Kanhangad | 3970.95 | 3313.1 | 7284.06 | 0 | 2520.84 | 2520.84 | 0 | 2880.96 | 2880.96 | 12685.86 |
| 2 | Kasargod | Karadka | 5217.48 | 3372.2 | 8589.69 | 0 | 2299.23 | 2299.23 | 0 | 3065.64 | 3065.64 | 13954.56 |
| 3 | Kasargod | Kasaragod | 4502.6 | 3654.14 | 8156.74 | 0 | 2283.84 | 2283.84 | 0 | 3045.12 | 3045.12 | 13485.70 |
| 4 | Kasargod | Manjeswar | 5769.94 | 5169.22 | 10939.2 | 0 | 2982.24 | 2982.24 | 0 | 3976.32 | 3976.32 | 17897.72 |
| 5 | Kasargod | Nileswaram | 3195.31 | 3545.1 | 6740.41 | 0 | 1772.55 | 1772.55 | 0 | 2363.40 | 2363.40 | 10876.36 |
| 6 | Kasargod | Parappa | 5918.97 | 5941.82 | 11860.8 | 0 | 3183.12 | 3183.12 | 0 | 4244.16 | 4244.16 | 19288.07 |
| | | | **28575.2** | **24995.6** | **53570.8** | **0** | **15041.8** | **15041.8** | **0** | **19575.6** | **19575.6** | **88188.2601** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Kollam | Anchal | 7237.86 | 4846.65 | 12084.5 | 0 | 3392.66 | 3392.66 | 0 | 3877.32 | 3877.32 | 19354.48 |
| 2 | Kollam | Chadayamangalam | 3407.12 | 2614.82 | 6021.93 | 0 | 1120.64 | 1120.64 | 0 | 1494.18 | 1494.18 | 8636.75 |
| 3 | Kollam | Chavara | 1876.47 | 3595.2 | 5471.67 | 0 | 2396.80 | 2396.80 | 0 | 1498.00 | 1498.00 | 9366.47 |
| 4 | Kollam | Chittumala | 2283.82 | 1309.5 | 3593.32 | 0 | 848.75 | 848.75 | 0 | 970.00 | 970.00 | 5412.07 |
| 5 | Kollam | Ithikkara | 2491.95 | 4564 | 7055.95 | 0 | 2420.30 | 2420.3 | 0 | 2420.30 | 2420.30 | 11896.55 |
| 6 | Kollam | Kottarakkara | 2090.63 | 1197.9 | 3288.53 | 0 | 698.78 | 698.775 | 0 | 748.69 | 748.69 | 4735.99 |
| 7 | Kollam | Mukhathala | 3011.95 | 7527.94 | 10539.9 | 0 | 3528.72 | 3528.72 | 0 | 4704.96 | 4704.96 | 18773.57 |
| 8 | Kollam | Oachira | 2992.98 | 6705.22 | 9698.19 | 0 | 3725.12 | 3725.12 | 0 | 2328.20 | 2328.20 | 15751.51 |
| 9 | Kollam | Pathanapuram | 3110.49 | 1859.26 | 4969.74 | 0 | 899.64 | 899.64 | 0 | 1199.52 | 1199.52 | 7068.90 |
| 10 | Kollam | Sasthamkotta | 2170.09 | 1381.43 | 3551.52 | 0 | 895.37 | 895.37 | 0 | 1023.28 | 1023.28 | 5470.17 |
| 11 | Kollam | Vettikkavala | 2620.21 | 1576.07 | 4196.29 | 0 | 762.62 | 762.615 | 0 | 1016.82 | 1016.82 | 5975.72 |
| | | | **33293.6** | **37178** | **70471.5** | **0** | **20689.4** | **20689.4** | **0** | **21281.3** | **21281.27** | **112442.1855** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Kottayam | Erattupetta | 2361.38 | 1281.08 | 3642.47 | 0 | 800.68 | 800.678 | 0 | 915.06 | 915.06 | 5358.20 |
| 2 | Kottayam | Ettumanoor | 2833.67 | 3628.03 | 6461.71 | 0 | 1984.08 | 1984.08 | 0 | 2125.80 | 2125.80 | 10571.59 |
| 3 | Kottayam | Kaduthuruthy | 4383.67 | 2403.2 | 6786.87 | 0 | 1502.00 | 1502 | 0 | 1314.25 | 1314.25 | 9603.12 |
| 4 | Kottayam | Kanjirappally | 3889.41 | 2397.6 | 6287.01 | 0 | 1554.00 | 1554 | 0 | 1776.00 | 1776.00 | 9617.01 |
| 5 | Kottayam | Lalam | 2804.77 | 1420.43 | 4225.19 | 0 | 994.30 | 994.298 | 0 | 1136.34 | 1136.34 | 6355.83 |
| 6 | Kottayam | Madappally | 4732.11 | 3804.96 | 8537.07 | 0 | 1902.48 | 1902.48 | 0 | 2536.64 | 2536.64 | 12976.19 |
| 7 | Kottayam | Pallom | 5282.42 | 6871.34 | 12153.8 | 0 | 3249.96 | 3249.96 | 0 | 3249.96 | 3249.96 | 18653.68 |
| 8 | Kottayam | Pampady | 2540.98 | 1596.48 | 4137.46 | 0 | 748.35 | 748.35 | 0 | 997.80 | 997.80 | 5883.61 |
| 9 | Kottayam | Uzhavoor | 3639.28 | 1789.78 | 5429.05 | 0 | 1160.04 | 1160.04 | 0 | 1325.76 | 1325.76 | 7914.85 |
| 10 | Kottayam | Vaikom | 2855.18 | 5367.24 | 8222.42 | 0 | 2367.90 | 2367.9 | 0 | 3157.20 | 3157.20 | 13747.52 |
| 11 | Kottayam | Vazhoor | 2131.07 | 1152.14 | 3283.21 | 0 | 746.76 | 746.76 | 0 | 853.44 | 853.44 | 4883.41 |
| | | | **37453.9** | **31712.3** | **69166.2** | **0** | **17010.5** | **17010.5** | **0** | **19388.3** | **19388.25** | **105565.016** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Kozhikode | Balussery | 2449.43 | 1130.19 | 3579.63 | 0 | 2406.89 | 2406.89 | 0 | 0.00 | 0.00 | 5986.52 |
| 2 | Kozhikode | Chelannur | 2275.42 | 1372.73 | 3648.15 | 0 | 2287.89 | 2287.89 | 0 | 0.00 | 0.00 | 5936.04 |
| 3 | Kozhikode | Koduvally | 4397.66 | 2129.24 | 6526.91 | 0 | 4708.91 | 4708.91 | 0 | 0.00 | 0.00 | 11235.81 |
| 4 | Kozhikode | Kozhikode | 2665.93 | 2697.92 | 5363.85 | 0 | 4292.14 | 4292.14 | 0 | 0.00 | 0.00 | 9655.98 |
| 5 | Kozhikode | Kunnamangalam | 2829.86 | 1529.46 | 4359.32 | 0 | 2804.01 | 2804.01 | 0 | 0.00 | 0.00 | 7163.33 |
| 6 | Kozhikode | Kunnummal | 2441.14 | 710.208 | 3151.35 | 0 | 1512.48 | 1512.48 | 0 | 0.00 | 0.00 | 4663.83 |
| 7 | Kozhikode | Melady | 1924.56 | 4304.38 | 6228.95 | 0 | 7398.16 | 7398.16 | 0 | 0.00 | 0.00 | 13627.11 |
| 8 | Kozhikode | Panthalayani | 3225.88 | 4888.08 | 8113.96 | 0 | 8672.40 | 8672.4 | 0 | 0.00 | 0.00 | 16786.36 |
| 9 | Kozhikode | Perambra | 3325.56 | 1450.06 | 4775.63 | 0 | 3088.10 | 3088.1 | 0 | 0.00 | 0.00 | 7863.72 |
| 10 | Kozhikode | Thodannur | 1567.9 | 928.992 | 2496.89 | 0 | 1596.71 | 1596.71 | 0 | 0.00 | 0.00 | 4093.59 |
| 11 | Kozhikode | Tuneri | 1610.61 | 1103.71 | 2714.32 | 0 | 1897.01 | 1897.01 | 0 | 0.00 | 0.00 | 4611.33 |
| 12 | Kozhikode | Vadakara | 1897.68 | 1387.78 | 3285.46 | 0 | 2385.24 | 2385.24 | 0 | 0.00 | 0.00 | 5670.70 |
| | | | **30611.6** | **23632.8** | **54244.4** | **0** | **43049.9** | **43049.9** | **0** | **0** | **0** | **97294.329** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Malappuram | Areacode | 4368.89 | 4593.83 | 8962.72 | 0 | 2977.49 | 2977.49 | 0 | 3402.84 | 3402.84 | 15343.05 |
| 2 | Malappuram | Kalikavu | 4349.81 | 4687.1 | 9036.91 | 0 | 2929.44 | 2929.44 | 0 | 2563.26 | 2563.26 | 14529.61 |
| 3 | Malappuram | Kondotty | 3103.94 | 3352.32 | 6456.26 | 0 | 1955.52 | 1955.52 | 0 | 2095.20 | 2095.20 | 10506.98 |
| 4 | Malappuram | Kuttippuram | 3029.41 | 5360.4 | 8389.81 | 0 | 3126.9 | 3126.9 | 0 | 3350.25 | 3350.25 | 14866.96 |
| 5 | Malappuram | Malappuram | 3235.42 | 3245.76 | 6481.18 | 0 | 1893.36 | 1893.36 | 0 | 2028.60 | 2028.60 | 10403.14 |
| 6 | Malappuram | Mankada | 2457.38 | 3658.8 | 6116.18 | 0 | 2134.3 | 2134.3 | 0 | 2286.75 | 2286.75 | 10537.23 |
| 7 | Malappuram | Nilamboor | 3844.32 | 3534.84 | 7379.16 | 0 | 2291.1 | 2291.1 | 0 | 2618.40 | 2618.40 | 12288.66 |
| 8 | Malappuram | Perinthalmanna | 5110.53 | 3373.17 | 8483.7 | 0 | 2176.24 | 2176.24 | 0 | 1904.21 | 1904.21 | 12564.15 |
| 9 | Malappuram | Perumpadappu | 1986.57 | 6040.58 | 8027.15 | 0 | 5663.04 | 5663.04 | 0 | 2359.60 | 2359.60 | 16049.79 |
| 10 | Malappuram | Ponnani | 2745.73 | 7260.09 | 10005.8 | 0 | 6405.96 | 6405.96 | 0 | 2669.15 | 2669.15 | 19080.93 |
| 11 | Malappuram | Thanur | 2594.25 | 2602.22 | 5196.47 | 0 | 2296.08 | 2296.08 | 0 | 956.70 | 956.70 | 8449.25 |
| 12 | Malappuram | Thriurangadi | 2481.23 | 1998.9 | 4480.13 | 0 | 1998.9 | 1998.9 | 0 | 832.88 | 832.88 | 7311.91 |
| 13 | Malappuram | Tirur | 2302.18 | 3900.3 | 6202.48 | 0 | 2600.2 | 2600.2 | 0 | 2275.18 | 2275.18 | 11077.85 |
| 14 | Malappuram | Vengara | 2416.53 | 2969 | 5385.53 | 0 | 2375.2 | 2375.2 | 0 | 2226.75 | 2226.75 | 9987.48 |
| 15 | Malappuram | Wandoor | 3026.98 | 2939.14 | 5966.12 | 0 | 1836.96 | 1836.96 | 0 | 1607.34 | 1607.34 | 9410.42 |
| | | | **47053.2** | **59516.5** | **106570** | **0** | **42660.7** | **42660.7** | **0** | **33177.1** | **33177.1** | **182407.4** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Palakkad | Alathur | 7302.28 | 5123.87 | 12586.4 | 0 | 8288.61 | 8288.61 | 0 | 0.00 | 0.00 | 20875.04 |
| 2 | Palakkad | Attappadi | 4021.87 | 3750.26 | 7772.14 | 0 | 7701.44 | 7701.44 | 0 | 0.00 | 0.00 | 15473.57 |
| 3 | Palakkad | Chittur | 5666.36 | 6622.8 | 12042.3 | 0 | 8278.5 | 8278.5 | 0 | 0.00 | 0.00 | 20320.77 |
| 4 | Palakkad | Kollengode | 6978.75 | 3623.48 | 10038.9 | 0 | 5141.43 | 5141.43 | 0 | 0.00 | 0.00 | 15180.31 |
| 5 | Palakkad | Kuzhalmannam | 7119.84 | 3803.98 | 10923.8 | 0 | 6339.96 | 6339.96 | 0 | 0.00 | 0.00 | 17263.78 |
| 6 | Palakkad | Malampuzha | 3007.15 | 3430.91 | 6956.45 | 0 | 5896.88 | 5896.88 | 0 | 0.00 | 0.00 | 12853.33 |
| 7 | Palakkad | Mannarkkad | 3644.45 | 5995.71 | 9895.48 | 0 | 10637.6 | 10637.6 | 0 | 0.00 | 0.00 | 20533.03 |
| 8 | Palakkad | Nenmara | 2598.91 | 4270.27 | 6769.61 | 0 | 7339.53 | 7339.53 | 0 | 0.00 | 0.00 | 14109.14 |
| 9 | Palakkad | Ottappalam | 3888.63 | 3005.8 | 5976.14 | 0 | 4152.75 | 4152.75 | 0 | 0.00 | 0.00 | 10128.89 |
| 10 | Palakkad | Palakkad | 6055.41 | 3068.74 | 9365.89 | 0 | 5114.56 | 5114.56 | 0 | 0.00 | 0.00 | 14480.45 |
| 11 | Palakkad | Pattambi | 3448.57 | 5550.98 | 9818.68 | 0 | 8095.19 | 8095.19 | 0 | 0.00 | 0.00 | 17913.87 |
| 12 | Palakkad | Sreekrishnapuram | 3027.25 | 3949.38 | 6968.52 | 0 | 7240.53 | 7240.53 | 0 | 0.00 | 0.00 | 14209.05 |
| 13 | Palakkad | Thrithala | 2384.32 | 2410.24 | 4794.56 | 0 | 3615.36 | 3615.36 | 0 | 0.00 | 0.00 | 8409.92 |
| | | | **59143.8** | **54606.4** | **113909** | **0** | **87842.3** | **87842.3** | **0** | **0** | **0** | **201751.144** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Pathanamthitta | Elanthoor | 2119.04 | 1019.71 | 3138.75 | 0 | 1752.63 | 1752.63 | 0 | 0.00 | 0.00 | 4891.38 |
| 2 | Pathanamthitta | Koipuram | 1956.37 | 1187.23 | 3143.6 | 0 | 2040.56 | 2040.56 | 0 | 0.00 | 0.00 | 5184.16 |
| 3 | Pathanamthitta | Konni | 4795.29 | 2104.14 | 6899.43 | 0 | 4481.03 | 4481.03 | 0 | 0.00 | 0.00 | 11380.46 |
| 4 | Pathanamthitta | Mallappally | 2450.47 | 1202.6 | 3653.07 | 0 | 2659.61 | 2659.61 | 0 | 0.00 | 0.00 | 6312.68 |
| 5 | Pathanamthitta | Pandalam | 2497.87 | 2514.46 | 5012.33 | 0 | 5354.86 | 5354.86 | 0 | 0.00 | 0.00 | 10367.19 |
| 6 | Pathanamthitta | Parakode | 6066.91 | 2445.34 | 8512.25 | 0 | 5207.66 | 5207.66 | 0 | 0.00 | 0.00 | 13719.91 |
| 7 | Pathanamthitta | Pulikeezh | 2004.15 | 4016.61 | 6020.76 | 0 | 5406.98 | 5406.98 | 0 | 0.00 | 0.00 | 11427.73 |
| 8 | Pathanamthitta | Ranni | 3693.12 | 1882.3 | 5575.42 | 0 | 4162.77 | 4162.77 | 0 | 0.00 | 0.00 | 9738.19 |
| | | | **25583.2** | **16372.4** | **41955.6** | **0** | **31066.1** | **31066.1** | **0** | **0** | **0** | **73021.6995** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Thiruvananthapuram | Athiyannur | 1281.84 | 1068.06 | 2349.9 | 0 | 381.45 | 381.45 | 0 | 572.18 | 572.18 | 3303.52 |
| 2 | Thiruvananthapuram | Chirayinkil | 1595.77 | 3146.81 | 4742.58 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 4742.58 |
| 3 | Thiruvananthapuram | Kilimanoor | 2762.03 | 4026.85 | 6788.88 | 0 | 2157.24 | 2157.24 | 0 | 2876.32 | 2876.32 | 11822.44 |
| 4 | Thiruvananthapuram | Nedumangad | 1883.67 | 3120.6 | 5004.27 | 0 | 2184.42 | 2184.42 | 0 | 2496.48 | 2496.48 | 9685.17 |
| 5 | Thiruvananthapuram | Nemom | 4710.7 | 2428.34 | 7139.04 | 0 | 1011.81 | 1011.81 | 0 | 1264.76 | 1264.76 | 9415.61 |
| 6 | Thiruvananthapuram | Parassala | 1516.99 | 2466.3 | 3983.29 | 0 | 1479.78 | 1479.78 | 0 | 1973.04 | 1973.04 | 7436.11 |
| 7 | Thiruvananthapuram | Perumkadavila | 3325.92 | 2703.8 | 6029.72 | 0 | 1622.28 | 1622.28 | 0 | 2298.23 | 2298.23 | 9950.23 |
| 8 | Thiruvananthapuram | Pothencode | 1434.51 | 3855.8 | 5290.31 | 0 | 2076.2 | 2076.2 | 0 | 2372.80 | 2372.80 | 9739.31 |
| 9 | Thiruvananthapuram | Vamanapuram | 3301.56 | 4229.94 | 7531.5 | 0 | 2847.08 | 2847.08 | 0 | 3253.80 | 3253.80 | 13632.38 |
| 10 | Thiruvananthapuram | Varkala | 1651.06 | 3879.42 | 5530.48 | 0 | 2552.25 | 2552.25 | 0 | 1276.13 | 1276.13 | 9358.85 |
| 11 | Thiruvananthapuram | Vellanad | 3506.42 | 4381.8 | 7888.22 | 0 | 2629.08 | 2629.08 | 0 | 3724.53 | 3724.53 | 14241.83 |
| | | | **26970.5** | **35307.7** | **62278.2** | **0** | **18941.6** | **18941.6** | **0** | **22108.3** | **22108.26** | **103328.03** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Thrissur | Anthikkad | 4335.29 | 5942.4 | 10277.7 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 10277.69 |
| 2 | Thrissur | Chalakkudy | 4464.89 | 3299.78 | 7764.67 | 0 | 7027.31 | 7027.31 | 0 | 0.00 | 0.00 | 14791.98 |
| 3 | Thrissur | Chavakkad | 3273.52 | 5394.85 | 8668.37 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 8668.37 |
| 4 | Thrissur | Cherpu | 3194.23 | 3548.16 | 6742.39 | 0 | 5322.24 | 5322.24 | 0 | 0.00 | 0.00 | 12064.63 |
| 5 | Thrissur | Chowannur | 3815.3 | 3732.54 | 7547.84 | 0 | 5598.81 | 5598.81 | 0 | 0.00 | 0.00 | 13146.65 |
| 6 | Thrissur | Iringalakkuda | 3226.15 | 3742.63 | 6968.78 | 0 | 3984.09 | 3984.09 | 0 | 0.00 | 0.00 | 10952.87 |
| 7 | Thrissur | Kodakara | 4326.46 | 3995.9 | 8322.37 | 0 | 6867.96 | 6867.96 | 0 | 0.00 | 0.00 | 15190.33 |
| 8 | Thrissur | Mala | 4351.26 | 4703.81 | 9055.07 | 0 | 4004.6 | 4004.6 | 0 | 0.00 | 0.00 | 13059.66 |
| 9 | Thrissur | Mathilakom | 3372.75 | 6790.64 | 10163.4 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 10163.39 |
| 10 | Thrissur | Mullassery | 2806.27 | 2844.72 | 5650.99 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 5650.99 |
| 11 | Thrissur | Ollukkara | 3187.08 | 3949.82 | 7136.9 | 0 | 6788.76 | 6788.76 | 0 | 0.00 | 0.00 | 13925.66 |
| 12 | Thrissur | Pazhayannur | 4314.88 | 3838.59 | 8153.47 | 0 | 8174.78 | 8174.78 | 0 | 0.00 | 0.00 | 16328.25 |
| 13 | Thrissur | Puzhakkal | 6107.64 | 5608.54 | 11716.2 | 0 | 8412.81 | 8412.81 | 0 | 0.00 | 0.00 | 20128.99 |
| 14 | Thrissur | Thalikkulam | 2209.89 | 3047.55 | 5257.45 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 5257.45 |
| 15 | Thrissur | Vadakkancherry | 3651.71 | 2686.9 | 6338.61 | 0 | 6549.31 | 6549.31 | 0 | 0.00 | 0.00 | 12887.91 |
| 16 | Thrissur | Vellangallur | 2411.02 | 5423.81 | 7834.83 | 0 | 0 | 0 | 0 | 0.00 | 0.00 | 7834.83 |
| | | | **59048.4** | **68550.6** | **127599** | **0** | **62730.7** | **62730.7** | **0** | **0** | **0** | **190329.649** |

| Total Ground Water Resource Availability -2017 | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| KERALA | | | | | | | | | | | | |
| **S.No** | **District** | **Name of the Assessment Unit** | **Annual Extractable Ground Water Recharge of unconfined Aquifer** | **In storage Ground Water Resources of Unconfined Aquifer** | **Total Ground Water Availability of Unconfined Aquifer** | **Dynamic Ground Water Resources of Semi-Confined Aquifer** | **In storage Ground Water Resources of Semi-Confined Aquifer** | **Total Ground Water Availability of Semi-Confined Aquifer** | **Dynamic Ground Water Resources of Confined Aquifer** | **In storage Ground Water Resources of Confined Aquifer** | **Total Ground Water Availability of Confined Aquifer** | **Total Ground Water Availability of the Assessment Unit** |
| | | | **Unconfined Aquifer** | | | **Semi-Confined Aquifer** | | | **Confined Aquifer** | | | |
| | | | **6** | **7** | **8=6+7** | **9** | **10** | **11=9+10** | **12** | **13** | **14=12+13** | **15=8+11+14** |
| 1 | Wayanad | Kalpetta | 6653.81 | 4962.12 | 11615.9 | 0 | 6202.65 | 6202.65 | 0 | 4341.86 | 4341.86 | 22160.44 |
| 2 | Wayanad | Mananthavady | 6638.94 | 4926.12 | 11565.1 | 0 | 6157.65 | 6157.65 | 0 | 4310.36 | 4310.36 | 22033.07 |
| 3 | Wayanad | Panamaram | 3808.27 | 2794.32 | 6602.59 | 0 | 3492.9 | 3492.9 | 0 | 2445.03 | 2445.03 | 12540.52 |
| 4 | Wayanad | Sulthanbathery | 6062.12 | 4448.88 | 10511 | 0 | 5561.1 | 5561.1 | 0 | 3892.77 | 3892.77 | 19964.87 |
| | | | **23163.1** | **17131.4** | **40294.6** | **0** | **21414.3** | **21414.3** | **0** | **14990** | **14990.01** | **76698.893** |