

**A CASE STUDY
ON
WATER LOGGING PROBLEMS IN AN
URBAN AREA OF
SILCHAR
(CACHAR DISTRICT)
AND THE PROBABLE MITIGATIONAL
OUTCOME**

1) INTRODUCTION:

Cachar is a district of heavy rainfall and regular floods. The average annual rainfall is about 3400 mm as per WRD. Being a densely-populated district of the state Assam, the towns here face some regular problems like traffic congestion, water logging, water pollution, improper waste management etc.

Water logging is one of the major problems of the urban areas. With uncontrollable growth of population and unplanned urbanization, the drainage and sewer facility are not developing accordingly. Drainage system of an urban area is assessed through a sequence of analytical processes and it finally results in a proposed drainage system. But there seems to be no such proposed structure and this has resulted in urban floods creating a situation of panic for both the common people as well as the administration.

2) LOCATION AND TOPOGRAPHY

Silchar Urban area is located in Cachar District. The area of Silchar town is 15.75 km². It has an average elevation of 25 meters (82 feet) and is gradual in most of the urban area. Insignificant fractional percent of land lies outside the above range. The use of present urban areas is can be broadly divided into lands for agricultural (10%) and non-agricultural (90%).

3) RAINFALL AND CLIMATE

The rainfall is quite inconsistent in the district. Heavy rain falls are always expected from the month of April to October. Whereas, exception still exists in the pattern of rainfall. There have also been cases of pre-monsoon heavy rains.

4) FLOOD

The Urban area lies in the Barak River basin. The water level gauging in close vicinity of the urban area is from Barak River. From field visit, local people's opinion and Satellite base flood map analysis the water level of Barak River is adjusted for Urban Area and only extreme cases of rainfall can cause flood through the rise of water in Barak River. But the average year flood level at the Urban area is somehow consistently increasing. It is assessed that 40% of land of the Urban area is above the average flood level. The rest of the land ranges from moderate to very deep flooding. It is assessed that 6%, 18%, 10%, 10% and 6% of land is subjected to moderate (30-90 cm flood depth), deep and very deep (90-150 cm flood depth) flooding in reference to average year flood.

(This is approx. values as per the past records received from LMs and SKs and other concerned departments)

5) RIVER AND KHAL SYSTEM

The Silchar urban area lies on the bank of Barak River. The River flows north to south beside the Silchar urban area. The khal system of this area is quite diverse and is spread throughout the city. There are three major khals named Rangirk-Khal, Singhir-Khal and Longai-Khal.

Rangirkhal is a water canal/khal which is 15km long. It starts from Moisabil, which is in

Berenga and extends upto Ghagra River, which is in Banglaghat. It is an important natural canal to carry rain water from various places of Silchar town. The canal is as such that it carries water all through that flows within the periphery of this 15km. This canal serves as the main stream canal is flowing out waters that can cause urban floods and also that can inundate local roads and houses to great extent. The other two Khals named Singhir-Khal and Longai-Khal are almost 2km long and carries water through some major sections of the city.

6) EXISTING DRAINAGE SYSTEM

There exist few lined and unlined drains within the urban area. These can drain some local areas of the urban area. The capacity and outfalls of existing drainage system is not planned with well-defined consideration of drainage areas/zones for the whole urban area. The lengths of existing lined and unlined drains are about 8.79 km. In absence of planned and adequate drainage system, the Urban area in places suffer from drainage congestion and water logging after heavy rainfall.

The main concerns for drainage issues of the Urban area can be summarised as:

- a) undersized drains,
- b) obstructions in the drainage system to outfall,
- c) damages of drains,
- d) inappropriate / temporary location of outfalls,
- e) absence of planned and systematic drainage network system

7) WATER LOGGED AREA

Inundation occurs in some localized places of the urban area after heavy rainfall in absence of appropriate drains and routes. Presently mentionable water logging is observed following moderate to heavy rainfall in and in the vicinity of ward no. -9,23, 22, 21. The depth and duration of inundation vary from place to place. Such areas are freed from inundation by the process of evaporation and infiltration.

Due to blockage in the three khals most of the urban flood occurs in Silchar city. The Rangir-Khal is a long canal and it flows through a greater area and due to overflow of this canal urban flood occurs in areas like Rangirkhari, Ashram Road, College Road, etc. Due to the other two Khals named Singhir-Khal and Longai-Khal some other areas like public school road, sonai road, radha-madhab road and some other areas are inundated during rainy seasons.

The reasons for inundation/water logging are technical, social and institutional. These water-logged areas have been considered and should be brought under proposed drainage network.

8) EFFECTS OF WATER LOGGING IN URBAN AREA

The logged water becomes polluted with solid waste, silt and contaminants that are washed off from roads. The increase in volume and rate of logged water causes erosion and siltation. It becomes a burden for the inhabitants of that urban area, leading to

unhygienic environment and creating adverse social, physical, economical as well as environmental impacts

9) PROBLEMS AND THEIR VARIOUS REASONS

Over the last five years the huge boundary of this Rangirkhal canal has reduced marginally with reference to both its length as well its breadth. This reduction is not due to any natural cause but it is actually due to the human encroachment in and around Rangirkhal. People have inhabited their livelihoods across the boundaries of Rangirkhal, thereby reducing and pushing its boundaries inside. Houses, shops and other constructions have been made on this boundary which has been reducing the boundary continuously.



Fig1: View of Rangirkhal from Rangirkhari Point

Due to this reduction of the boundaries of Rangirkhal various problems have come out. The major problems faced include urban flooding, water logging, improper garbage assimilation, etc. The persecution that has been done with this canal has lead to various situations of ambiguity that has adversely affected Silchar town.



Fig2: Houses and habitations around Rangirkhal

10) NEED FOR PREVENTIVE MEASURES

The improvement of drainage system of urban area has the following specific objectives:

- a) On the basis of outfall, dividing the total water shed into number of drainage zones to check the discharging capacity of the outfalls and analysing the existing conditions related to.
- b) Drainage facility in urban area.
- c) Improvement of drainage network by construction of new primary and secondary drains.
- d) Improvement of outfalls to accommodate runoff from present and future urbanized area.
- e) Cleaning and removal of blockage from existing drains and repair and rehabilitation of
- f) existing primary, secondary and tertiary drains and protection of the water quality at outfall.

11) MITIGATION PLANS UNDERTAKEN

To resolve this problem recently some mitigation measures have been taken up by the Deputy Commissioner, Cachar Mr. S. Viswanathan. At the first phase, all the issues were studied and then a detailed probable way was figured out.

Considering the above all factors, DDMA, Cachar has issued an order as per relevant sections of DM Act 2005 for eviction and de-siltation of Rangirkhal and Singirkhal etc. and accordingly the work has been started and after completion of 50% works the pre-monsoon rain started from 29th March 2017 and inundated many areas of the city and also the people of this city witnessed the improve water carrying capacity of the Rangirkhal. Sri S. Viswanathan, IAS, Deputy Commissioner cum Chairman, DDMA also visited many inundated areas of the city and seen how mitigation works reflects during the real-time scenario.

12) OUTCOMES OF THE MITIGATION MEASURES

Every year the city of Silchar suffers a lot due to urban flooding. After the eviction drive started it was noticed that a significantly less amount of effect was noticed. Less amount of inundation was observed and the areas inundated were also not stagnant for a longer period.

This change that came though it could not completely solve water logging process but it has certainly reduced its impact. This is only because the water canals/khals were removed of blockages and this helped in free flowing of the water. Had these waters not been able to flow through these khals more disastrous effects would have been experienced by all the inhabitants of the district.

13) CONCLUSION

The relatively low lying area of the urban area is flood affected from internal rain feed. This is mainly due to blockages and unavailability of proper drainages. Here we can say

that non-implementation of **land use plan** has caused all such ambiguities. There exist few lined drains within the urban area. They are much unplanned and lack in systematic drainage network. Some localized places of the urban area suffer from inundation due to internal storm water drainage congestion, and water logging in few places in absence of adequate gravity drainage provision and routes and also for choked up with solid wastes. After the absorption of the mitigation measures in the real process changes have positively been noticed and ill-effects of water logging have been reduced.

Thus, Lack in social awareness is a huge concern for smooth functioning of the same and disaster management should be a part and parcel of every one's life where each one needs to be socially aware that what harm he is causing to the nature and the mankind.

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