HOUSING IN INDIA

The demand for housing has in general been much higher than the growth in housing stock for a long time now in India. According to estimates made by the government the housing shortage this year (2007) is 24,71 million units and the number is likely to grow exponentially (Singh, M.K, 2007).

The largest shortage, 17,9 million, is among Indians from the Economical Weaker Section¹ (EWS). Among the Low Income Group (LIG) the shortage is 6,29 million and among the Middle Income Group (MIG) only 0,45 million units (Singh, M.K, 2007).

Some reasons mentioned for this major gap between the housing stock and demand is dominance of outdated legislations, planning and development control regulations in the urban areas, long production time, greater cost of housing and competition with other areas for investment.

The condition of the existing housing stock is also poor. Ageing, shabbiness and their location on some of the worst land are also problems not taken care of.

¹In India groups are formed after the income people have. EWS is the poorest sector, normally people who live in slum areas. LIG, MIG and HIG are the other three groups, the people have jobs but after income a division is made to separate them.

As housing needs are largely driven by population and demographic changes it is important to review the urbanisation pattern in India. It is also important to go over the town planning in India to better understand the system.
PRINCIPLES OF INDIA´S TOWN PLANNING SYSTEM

THE ECONOMIC FACTOR SURROUNDING A PLOT SITE

The economic factor plays a different role in India´s town planning compared to the Swedish way of planning. Here it is only possible to get a part loan from a bank to be able to buy a plot site. Only one part of the finance is provided by the bank, the buyer needs to provide half of the money himself. This is one reason way the residential areas in for example Salt Lake and the new planned residential areas in Action Area I in Rajarhat is divided into different income groups after plot size which follows a distinct pattern when looking of a town plan.

The purchase of a plot is made by a number of monthly payments made from the buyer of a plot to the seller until the whole value is transferred. For the seller security it is important to know that the payment will be made, and to ensure this the buyers income/month must be known. This system is called Equated Monthly Instalment, E.M.I.

Ex. Income/month= 60.000 rupees
    Equated Expenses/month= 40.000 rupees
    Left to pay the seller of a plot/month= 20.000 rupees

If the plot value is 100.000 rupees, then the buyer will transfer 20.000 rupees for five month and the property will be properly bought.

The result of this economic factor is for example in Action area I there are six different plot sizes and to be able to buy a 26,6 x 15,0 meter plot one must belong to the High Income Group. Low Income Group inhabitants can here only buy a 21,6 x 12,5 meter plots.

Plot site ➔ Affordability

THREE FACTORS SHAPING THE URBAN PLANNING

There are three factors which shape the urban planning in India.

Shape ➔ Building by law
          ➔ Climate aspects
          ➔ Economic factor

Kolkata
BUILDING BY LAW
Every state creates a document in which all the rules and regulations for building operation in the state is gathered. “Collection of rules and regulations for building operation, 2006” is developed by West Bengal Housing Infrastructure Development Corporation Ltd and has strict rules about everything regarding building projects as well as a detailed introduction regarding what kind of education each person operating in a project must have, exact descriptions on the subject of every word used in a project. Some examples of rules are; which mix of uses or occupancies are allowed, means of access; allowed height of buildings compared to the width of the building; open spaces for buildings depending on the residential buildings height and floor area ratio and ground coverage approved for a certain plot size. Every rule headline is followed by a description on how to apply it which must be practiced, if not, fees will have to be paid, projects will be stopped or buildings will be taken down.

CLIMATE
The climate aspects are another aspect, this means the way houses are shaped and organised on a plot site. Planning for the climate in Kolkata compared with other areas in India is different, for example in New Delhi or Mumbai. The humidity, massive heat and the monsoons are all figures which makes the planning of an area more complicated. To be able to take care of the massive rainwater during the monsoon is another thing.
ECONOMIC FACTOR

The urban planning in India is normally made by the government. With help of the expropriations law land is gathered. Then a plan is developed over the area with different plot sizes with guidance by all the rules and regulations mentioned earlier.

There are three types of groups who the plan is developed for; private persons, private developers, and Government housing for LIG.

Private persons
For this group the plan has developed plots for one family houses. The government has a fixed price on every plot size, and as the number of potential buyers normally is ten times as many as the number of plots, the matter is sorted out by lottery.

Private developers
The private developers in India are not much different from the Swedish. Companies buy large plots and develop everything from apartment’s blocks, schools, to shopping malls. When fully developed they sell it to the highest price on the opened market.

Government housing for LIG
People from the LIG or EWS have no possibilities to purchase a plot or apartment as the prices are too high. The government is providing apartment buildings for a lower cost for these groups. The standard is told to be lower than in the residential areas constructed by the private developers.
**URBANISATION IN INDIA**

The urbanisation in India has grown like elsewhere in the world. After the independence in 1947, urbanisation has mainly been seen as economic changes sweeping across the country, with cities seen as centres for flow of goods, people, finance, information, etc.

Today the country belongs to the group of countries with one of the lowest levels of urbanisation in the world, 2001 28% of the population lived in urban areas. This might seem like a small number, when the urban population in developed countries was as high as 75,4%. With an urban population of 285 million growing at 2,7% annually India still has the second largest urban population in the world after China (Singh, B.N, 2006). The level of urbanisation within Asia was at the same time 37,5%.

<table>
<thead>
<tr>
<th>Year</th>
<th>Population (in million)</th>
<th>Level of urbanisation (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901</td>
<td>238,40</td>
<td>10.84</td>
</tr>
<tr>
<td>1951</td>
<td>361,09</td>
<td>17.29</td>
</tr>
<tr>
<td>2001</td>
<td>1027,02</td>
<td>27.78</td>
</tr>
</tbody>
</table>

(Singh, B.N, 2006)
STATES
The pace and spread of urbanisation is not uniform in its character. From state to state it varies a great deal, from the city state Delhi with a urban population of 93,0% to Himachal Pradesh which has an urban population of only 9,8 % (Singh,B.N, 2006). The states within India all have different urban patterns and the problems and perspectives of the regions and areas are highly differentiated. Some states have adjoined urbanised parts like in the West Bengal - Bihar region, and the urban spread can also vary in different parts of a single state.

These factors makes it impossible for the government of India to compose a single unified urban policy for a country of India, each single state needs to reflect upon its urban strategies and compile urban policies within the state.

CITIES
India’s cities are divided into six different classes, from Class I cities with over 100 000 inhabitants to Class VI cities with a population less than 5 000. All statistics are now showing an increase in population of the Class I cities and from 1941 to 2001 category of city has increased from 38 to 69 % of the total urban population in India, this while the Class IV to VI cities experienced a reduced number of inhabitants from 16 % 1941 to only 9 % 2001 (Singh,B.N, 2006).

Today India has 393 Class I cities, among them 35 are metropolitan cities, with a population over 1 million. By the year 2011 recent estimates show that the number of metropolitan cities has increased to 51 and in the year 2021 to 75 (Singh,B.N,2006), in addition, there will be 500 Class I cities.

The metropolitan cities play an important role with economic reforms and liberalisation of the economy, as most of the investments are taking place in and around them. They are the engines of growth and their per capita economic contribution is higher than that of other urban centres in the country.
Mumbai, Kolkata and New Delhi are the three mega cities in India, all with a population over 10 million. These three together with Chennai, Bangalore and Hyderabad are treated as mega cities by the central government for financing its Mega City Scheme. However the priority made in this sector the total plan investment has been declining from 34 % in 1951 to 2.4 % in 2004 (Nallathiga, R, 2006).

This polarisation of growth of the Mega cities and Class I cities is posing a great challenge, to provide housing in these urban areas, which rapidly is becoming areas of crowded habitations. Problems which are emerging from this is sharing of water and natural resources, drainage and communication. Rural-urban integration is therefore assuming a critical and urgent need.

Large investments in regional infrastructure, roads and rail, power, ports, airports and telecommunication would accelerate the growth of the economy. Today the cities suffer from infrastructure bottlenecks, service deficiencies, poor local governance and distortions in land market. The demand for water is also increasing, as the availability/potential of both surface and ground water is reducing.
SHORT HISTORICAL OVERVIEW

The city of Kolkata is more than 300 years old. The industrial and urban growth of Kolkata city can be divided in three major phases.

PRE INDUSTRIAL PHASE, 1690 - 1855

The city is first mentioned as “Calcutta” in a letter written in 1688 by two servants of the chief agent of the Company in Bengal, the Englishmen Job Charnock, and the man who later become known as the founder of Calcutta 1690 (Dutta, K, 2003).

Nationalities as English, Portuguese, Danish, Dutch and French have all been here. The wide open Ganga Valley gave easy crossways for accessing the inland and for trapping its rich and varied agricultural resources, encouraging the establishment of series of foreign trading outposts along the river Ganges. During this period British political power laid the economic and commercial foundation of the city and the rise of Kolkata as a thriving port, a collecting centre of rich agriculture hinterland and the administrative stronghold of the British colonial empire on Indian soil (Roy U. K, 2000).

PERIOD OF INDUSTRIAL GROWTH AND CONSOLIDATION, 1855 - 1931

This period starts with the installation of a power-driven Jute mill not far from Kolkata. Other historical factors during this period was; increase of cotton and jute mills due to the rising demand from the American Civil War’s need of raw cotton and jute. The first iron and steel factories where built in West Bengal. Railway link to Kolkata established which in the end lead more exports of industrial raw materials to Europe.

Up until 1911 Kolkata was the head capital of India, that year Great Brittan announced that Delhi would become the new head capital of India and New Delhi was built to under the supervision of the British architect Edmund Lutyens (Dutta, K, 2003). An impact of World War I was a heavy demand of Indian engineering goods and supplies to meet the British military campaign in Middle East.

PERIOD OF RAPID URBANISATION AND METROPOLITAN GROWTH, 1931 -

A modern international airport, several feature governmental institutions, three rapid built universities, a large number of research institution, centre of higher education. These are some of the factors which lead to the increase in population of Kolkata metropolitan area from 2,54 million in 1931 to 6,74 million in 1981 (Roy U. K, 2000).

Until 1947 India stood under Great Britain’s flag, 1947 the British India was divided in today’s India and Pakistan, and were left liberated from the colonial power of Britain. After this liberation Kolkata collapsed, millions of Hindi refugees came from East Pakistan to the streets of Kolkata. After 1971 when Bangladesh was formed after East Pakistan’s liberation from West Pakistan the next refugee wave came to Kolkata in order to have a safe life and employment. Unauthorized settlements, slums, squatter has followed this migration.
CALCUTTA GOES KOLKATA

From the 1st of January 2001, Calcutta was officially renamed Kolkata. The main reasons for the change of name was that Kolkata better would reflect the pronunciation of the city’s name in Bengali and that way would protect state’s linguistic identity. The new name, Kolkata, is a compromise between acknowledging the city’s colonial past and the need to restore its threatened identity as a Bengali city (Dutta, K, 2003).

WEST BENGAL AND KOLKATA

The Kolkata region had 14.9 million inhabitants in 2001 and recent made estimations show that in the year 2025 the region will house 22 million people (Singh, B.N, 2006). The region already today has problems with providing housing for the inhabitants.

CITY PROFILE

With an area over 7 800 000 sq.km stretching from western boundary of Uttarpradesh and Madhya Pradesh to eastern boundary of West Bengal and Bangladesh the city of Kolkata is the heart and dominant urban centre throughout the eastern part of India. With administrative headquarter of
two regional railway networks in India, Kolkata is also connected with Delhi and Mumbai correspondingly. Kolkata is the main producer and distributor of goods and services. No other city in the region can act as a major metropolitan city seen in aspects of national and international trade and traffic. Greater Kolkata is over 23,000 sq.km, about 1/4th of West Bengal entire area, and accommodates more than 78% of the total population of the state (Roy U. K, 2000).

**PROBLEMS**

Although Kolkata is a metropolitan city it does not provide basic facilities for all people. Basic necessities like water supply, electricity and toilet facilities are not provided to all the inhabitants of Kolkata. The problems that the city has been and still are facing are crowding, shortage and deterioration of urban infrastructure and one of the worst affected areas are shelter and housing.

By the year 2011 there will be a estimated demand for housing for 4,5 million people, and as now the maximum demand is among the EWS and LIG. This is the challenge and issue for the planners and West Bengal government.

**ACTIONS**

Kalyani and Salt Lake are two new towns which have been developed to cope with the shortage of housing and to create alternative centres to Kolkata.

**KALYANI**

Kalyani is located 49 km north of Kolkata (see map previous page) and was first developed in 1914 as “Roosevelt city” along two airplane landing fields built during World War I for American soldiers. In 1954 a development plan were developed, the idea was to create a rural environment with modern facilities. Targeted population in 2001 was 125,000, but today the city provides homes for about 82,000 people. The density is very low 60 persons/ha, in the residential areas the density is 89 persons/ha (Bysack, R.K, 2004). Due to the low density of Kalyani I have chosen not to analyse this new town.

**SALT LAKE**

To reduce the pressure on housing and infrastructure in the 1960’s the new town Salt Lake was developed. The city is located only 7.5 km east of Kolkata city core (see map previous page). The aim with this development was to set up a township mainly for MIG, self contained with a full range of social, culture and commercial facilities. Although the city was predominantly developed for MIG, nearly half of its population is from the HIG. Only 40% of the targeted population 625,000, is achieved within...
the 30 years of development (Roy U. K, 2000). Today 250 000 people live in Salt Lake.

Salt Lake is roughly formed as a polygon, in a total area of little more than 12,5 sq.km, and divided into five well organised sectors. In the residential areas there lives in average 4,34 persons / house and each house consists of 3,88 rooms. In Kolkata the average number of persons / house hold is 5,5, and the number of rooms for the family is 1,55 rooms (Roy U. K, 2000). The density in Salt Lake is 12 000 persons/ sq.km. Salt Lake has developed into a satellite city to the mother city Kolkata rather than a self sustained community, this makes a daily connection with Kolkata inevitable. The public transport between Kolkata city core and Salt Lake is poor, few direct buses exist, which makes the car the most important transportation vehicle.

An example of the well organised and planned structure is the fact that there are no street names, every block has instead a two letter combination followed with the house number; IB -block 190, or FG- block 20. Every block has the same ground service, within short walking distance to a Mother Dairy (milk booth), and a market area. The aim was also to provide education the same way but this has not been provided as planned.
NEW ACTIONS

The actions now taken place to cope with the shortage is development of new towns in the region, other satellite towns and housing projects in the Kolkata region.

The state government has taken initiatives to provide housing for people from low-income group and middle-income group. In East Kolkata Township projects has turned into reality. Some of the goals with these new town’s are;

- Preventing unauthorised settlements that are likely to grow near the city of Kolkata.
- Checking chaotic urban sprawl in the fringes and further intensification of congested Kolkata.
- Building up an eco-friendly green city dotted with trees, gardens, water bodies.
- Providing social infrastructure, better education and hygienic environment, markets, cultural and recreational centres, sport complex, technology park, shopping complex etc.
- Ensuring effective utility use of land and creating efficient settlement area with provisions of recycling of resources and a new Business District with non-polluting, non-offensive and non-hazardous industries.

By building new towns the government hopes to absorb the future metropolitan population growth. Included in the concept of the new town are; new areas for residential facilities, establishing new business districts, provide land for non-polluting, inoffensive and non-hazardous industries. By planning for new towns the government also hopes to get control and protect the newly grown unplanned existing settlement areas from flooding and draining congestion. It is also important to prevent unplanned growth of settlements in the presently vacant areas by providing planned infrastructure facilities for sustaining the residential and business activity.

In the year 1993 the Department of housing, government of West Bengal constituted a Technical Committee for preparation of a primary report of a New Town very close to Kolkata (West Bengal Housing Infrastructure Development Corporation (WBHIDC), 1999). This was the start of the development still going on of the New Town now called Rajarhat.

NEW TOWN RAJARHAT

The new town is located approximately 13 km east of Kolkata, only 5 km from Salt Lake and 10 km away from the Kolkata business district. Total area of Rajarhat is 25,7 sq.km and today the area consists mostly of agricultural land and small villages of existing settlements. The new developments have begun in the northern parts of the new town.

AIM WITH NEW TOWN RAJARHAT

Generate new areas for absorbing future metropolitan growth, this by creating new residential areas for 750 000 people.

Create a new business district for complementing and supplementing the recent district in Kolkata.

Provide land for setting up non-polluting and non-hazardous industries to generate maximum employment.

Control and protect the newly unplanned settlements in the presently vacant areas by providing planned infrastructure.

Provide new areas for setting up centres of regional levels of community centres, central cultural complex, permanent exhibition ground, major educational centre, technology park, etc. (WBHIDC, 1999)
Rajarhat’s master landuse plan
PRINCIPLES OF RAJARHAT´S PLANNING

The development is planned along the main road that crosses the area in east-western direction and then continues towards the north. After that a grid pattern layout is applied. Rajarhat is divided into four action areas, three of them with a sub centre.

PROFILE OF THE NEW TOWN

The proposed density of the new town and in the residential areas is 2000 people/sq.km, or 500 people/ha (Bysack, R, 2004). Out of the total residential areas 4 % will provide housing for the economical weaker section (EWS), 16 % for low income group (LIG), 35 % for middle income group (MIG) and 45 % will provide housing for the high income group (HIG).

PLANNED LAND USE

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Residential</td>
<td>40.7%</td>
</tr>
<tr>
<td>Non polluting industries</td>
<td>6.5%</td>
</tr>
<tr>
<td>New business district and other commercial areas</td>
<td>4.5%</td>
</tr>
<tr>
<td>Regional public facility</td>
<td>4.9%</td>
</tr>
<tr>
<td>Transportation</td>
<td>8.1%</td>
</tr>
<tr>
<td>Large open space and water body</td>
<td>35.3%</td>
</tr>
<tr>
<td>Total</td>
<td>100%</td>
</tr>
</tbody>
</table>

The three sub centres will be situated along the east-west Arterials, one business district which will act as a supplementary to the Kolkata business district, and two commercial centres. The commercial centres are planned to house everything from; head quarters and regional offices of banks, insurance companies, financial institutions, major offices of airlines organisations, hotel complex, shopping complex, major cultural complex to commercial recreational facilities.

200 ha of land for non-polluting and non-hazardous industries will also be provided. This industry has an aim to help Rajarhat to become a self sustaining town, by providing plenty of employment potential.

TOWN PLANNING CONTEMPLATE

A contemplate is worked out by West Bengal Housing Infrastructure Development Corporation Ltd which shows how the planning shall be organised in the new town. Every plot in site belongs to a category and each category has its own description, followed by plot size and area. A list of facilities needed when developing new residential areas is also prearranged, with specific areas given for each facility and on which level of population it is required, for example;

<table>
<thead>
<tr>
<th>Population</th>
<th>facilities</th>
<th>area for facilities</th>
</tr>
</thead>
<tbody>
<tr>
<td>1500-2000</td>
<td>nursery school</td>
<td>500 sq.m</td>
</tr>
<tr>
<td>6000-7500</td>
<td>neighbourhood centre incl. Milk booth, convenience Shopping, community room</td>
<td>1000 sq.m</td>
</tr>
</tbody>
</table>
DEVELOPMENT IN RAJARHAT TODAY

The development is divided into four parts; Action area I, II, III, IV has started in the northern and western parts of the new town. The area is now a mix of high rise buildings, agriculture land and existing settlements.

Action area I is under construction, here residential areas with apartment buildings have been developed with a clear division between the HIG, MIG and LIG areas. One-family plots have also been drawn out on the fields, but no development has started there yet. Office complex and cultural buildings has also been and are still developing in the new town. These plots are spread out, and are in some cases connected with temporary roads.

Today the area is depending on the facilities and services in Salt Lake and Kolkata, but the aim is that it will develop to a self efficient new town.
INFRASTRUCTURE

Within the new town many of the roads and streets are still under construction. It is only in the fully developed residential areas the streets are completed with proper pavements and parking lots. The main road through the new town is still under construction and will when it is finished be 59 metres wide with four lanes in each direction. The road design in the new town is made by a road consult, and not the planning office which have the made the total town planning.

There will be five types of roads in the area;

- Major Arterial Roads, 59 m
- Arterial Roads, 40 m
- Sub-arterial Roads, 24 m
- Collector Streets, 18 m
- Local Streets, 12 m

In general the new town will have good linkages with the regional and national road transportation network. For example is the connection to national highway 34 (see map on page 29), which runs in north-south direction and connects Kolkata with north West Bengal very good. The airport is just 6 km north of Rajarhat and location of the new town is chosen for its close contact with the Dum Dum airport.

Drainage canals will be dug to help both the existing as well as the new areas with drainage systems during the monsoon. Planned widest of the canal is 20 metres. The aim with the drainage canals is to help the drainage in both the new and the old areas from flooding during the monsoon period. An unwritten reason for this canal is also to separate the existing settlements from the new.
PUBLIC COMMUNICATIONS

The people who now live here have bus communications with Salt Lake and Kolkata. The bus runs on the Major Arterial road through the area. To make the area efficient in terms of public transport focus has been on planning for higher densities of residential near the arterial roads (WBHIDC, 1999). This way bus stops will be within convenient walking distance from the residential areas. The major arterial roads are planned to have Express bus lanes and they will be integrated with node transfers points.

The nearest railway station is situated in Bidhannagar 6 km west of Rajarhat. There are however plans made for providing a connection from Bidhannagar Railway station to the new town (WBHIDC, 1999). An Outer Ring Railway line is also under consideration, this line would start from Titagarh Railway station and bypassing the Dum Dum Railway station as well as the built up core area which will move parallel Eastern Metropolitan Bypass. This Outer Ring Railway Line will run west of the new town area and the proposed stations will be close to the new business centre in the north of Rajarhat.

Bicycle rickshaws, auto rickshaws, taxis are also playing an important role in the transport system in India. They will continue to play an important role in the future and it is obvious that there will be a need for such facilities in Rajarhat. The bicycle rickshaws tend to slow the traffic down, and today no special attention is taken to prevent these problems.
EXISTING SETTLEMENTS

As the area where the new town is situated in agriculture land there have been, and still are, existing settlement spread out in Rajarhat. Some of the existing settlements have by a court order and legal right to stay in the area. Other landowners have been offered money for their land, and moved.

The total population if the existing inhabitants is difficult to say but around 100 000 in the year 2000 lived in the whole new town area and the number of people / households is about 5-6 persons (Roy, U, 2000). Dominant occupation in the settlements is farmer, small economic activity. This people belong to the lower LIG and EWS.

The existing settlements housing is poor with walls and roofs in bad conditions. The infrastructure is dominated by narrow roads and paths, leading from the main road which runs through the area. Underground water supply from tube is dominantly used as drinking water as well as for other purposes. Only natural drainage is provided today through the natural slope and towards the Bagjola canal. Very few of the settlements have electricity. Except from organically grown shops and a few schools, clubs, dispensary no other community facilities are provided in the area (Roy, U, 2000).

GOVERNMENT’S PROPOSAL FOR EXISTING SETTLEMENTS

The government will provide basic infrastructure to the existing settlements, like roads, water supply and electricity. Over proposed drainage canals separating the existing settlement from the new areas, footbridges are told to be provided (Roy, U, 2000), so these people also can take advantage of the social infrastructure in the new town, but on the plans made today there are no bridges present.

CLIMATE

The climate in the project area is humid and tropical. It is characterised by a hot and dry summer from March to May, a monsoon or rainy season from June to September and a moderately cool pleasant winter from October to February.
Existing settlements
PROJECT AREA

The actual project area is situated in the middle of the new town, is divided into two areas by the main road, and is approximately 20 ha. Existing settlements is surrounding the area which today consist of open agriculture land.

PLANNED BUT NOT REALISED INFRASTRUCTURE

A connecting road leading west from the main road in the south part of the project area is also a part of the infrastructure plans. This road will provide connection to other areas west of the project area.
LANDSCAPE INVENTORIES OF THE SITE

When making the landscape inventories the focus was drawn to; paths, landscape rooms, shadow, water bodies, landmarks, and barriers.

PATHS

As the existing settlements are surrounding the site there are several paths crossing over the open field. Some are more frequently used by the inhabitants, other only narrow trails. They create a pattern over the whole site, and a distinct grid in the east western direction.

LANDSCAPE ROOMS

As the site mostly consists of an open field, it is easy to locate the landscape rooms.

One small forest of around 40 Sirishtala trees is seen from all over the site. The forest is approximately 12 metres high. This forest is protected, and not allowed to be taken down when developing to the area.

South of the forest there is a big old tree also creating a kind of landscape room in the area.

North of the forest there is an existing tree, today with settlement around it. This tree together with the trees in the existing settlements north of it makes a nice small room, worth taken care of.

On the eastern side of the road just beside the boundary to the existing settlement there is a kind of landscape room. Today there is a small chai cafe here. From this point you have a nice view over the site.
SHADOW
The existing trees play an important role as they are needed for shadow during the warm season. The small forest and the lonely tree in the open field south of the forest are the main “shadow points” in the area.

WATER BODIES
One small lake is located just north of the Sirishtala forest, the shore line is rough and when doing the inventories, during the dry season, the water level was approximately 1,5 metres below land level.

Opposite to the lake, on the other side of the main road, there is a kind of canal shaped water body, with the same rough water line and low level of water.

In the western end of the field there was a large water body, with a lot of reed and other water vegetation. This water body is partly in the existing settlements area, but as I think it can become an important part of the drainage system I have chosen to observe it.
BARRIERS
The main road is the only barrier in the area, and as more developments in the new town are being completed the barrier will become larger when more vehicles cross the project area. This road is today 26 metres wide, but as mentioned earlier the principles for Rajarhat say it will become 59 metres wide when fully developed.

LANDMARKS
I have identified five landmarks in and around the project area. The most valuable one is the Sirishtala forest and the old tree south of the forest. Other landmarks are the 11 floors high office building for information and technology northeast of the project area, a residential area west of the project area, 4 to 17 floors high and one south west of the area, 8-19 floors.
THE PLANNING OFFICE
PLAN PROPOSAL FOR
THE PROJECT AREA

During the time I was in India and Kolkata the planning office completed their proposal for the development of the residential area which is my project area. The planning office has done some changes regarding the land use, the area southwest of the project area was originally marked “green/open space” but after some adjustments this area is planned for residential use. The percentage green/open space and residential areas in the whole new town is still the same.

As the plan proposal show, plots are drawn out in the area. Different plot sizes for different income groups. No buildings are illustrated on the plan, but the “Collection of rules and regulations for building operation 2006, New town, Kolkata” has listed rules regarding plot sizes contra maximum ground coverage of residential buildings, minimum open spaces for a particular building height, etc. It is only to elaborate as much as you want as long as the rules and regulations are followed.

With this plan proposal as an example of how the guiding principles is carried out in the Indian urban planning it will be easier to see the differences in the way my plan proposal is designed.