

# An Analysis of Ramasandra Lake, Bangalore: A Geographical Study

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**Abstract:** Any inland body of standing water occupying a depression in the earth's surface generally larger than a pond and too deep to permit vegetation. The term includes an expanded part of a river, a reservoir behind a dam, or a lake basin in temporarily or formally covered by water. The case study has been done for lake analysis for which the geographical analysis of the lake Ramasandra is situated. It is located at an absolute location of  $77^{\circ} 46' 2''$  longitudes and  $12^{\circ} 95' 6''$  latitude. The technological advances software is surely blessing to analyze lake studies. The Indian topographical maps of 1:50,000 scales is used as the base line data for comparison (map no 57H/5). IRS 1-C imagery is obtained for land use map. And to get updated land use data for 2010 GPS survey was conducted, Georeferencing, subset. Mosaic and projection is done in ERDAS imagine software. 9.0. The work is divided into three stage namely pre field, field work and post fieldwork. The present study concentrate of analyze above lake and its catchment area.

**Keywords:** lake, analysis, toposheet, catchment area. Etc.

## 1. Introduction

The term 'lake' has been derived from Latin word lacus. Lakes are those static bodies of water on the land surface which are surrounded by land on all sides and are always located on land surface. Lakes are also called inland standing water but this is not always true as some lakes are also located on the sea coast. a lake remains permanent provided that amount of water it receives, as rain and as water draining into its hollow, equals the amount lost. Bangalore district presently situated in the heart of the South-Deccan plateau in peninsular India to the south-eastern corner of Karnataka state situated at  $13^{\circ} 0'$  north latitude and  $77^{\circ} 33'$  east longitudes is at a height of 940 m above sea level. It is capital of Karnataka variously known as garden city and hub of IT industries and MNC's. The growth of industries and mushrooming of companies has seen a dramatic increase in the population and the consequent increased pressure on city's resources including its lake. For long Bangalore has been justifiably proud of its many lakes, ponds and wetlands. Studies show that during the middle of the last century Bangalore had as many as two hundred sixty- two lakes. The naturally undulating terrain of Bangalore city with its fills and valleys leads to the development of lakes that can captured and store rainwater. Streams were generated at the ridge top and cascade down to three valleys-

a) The Hebbal valley, b) The Koramangala-Khallaghatta valley, c) The Vrishabhavati valley

The Bangalore district supports about 461 tanks serving the irrigation needs to various capacities. Most of these tanks are seasonal and carry water for six months during a year. Bangalore: north-98, south-166, anekal-197 tanks. Kempegowda, the founder of Bangalore, established several tanks and lakes to impound runoff water so that the same could be utilized for better purpose. But the tanks built by him have been engulfed by the bulging city. After 1950's the rate of urbanization increase rapidly. To create accommodation for increasing population, lake beds were converted into layout, bus depots, and playground and so on.

As such several lakes have been erased from the map. Lakes play a very important role in human life. Besides being a source of water, water bodies in urban areas plays an essential role in keeping the area cool and congenial. They moderate temperature and affect the climate of the surroundings land. They store water, thereby helping to regulate stream flow; recharge ground water level and moderate droughts, aside from their importance for human use, lakes have intrinsic ecological and environmental values. They provide habitat to aquatic and semi aquatic plants and animals, which intern provide food for many terrestrial animals; and they add to the diversity of the landscape. Due to relatively high human population density, the lakes are being threatened by development pressure and misuse. Some small lakes are vulnerable by sewerage inflow, solid waste dumping etc. There has been reduce in the ground water level on account of poor permeability with more and more silt, clay deposit, trash and toxic waste accumulation in the lakes years after years. Most of the lakes in Bangalore have already been engulfed by the bulging city. As such several lakes have been erased from the map. All these have led to serious environmental impact on the lake and have disturbed the equilibrium of the wetland ecosystem. In order to supply sufficient water to the growing population, the govt. of Karnataka is facing the problem of acute water shortage. The continuous use of ground water has very much lowered the ground water level causing water problem in the entire state. The B.D.A, B.B.M.P, L.D.A, etc are trying their best to develop and maintain lakes to solve future problems of water supply. Our main purpose behind choosing Ramasandra Lake as a study area is because it has an easy accessibility and located nearby. Also lakes are one of the burning issue of the present state govt. so with a view to contribute to the state govt. and socio-economic development of the people, we have undertaken Ramasandra lake a study area. This study will also help to create awareness among the general public about the need of development and conserving lakes.

## 2. Study Area

The case study has been done for lake analysis for which the

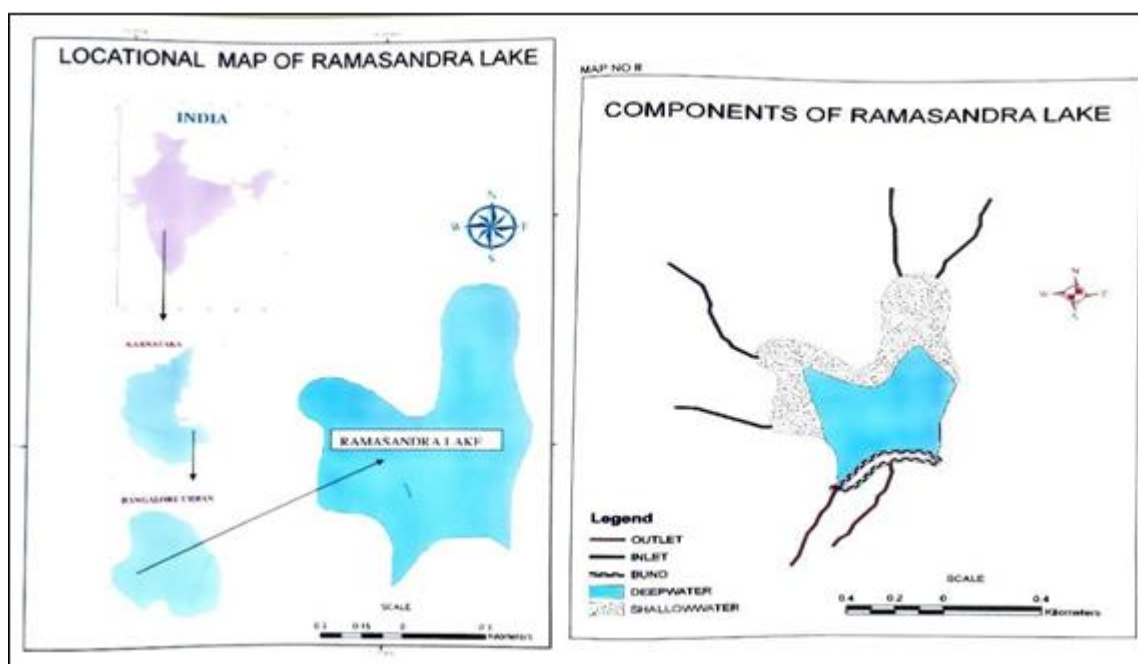
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geographical analysis of the lake Ramasandra in studied. It is located at an Absolute location of  $12^{\circ} 95'6''$  latitude and  $77^{\circ}46'2''$  longitude. This lake situated in an undulating terrain on the foothill of an intermingling valley and hills having a spot height of 865m contour height of 842m. according to the top map of Karnataka 57H/5, 1973; the lake has been surrounded by villages namely, sulikere village in the southwest which is developed large settlement with a post office, well-constructed tube wells and a favorable road network of the both metalled and unmetalled which connects to the main district roads. Kenchanapura village in the north western side of the lake has sparse vegetation with numerous constructions of well and consists of tank which depends upon the main sources like river Arkavati and the perennial rivers. Towards the northern side of the lake we notice villages like hosahalli and kannahalli which has good amount of tube well and a dry tank which falls up during the rainy season of the month of June to September with an annual rainfall of 859.6mm with a mean temperature of

$33.4^{\circ}\text{c}$  and has both footpath and a metalled road. Villages like sigehalli, byandahalli and kodagehalli area large settlements area with several small clustered settlements which is highly favored by the drainage system and a well development transportation of metaled and unmettals road and has high and a compact concentration of vegetation. Gollarhatti and Bedarahalli are fully developed settlements of high and scattered concentration on the north east side of the lake which is predominated by secondary activities growing along the roadside. This lake is located in India, Karnataka of south Bangalore. The size of the lake is 135 acres 14 gunta and has a catchment area of 1629 hectare (4023.63acre) with a storage capacity of water 1539million liter. The man source of the lake Ramasandra is river Arkavati with a main inlet sources coming from Kenchanapura on the northwest side; Kannahalli, sigehalli, Gollarahatti ang Kodagehalli on the northern side of the lake Ramasandra.



### Objectives

- To know the dimension of lake and its catchment area.
- To know the spatial-temporal analysis of lake. And
- To know the Demarcation of boundaries.

### 3. Methodology

Any geographical study requires and conservation activity of management of strategic approach with a reliable data sources and real time data are required. To prepare various information of the lake analysis in term of catchment area, drainage pattern, vegetation settlement, agriculture and road networks identification, certain criteria are taken into consideration like contours, spot height and stream. Further for the demarcation of the boundaries top sheet map of cadastral map and physical observation along with questionnaires, discussion and photographs. Thus, the information regarding the study area is obtained from the following section of data base used:

### Geography and Geology of the Lake:

#### Climate

Climate is climatically well favored in this area. It is classed seasonally a dry tropical savannas climate with four season. It records a high temperature during April with mean temperature of  $33.4^{\circ}\text{c}$ . The mean annual rainfall in this area is 859.6mm with a rainy season which receives 54% of the total annual rainfall during the month of June to September. Thus, lake and climate is interrelated in terms of living (plants and birds) and non-living (mud or sediment) as the sole existence of the whole lake ecosystem depends on the light penetrating which produces basic food for the ecosystem. Thus, the lake is known for various microorganism living in the mud and various species and birds like, common crow, white breasted kingfisher, common mina, small green be eater, black kite, spotter dove and weaver bird etc. the climate favors the Ramasandra which still in its initial stage is clean and has a Positive influence on the ecosystem including vegetation, flora, fauna, soil, build-up area. The lake gets filled up during

rainy season is due to climate effect and the lake show an impact of it on the environment and agriculture.

### Topography

The study area of the lake Ramasandra catchment area shows the area has an uneven landscape with an intermingling of hills and valleys with captivating a spot height of 865m and contour height of 842m. The valleys have been a great advantage for the lake as during the rainy season the water drains from the valley toward the lake has further favored the environment of the lake, influencing the vegetation and the agricultural pattern. The geological structure as observe is rocky hard rock's which are not deteriorated easily due to which seeps in the water. This lake is in its initial of stage development due to which there is not much deterioration in the surroundings.

### Vegetation

According to imagery data of 2010 Of Europe technologies, the catchment area of the lake supports a wide variety of vegetation. The vegetation found in this area includes bamboo, beetle nut, mulberry, mangoes, palm and many wild plants and trees. The southern part has a great impact of the lake as we observe a high concentration of vegetation supported by the outlet source of the lake and the vegetation includes both forest and plantation.

### Soil

The soil found in the concerned study area is mostly red soils. They can be described as shallow well drained to excessively drain of the reddish brown to yellowish brown of moderate eroding. The small hills and undulating lands of the lake catchment area are all composed of red soil and big rocks which do not erode easily. The imagery data shows high concentration of agriculture pattern which shows the fertility of the soil which has high content of moisture supplied by the inlet sources of river Arkavati, Kenchanapura, kennahalli, sigehalli and kodagehalli and outlet source of lake Ramasandra lake in the Ramasandra village which has benefitted both in vegetation and agriculture.

### Wetland

It is usually an area of land near the lake where the soil has been saturated with moisture either permanently or seasonally. It is usually covered by shallow pools of water and includes swamp and marshes which is an ideal for lake

Ecosystem for the living beings and non-living beings. Since the lake is in its initial stage there is no evidence as such of the wetlands. But according to the future management of lake area, the land record development has come up with a strategic approach of eliminating the land encroachment of the lake by converting in to a green belt park and gardens and fencing the lake area from getting polluted and managing the shallow part of the Lake as a wetland to provide a vast home for flora and fauna.

### Spatial Analysis

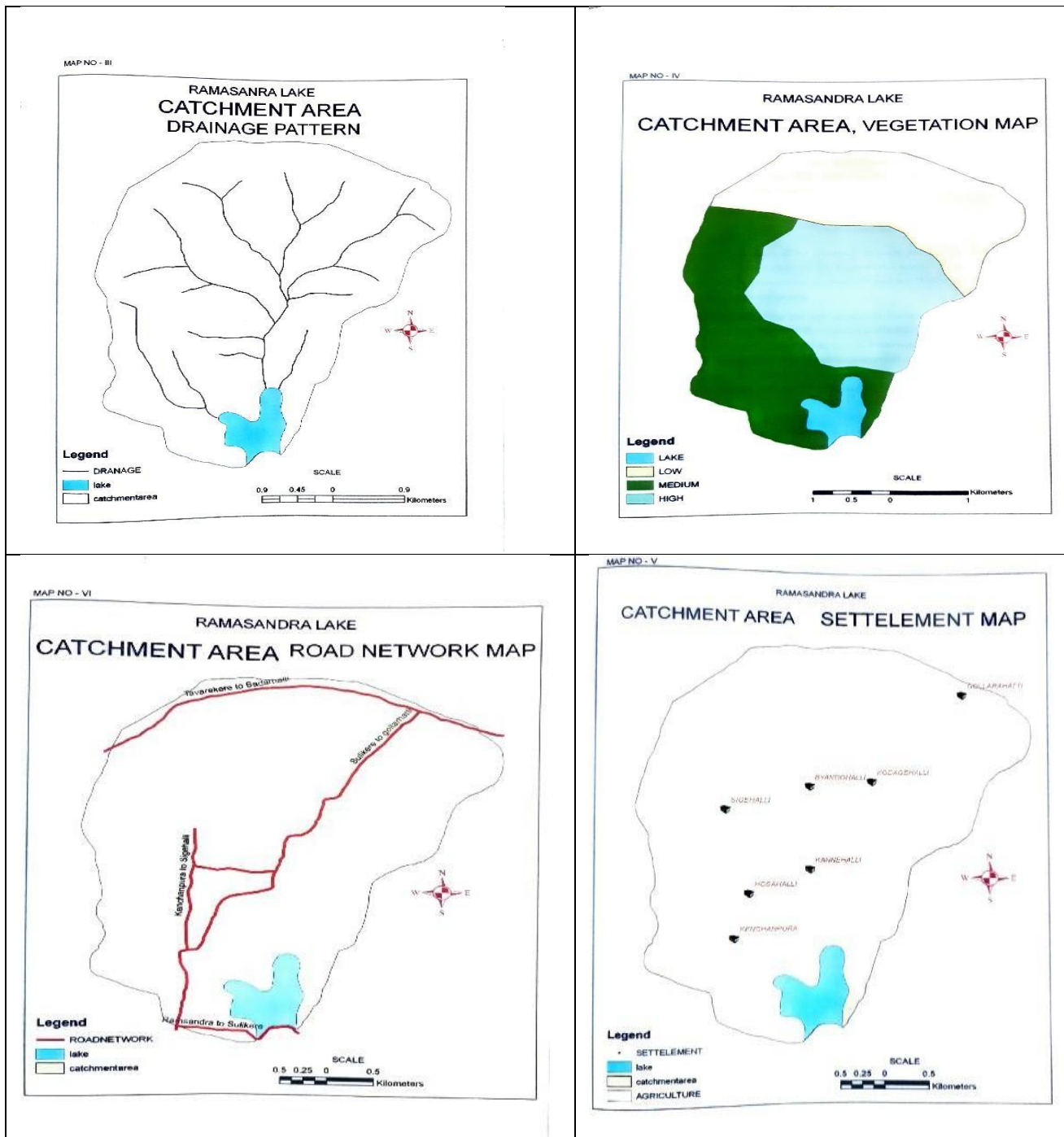
In a spatial analysis we adopt a topical method for studying the Ramasandra Lake analysis. This study of spatial analysis is done by interpreting the digitize top map of the catchment area of the lake Ramasandra by using the software ERDAS, ARS GIS. In the spatial analysis we study the feature found in the catchment area of the lake, as how it affects the lake and its ecosystem. For this spatial analysis we study the features like:

Catchment Area, Vegetation, Drainage Pattern, Road network, Settlements, Agriculture.

This study is done to get the information about the lake's feature distributions (evenly unevenly, compact, clustered) and density (high, medium, low and very low) and how it effects the ecosystem of the lake.

### Temporal Analysis

This analysis keeps changing with time. Here for the study of Ramasandra Lake analysis to the map of Karnataka, 57H/of 1973 is taken to study the previous topography and its characteristics of its feature found within the catchment area its impact on the lake. The temporal analysis study can also be done through physical observation in the field along with ready questionnaires, discussion with the local settled near the lake side area and the changes taken place in comparison to the top map through photographs. Thus we can say by clubbing the criteria like contour, spot height and streams with the methodology like top map, cadastral map and physical observation" we can study the spatial- temporal analysis of the Ramasandra lake. Therefore, observation both the spatial and temporal analysis i.e. the previous top map and the present imaginary data of Europe technologies of 2010 shows the catchment analysis of the lake Ramasandra and its catchment areas.



**Catchment Area**

An area which drained by a particular river is known as a drainage basin. In this area, rain water is collected which feeds the river or in this case, lake. A basin is a depression on the surface, the lowest part of which may be occupied by a lake or the area drained by the river. A close observation of the given top map of Karnataka 57H/5 shows a catchment area of lake Ramasandra which covers a large area to the north of the lake to the south where the lake is situated. This catchment area includes the vegetation, drainage pattern, settlement, road network, and lake on a scale of 1:50,000. The catchment area of the lake Ramasandra has been highly favored by the undulating topography with intermingling of hills and valleys which has a height of 828m on the Kannahalli side and a spot height of 865m on the northern side which help in draining water into the lake and its catchment area with perennial rainfall in the rainy season of

the month of July and December and receives water from its main source, River Arkavathi. The Ramasandra lake's catchment area also benefits as a favorable catchment in terms of vegetation, agriculture, built-up area, road network, and drainage pattern as they get water from Kannanapura, Hosahalli, Kannahalli, Sigehalli, Kodagehalli, and Golarahatti, which is evident from the given top map of 57H/5, of 1973.

**Drainage Pattern**

River Arkavathi is the main source of Lake Ramasandra. It has a much system due to its undulating topography and gives a favorable drainage pattern suitable for the catchment area. A careful study of the prevailing natural drainage of the given topographic map catchment area denotes dendritic and irregular parallel patterns. Its uneven landscape and intermingling valley helps in draining the water into the lake

Ramasandra during rainy season. Broadly speaking the prevailing drainage has three inlets feeding the lake coming from the north. As per given slope from north to south broad river system flow from north to south which is a dendritic pattern towards the lake. Its main inlet source is river Arkavati and the perennial rainfall and other tanks like kenchanapura in the north-west and western side of the lake, kanehalli, hosahalli, sigehalli, kadagehalli, Gollarahalli and kenchanapura which fills the lake Ramasandra. Though it is a dendritic pattern of irregular parallel, it is unevenly distributed but has a high concentration on the northern side of the lake as it is situated within intermingling of valleys and hills having spot height of 865m and contour height of 820m. The major source of inlet like hossahalli, kannahalli, sigehalli, byandahalli, kodaganahalli and gollarahatti of the lake which makes the catchment area has high concentration of drainage pattern. As for in the western side of the lake there is an even distribution of low concentration of dendritic pattern, which flows from one of the inlet of kenchanapura. At the outset of a simple glance we can see the facilities provided the river for irrigation purpose and cultivation along with several constructions of wells near the inlets sources and the rising build up area along the drainage pattern of bigger settlements. The outlet source of the drainage pattern is future used for many purpose including irrigation and agriculture purpose as evident from the cadastral map of Ramasandra village which lies on the south side of the lake. We observe a high concentration of coconut plantation, beetle-nut tree and other fruit plantation. The south west side of the village has a high density of primary activities consisting of rice cultivation, mulberry plantation and few fruits plantation of banana, mango and guava etc. this is possible as the outlet source of the lake Ramasandra is more prominent in these areas of the village Ramasandra

### Vegetation

As a detailed study shows a compact and high distribution of vegetation along the bigger settlement areas like kodagehalli with and other smaller settlements nearby as it influenced by the favorable drainage pattern and the presence of tank of its own and over flowing water from the Gollarahalli tank which benefits the vegetation. A medium concentration of uneven distribution of vegetation is seen on the bigger settlements areas of kenchanapura, sigehalli and byadahalli which has been benefitted and facilitated by drainage pattern and tanks which have highly influenced the vegetation pattern. A sparse and uneven distribution of the vegetation is observe on the settlement areas of kanehalli and hosahalli in spite of the available tanks is due to undulation of landscape having a contour height of 820m and 840m and whose tanks are usually dry and depend upon the perennial rainfall whose water again overflow in the lake Ramasandra whose means of transportation is done through footpath and unmetalled road but now has metaled due to rising changes and urbanization which has developed to same extent is brought by involvement of BDA, BBMP, LDA AND LRD. The vegetation found in these areas mainly includes bamboos, mangoes, coconut, beetle nut, mulberry, palm trees and many other wild plants and trees. We observe a large concentration of vegetation can be found northern and southern parts of the lake. There is comparatively less concentration of vegetation on the eastern side of the lake

expecting few cluster vegetation. The southern part of the lake has a heavy concentration of vegetation results of the water supplied by the outlets of the lake. As a whole the vegetation is found along the catchment area of the lake and includes both forests and plantation.

### Agriculture

According to imaginary data of 2010 Europe technologies shows that the lake water also supports the agriculture system of the area by providing irrigation facilities for the agriculture field. The main agricultural crops cultivated in this area include rice cultivation, ragi, variety of vegetables like cabbage, beetroots, brinjals, chilies, pumpkins, ladies finger carrot etc. Also other fruits like mangoes, custard apples, coconut, bananas, watermelons, pine apples can be found in the agricultural area. Area under agriculture is highly distributed in the northern and southern side of the lake whereas eastern side has a low and sparse distribution of agriculture due predominant nature of urbanization. The government has also constructed a proper channel in the lake for irrigation of agricultural field in the area: these channels are well connected with agriculture areas. A thorough observation of the map reveals that a area is covered with a high concentration of agriculture and vegetation reason being that the area is still located on the edge of the city and area is still under BBMP.

### Transport

According to study of topo map of 57H/5 of 1973 the road here is unevenly distributed as the result of the undulating landscape. There is high distribution of compact footpaths along the lake and along the bigger settlement area like sigehalli, Byandahalli, and some smaller settlement areas. We observe sparse uneven metaled and unmetalled roads towards far north of the lake and north western side of the lake of the settlement areas of Gollarahatti, hosahalli, kanehalli, Bedarahalli and kodagehalli is due to urbanizing and developing of the area. The imagery data of 2010 Europe Technologies shows the distance from Bangalore University to the study area of the Lake Ramasandra Lake is approximately 6 to 7 kms. One of the main highways running near Ramasandra village is the nice road which is about 2kms away from the lake. There is a network of roads running in and around the Ramasandra village connecting all the major villages. Another major road runs through the southern part of the lake connecting Ramasandra to Kenchanapura.

### Settlements

A detailed study of Topomap shows an undulating terrain with hilly areas with a spot height of 865m. This has influenced number, size and distribution of settlement. Moderate to poor red soils with undulating topography has resulted in smaller and highly scattered many small and relatively big rural settlements in the given catchment area. Along the northern side of the lake ramasandra big settlement like kenchanapura, hossahalli, kanehalli, sigehalli, byandahalli, kodageballi and bedarahalli and gollarahatti appears along the drainage pattern are well developed settlements with number of development of wells. We also observe aa small clustered settlement which is unevenly distributed within the catchment area and along the main district road which is well constructed metaled road

joins other district routes. These settlements are not only influenced by the well-connected metalled road now but are also affected by the river Arkavati which is the main source of Lake Ramasandra. Thus, settlement like kenchanapura, kannehalli and sige halli, kodagehalli and gollarahatti have a well-established settlements as they have the benefit of tank where the water over flow during the rainy season and flows towards lake Ramasandra and a well-constructed metaled road. Therefore, we can say the settlement within this catchment area is more dense and compact along the dendritic drainage pattern in the northern side of the lake whose main source is river Arkavati and have high and uneven distribution of settlement along the road which has well developed metalled road and is more urbanized with less primary activity and more of secondary activities of retail and wholesale shops, miscellaneous shops, service and repair shops etc. Thus, demarcating the areas of settlement on the top map shows that there is a high and scattered concentration of settlement on northern zone of the catchment area which show its unplanned nature but an unchecked growth towards urbanization which is clearly evident from the settlement of gollarahatti and bedarahalli which connects towards the metaled main district roads which connect other district roads and is dominated by secondary activities of retail, wholesale shop and repairs and service shops. There is medium and uneven concentration of settlement like sige halli, byandahalli and kodegahalli on the central zone of the catchment area which are influenced by the drainage pattern where the valleys intermingle and facilitates the area with a good amount of water along with numerous construction of settlement on the southern side of the catchment area like hosahalli and kannahalli, along with other small settlement though it has an advantage of receiving perennial rainfall but due to its undulating terrain with a contour height of 842m and 828m respectively the water flow towards the lake Ramasandra making the area unsuitable for settlement and difficult for good transportation accessibility, therefore we observe a good amount of construction of well and a very low concentration of settlement of south western zone in kenchanapura due to the unavailability of good transportation facility provided only by footpath. Towards the outlet source of the lake Ramasandravillage we notice an uneven distribution of settlement as this area is dominated mostly by primary activities like agricultural practice and coconut plantation and is still development in relation to transport facilities. We notice high concentration of settlement in the northern side of the village due to availability of tank and other facilities like good road network whereas towards the south west and south we observe a low and unevenly distributed settlement due to poor facility of transport and as area is predominantly an agriculture area.

#### **Environmental Impact on Ramasandra Lake**

If the condition of the environment change and new set of conditions emerge then it will have effects on ecology. The effects are generally termed through the term "Environmental Impacts" which may be caused or include by an action as set of action of human or nature itself. The impacts of the environment are assessed through 'Environmental Impact Assessment' or 'Environmental Impact Analysis'. The pollution of the lake has a great

impact on the entire environment of the area.

#### **Impact on Ecology**

All sorts of pollution resulting from washing clothes, garbage dumping etc. establishes unhealthy effect both human and all kinds of flora and fauna depending on the lake. Though the lake is comparatively less polluted but in future if the pollutants are not restricted it may produce toxic effect for both human consumption and livestock consumption. The dirty water of the lake may also lead to many types of water borne diseases such as cholera, typhoid, dysentery, hepatitis etc. water borne diseases are those caused by water that has been contaminated by human, animal or chemical wastes that flows into lake through sewages. Where proper sanitation facilities are lacking, waterborne diseases can spread rapidly. Untreated excreta facilities are lacking; waterborne diseases can spread rapidly. Untreated excreta carrying disease organisms wash or leach into lake water sources, contaminating the water used by people around the lake. This water used for irrigation contaminates the fruits and vegetables, which are later consumed by the people. Open latrines near the lake are an important problem that is polluting the lake water. So proper sanitation facilities must be provided by the govt. wetlands are considered the most biologically diverse of all ecosystems, so Great care must be taken to save the lake from getting polluted as the result ultimately affects the human beings including plants and animals. Throwing garbage should be an act be considered as illegal and penalty should be enforced when any individual is seen throwing the garbage into the lake.

#### **Serious Impact on Ecosystem**

Pollution of the lake severely impacts the overall health of ecology in the wetland causing severe harm on the aquatic life. Nearly all fertilizers contain phosphate which is necessary for plant and animal growth. When it rains Carrying amounts of phosphates wash from agricultural field to the lake. If too much phosphate is present, algae and water weeds grow wildly, choke the lake, and use up large amount of oxygen. Many fish and aquatic organism may die. When waste materials like garbage of residential areas are thrown into the lake, it becomes toxic for both aquatic plants and animals and have huge impact our health. When toxic waste harms an organism, it gets quickly passed along the food chain affecting the entire ecosystem including varieties of birds that feeds on the fishes found in the lake. In the food chain, one toxic organism gets eaten by another, larger animal that gets eaten by another animal and can end up as a food for the people consuming the fishes of the lake. As a preventive measure there should be biological purification of water by construction of wetland. Also the source and entry points of sewage discharge into the lake should be identified.

#### **Impact on other species**

Ramasandra Lake boasts both nesting and roosting of birds. The wetland is a home for many species of birds which on fish and other small aquatic organism like frogs, tadpoles etc. so if the marine organisms are affected by toxic pollutants, it will indirectly have affected the various species of birds as a result of imbalance in food chain. If the lake is not revived soon, in near future the lake would itself get deprived of birds, as the food for the birds may not be

there because sewage and chemical fertilizers from the residential and agriculture land may adversely affected the water quality and thus the aquatic life.

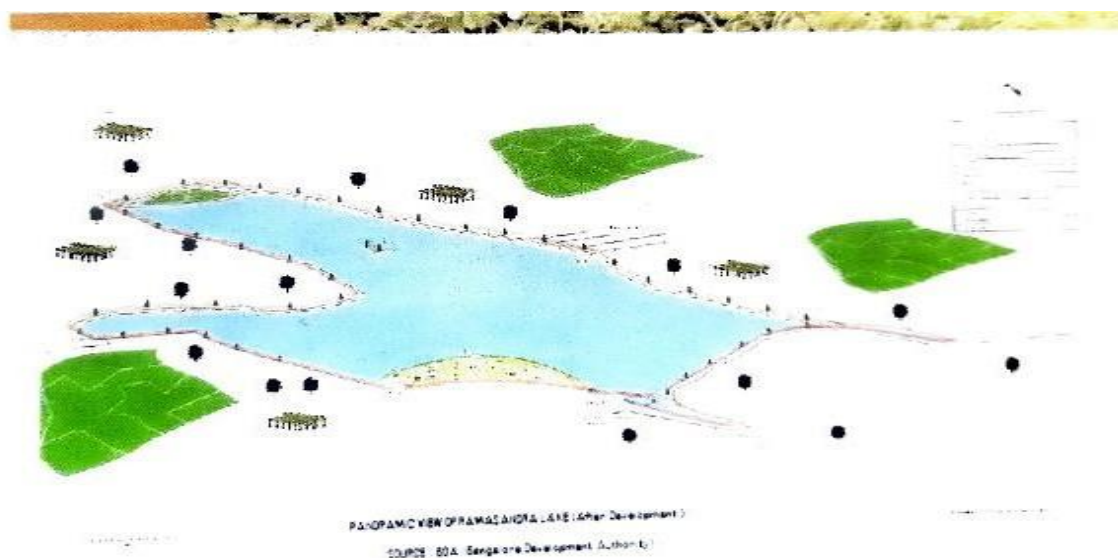
### Encroachment

Encroachment of the lake area is one of the main problems in Bangalore, as much number of lakes has already disappeared from the map. In the process of urbanization lakes have often been converted into layouts, bus depots and various other development purposes. Though at present the lake is free from encroachment but there is possible encroachment area in future especially in the eastern side of the lake where the settlements are very near to the wetland. There are vulnerable areas of the lake that are likely to be misused if precaution is not taken. Poor people may construct their huts near the lake illegally which will further add to the deterioration of the lake ecosystem. As protective measures a very good fence must be built up around the lake which will not only save the lake area from encroachment but also from human intervention. For vacant areas around the lake gardening and building up park is to be suggested. Besides the land around the lake is could be depend to allow water to be stored for various purposes. The encroachment or throwing garbage Should be an act to be considered an illegal and penalty should be enforced when any individual is seen throwing garbage into the lake or engaged in illegal construction near the lake area.

### 4. Conclusion

Lake plays a very signification role in human life including flora and fauna. With regards to the increasing pressure on lakes of Bangalore with the growth of urbanization, it has become very significant to preserve them. Our study area, Ramasandra Lake which is located in Ramasandra village of Bangalore south taluk is among the few water body which boast both nesting and roosting of birds. A study of the area shows that the main source of water for the lake is river Arkavathi, which a main river is flowing through Bangalore city. The lake also receives water from seasonal rainfall in the area. The catchment area of the lake includes some of the main villages which use lake water foe various purpose,

mainly for irrigation of the agricultural field. The lake is well connected with an agriculture field through a channel constructed by the govt. this channel helps irrigate the agricultural fields of the area. A brief patio-temporal analysis of the area shows that the area under vegetation has decreased to a great extent with more percentage of land brought under agriculture. The settlement in the areas has also increased a lot within the last few years within the influence of urbanization as it is located in the edge of the city. It is to be noted that the area is still not under BBMP. One of the main reasons for the growth of settlements are the development of roads. The roads are mostly metaled and are well connected with the city and main villages. The authorities are planning for the development of the Ramasandra Lake under future programme. Buton the way to development of the lake, the concerned authorities have to take careful measures of this would simply destroy the balanced ecosystem. If the lake is not revived soon, in the near future the lake would itself get deprived of the birds and other living organism which depends upon the lake for survival, as the food for them may not be there because sewage and chemical fertilizers from the residential and agricultural land may adversely affect the water quality and thus the aquatic life. Under the geographical analysis of the Ramasandra lake we also studied the ecosystem of the lake, as we all know that pond is one of the best examples of ecosystem we could study the complex relationship between the living organism like birds, fishes, micro-organism, plants, trees including human and their respect environment around the lake. The ecological system of the area could clearly be observed and studied by seeing the effect and importance of the lake in the area. We hope our research article work on Ramasandra Lake will give some useful ideas and tips to the authorities of BDA, LDA, BBMP and BMRD for the development of the lakes in Bangalore. Besides it will also help some research scholars and students who wish to study about lake. Even through restoration of Ramasandra Lake is LDA's (lake development authority) future project, there is a need to bring awareness among the people residing in the surrounding residential area about the importance of conserving the lake and timely action is desired to prevent the pollution.



Future View of the Ramasandra Lake  
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