

5.1 TRAFFIC & TRANSPORTATION

The vehicular growth in the city shows, that there has been steady increase of vehicles in the city. Table 5.1 shows the Annual Vehicular Registration in Bhubaneswar City.

Table 5.1
Annual Vehicular Registration in
Bhubaneswar City

Year	Total Vehicles	Growth Rate (%)
1987-88	7335	--
1988-89	9079	17.37
1989-90	8586	-5.43
1990-91	11051	28.70
1991-92	6991	-36.73
1992-93	7103	1.60
1993-94	8329	17.26
1994-95	10743	28.98
1995-96	12848	19.54
1996-97	14712	14.50
1997-98	16526	12.33
1998-99	17170	3.89
1999-00	27033	57.44
2000-01	25543	-5.5
2001-02	26244	2.741

Source: RTO, Bhubaneswar,

Chapter 5

Infrastructure

From the above table it is observed that the registered vehicles have grown at an annual average rate of about 7 %. The growth of the vehicle in the city is shown in Fig 4.1. From the figure it is clear that the no of vehicles is increased from the year 1987 to 1990 and then it falls in the year 1991. Then from the year 1991 there is a steady increase of the no of vehicles till the year 2002.

To have a realistic figure recently a survey of traffic volume was conducted by the Board. Traffic volume count was conducted at important traffic squares of the city are Rasulgarh, Vanivihar, Acharya Vihar, Rupali, Ram Mandir, Sriya, Master Canten, Rajmahal, Kalpana, Laxmisagar, Ravi Talkies, Samantarapur, Kedar Gouri, Mausima, Aerodrome Gate, A.G., Raj Bhawan, Gopabandhu, Siripur, Khandagiri, Power House, CRP, PMG Square, Museum Square, and Jayadev Vihar.

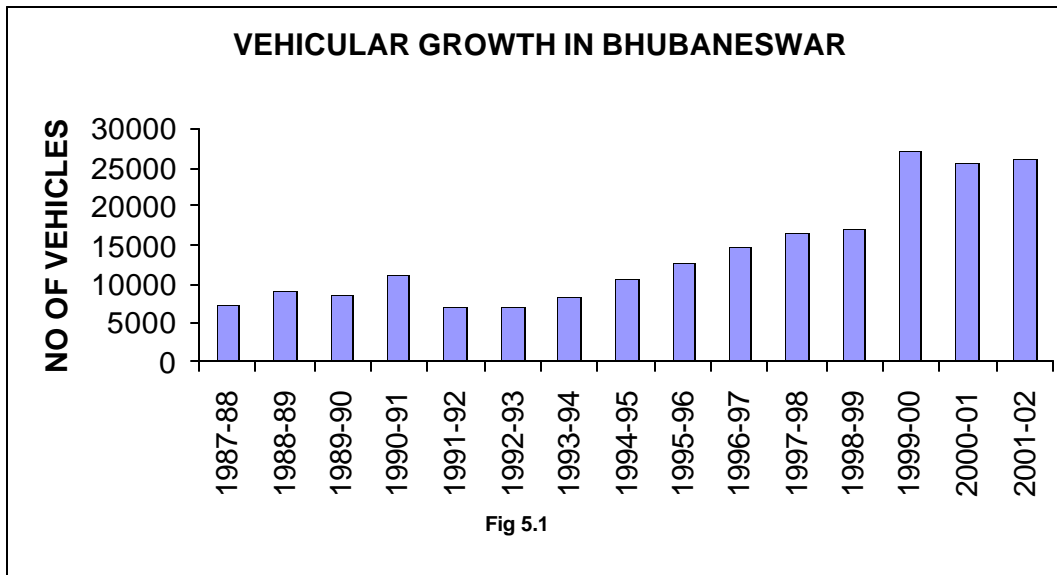


Table 5.2
Mode-Wise Vehicular Growth In Bhubaneswar City

Category	1994	2001	% Increase
Cars	540	1893	28
2 Wheelers	8773	20521	43
3 Wheelers & Taxis	320	2045	15
Buses	58	43	-
Goods HCVs	339	718	47
Goods LCVs	147	585	25
TOTAL	10177	26244	39.43

Results from traffic volume at some important nodes reveals that the recorded figures in some nodes were as high as 29,607 during 7.00 A.M. and 3.00 P.M. The evening figures were found to be still higher suggesting more activities. It might be due to the evening peak hour when offices close and marketing activities start. Also, the personalized modes of transport especially two wheelers and cars have shown the maximum increase. Table 5.2 shows the mode wise vehicular growth. Over 80% of the registered motor vehicles in the city are composed of two wheelers-scooters, motorcycles and mopeds.

Inter City Traffic:

There are two major roads in the city namely; NH-5 and NH-203. Both the National Highways intersects at Rasulgarh point, where one road leads to Chennai and the other leads to Puri. The NH-5 enters in the city through Rasulgarh and passes through different traffic squares like Vanivihar, Acharyavihar, Jayadevihar, CRP and Khandagiri. This is the major arterial road in the City and it connects Kolkatta to Chennai. This road is a double lane road. This road is also connected with other city roads at different traffic squares. Traffic flow in this road is continuous and carries heavy traffic throughout the day.

Earlier the alignment of this road was the Orissa trunk Road, running from Cuttack to Khurda, through Chandaka about 18 kms, northwest of Bhubaneswar. This was then shifted closer to the city and followed the old Jagnath Road from Cuttack to the Rajpath junction (now Pandit Jawarhar Lal Nehru

Marg) in the city and hence the Khandagiri Road upto Khurda. However, the volume of local traffic increased substantially, conflicting with through traffic. A bye pass was then constructed, taking off the Rasulgarh junction and meeting the earlier alignment at Khandagiri junction.



Traffic intersection at Rasulgarh square

The NH-203 enters in the city through Rasulgarh and passes through Kalpana square and finally leads to Puri. This road is single lane road. This road is also connected with other city roads at different traffic squares. Traffic flow in the road is continuous

throughout the daytime and carries heavy traffic. Due to the narrow width of the road this road is always congested during the daytime. At night time the traffic is calm.

Intra City Traffic:

For the intra city traffic Bhubaneswar city can be divided into four distinct parts, based on the stages of growth of the city: -

- the Old Town, nestled between the Daya West Canal and the railway track in the South-Eastern corner;
- the New Town, sprawled between the Cuttack-Puri Road and the National Highway No.5 Bye-pass;
- the Industrial Area tucked into the North-Eastern corner, between the Sainik School Road and the main Industrial Estate Road and
- the relatively under developed area North West of the National Highway-5 Bye-pass contained by the Old Orissa Trunk Road.

The road networks within these areas have their own identity and are remarkably different from each other.

As its name implies, the Old Town is the oldest part of the city. This area has an organic pattern of growth and the road network is also of a corresponding organic nature. In the new town, which is the planned part of the city, the road network is by and large of a gridiron pattern. The major North-South corridors of movement are the Bidyut Marg, the Pandit Jawaharlal Nehru Marg, the Janpath and the Cuttack-Puri Road. East-West corridors of movement are the Laxman Nayak road, the Gandhi Marg-Gopabandhu Marg and the Madhusudan Marg-Patel Marg connections.

The industrial area also has a basic gridiron pattern of roads. The landuse here being strictly industrial, the nature of traffic is in consonance with it, being generally heavy vehicular traffic carrying industrial raw material or finished products. Beyond the National Highway-5 By-pass, the area is still relatively under developed and roads are scanty. There are only two sub arterial roads-the Nandankanan Road and the Old Nandankanan Road both of which converge near Chandrasekharpur. The Nandankanan Road leads on to the Zoological/Botanical Garden complex of Nandankanan. There is no secondary network of roads in this area. The housing complex of Chandrasekharpur developed here has its own limited network of feeder roads, strictly within the precincts of the colony.

Roads in the Old Town of Bhubaneswar are under the jurisdiction of Bhubaneswar Municipality while the National Highway, which also serves as a major east-west arterial of the city, is under the National Highways Department. Roads in the new town and the Industrial area are constructed and maintained by the Public Works Department.

Type of Roads

The type of roads in Bhubaneswar city is given in Table 5.3. The information on different city roads along with their length and width is given in Annexure 5. The total road length under Roads and Building Department, Bhubaneswar is 900 km.

Table 5.3
Type of Roads in Bhubaneswar City

Sl.	Type of Roads	Length of Road (Km)
1	Black Topped	548.88
2	Metalled	181.21
3	Cement Concrete	50.31
4	Unmetalled	67.66
5	Earthen	51.86
Total		900

Source: Poura Samachar, 2000, by BMC

Observation on traffic & transportation:

1. *The existing road network is inadequate for both intercity as well as intra-city traffic movement. There is smooth flow traffic in four lane and two lane roads with some exception in some single lane roads. There is a need to plan the roads taking into consideration the vehicular pollution and its likely impacts.*
2. *The roads in the Old Town are generally narrow and winding. The major corridors of movement in the Old Town are Lewis Road and the Jatni Road. This is a predominantly residential area and traffic is composed mainly of slow moving vehicles and of generally low volumes.*
3. *A major limitation of the road system is the absence of service lanes and the provisions of direct access to all properties abutting the arterial roads. This is a serious problem especially during peak hours, when through traffic movement is substantially hampered by vehicles continually slowing down to perform their turning maneuvers. Although there is generally sufficient right of way, provisions of service lanes has been made only at a few sections of Janpath. However, the rest of the arterial streets do not have this facility.*
4. *The Cuttack-Puri road has varying road width along its length, from Rasulgarh junction upto Samantrapur, when it assumes the characteristics of a major district road. Within the city limits, its function as a major arterial is severely constrained by heavy commercial landuse abutting the right of way, parking demands and very high volumes of mixed traffic. The road is undivided throughout its length, and apart from the Rasulgarh junction which is literally the entrance to the city and the Kalpana junction all junctions are untreated and uncontrolled.*
5. *Indiscriminate roadside arboriculture at a few major junctions is a serious hazard to safe traffic operations, as they practically eliminate visibility for turning and inter-section clearing operations.*
6. *Improper design of road camber or cross fall results in accumulation of rain water along large stretches of major roads, contributing to rapid use of the road surface, in addition to interfering with traffic operations during monsoons. The roadside drainage system also has not been properly designed and maintained, thereby compounding the problem.*

5.2 PARKING

On street parking is a major problem in Bhubaneswar. All commercial and business establishments are abutting the roadside, and none of these have been designed to accommodate the parking demands they generate. Consequently, all major through fares lose a large portion of their capacity due to on-street parking. Map-12 shows the sections of the road network worst affected by parking.

This is again found to the major arterials of the city, and a few shopping complexes. The areas having severe parking problems are given in Table 5.4.

**Table 5.4
Problem of Parking Areas**

S. No.	Areas/Roads	Cause/Reason
1.	Rajpath	<ul style="list-style-type: none"> • Location of the main wholesale grocery market complex situated on the westward carriage way • Location of the other commercial establishments on the eastward side
2.	Raj Mahal Chawk up to A. G. Crossing.	Informal retail trading shops and wrongly placed median opening
3.	Rajmahal Chawk and Kalpana Square,	Retail commercial use, mainly used by 1-2 tonne trucks.
4.	Janpath	<ul style="list-style-type: none"> • Eastern side of this North South road has commercial activity along its entire length. Although there is sufficient space within the right of way, parking from of these establishments, encroachments and other unauthorized uses reduce the right of way • Location of several potato godowns on Janpath, close to Rajmahal Chawk brings heavy truck traffic. • Location of the vegetable and the fish market at the Master Canteen
5.	Sahidnagar market, the Unit-IV Market and Unit-I market.	Road side shopping, although set in large areas, are highly unorganized. No provision has been made either for the vendors or the shoppers.
6.	Pandit Jawaharlal Nehru Marg	Multi storeyed commercial complexes state administrative offices none of the newer blocks have made provision either for basement parking or for a front set-back,
7.	Cuttack-Puri Road from Satyanagar Level Crossing to Kalpana Square	<ul style="list-style-type: none"> • Commercial activity being concentrated along the roadside 90% of the business is automotive spares retail or automotive repair shops • Absence of adequate godowns or garage space leads to the businesses spilling out onto the right of way. All large volume spares like tyres are stored on the shoulders, vehicles are parked for repairs on the verge. The roadside provides the garage space. Several tent houses and hardware stores are seen with 5 ft high stacks of bamboo poles and torque street roads piled over a length of 20' and 10' respectively. The entire length of the road is utilized either for idle parking or for maintenance jobs.
8.	Old Town	Parking of buses interferes with the
9.	Old Town Vegetable market	Shopping here is highly disorganized and vendors, shoppers and vehicles clash while vying for limited road space.
10.	D.A.V. School, Stewart School, Central School and Rama Devi College	Schools and colleges, notably convent school, vehicles either parked or collection/discharging their wards,
11.	Swasti Hotel	Parking of taxis
12.	Bapuji Nagar	Commercial land use, mature of retail activities located here are highly people intensive there are several small eateries, takeries, restaurants and hotels

Source: SPCEB, Orissa

5.3 Health Care Facilities

Within Bhubaneswar Municipal Corporation area there are 6 Govt. Hospitals, 2 Private Hospitals, 17 Government Dispensaries and about 20 Nursing Homes and many private clinics. The Capital Hospital, with about 324 beds, is the most important followed by the Municipal Hospital in the Old town of Bhubaneswar with 84 beds. Besides, each of the institutions like the Utkal University, the Orissa University of Agriculture and Technology, the Regional College of Education, the Regional Research laboratory, the Rama Krishna Mission, the Orissa Mining Corporation, the Reserve Bank of India Colony, the Coach Repairing Factory has its own dispensary. The list of the hospitals and the nursing homes, the number of beds and the ownership, in Bhubaneswar city is given in Table 5.5

**Table 5.5
Hospitals and Nursing Homes In Bhubaneswar**

Sl. No.	Name and Location	Managed by	No. of Indoor beds
1	Capital Hospital, Unit-6	State Govt.	324
2	Municipal Hospital, Old Town	State Govt.	84
3	Unit-4 Hospital, Unit-4	State Govt.	06
4	Homeopathic Hospital, Unit-3	State Govt.	50
5	Ayurvedic Hospital, Unit-1	State Govt.	--
6	E.S.I. Hospital	State Govt.	06
7	Bhubaneswar Maternity Home, Nageswar Tanki	Private	12
8	Sandhya Nurshing Home, Cuttack Road	Private	06
9	Sunflower Nurshing Home, Cuttack Road	Private	10
10	Rajdhani Nurshing Home, Sahid Nagar	Private	10

Source: CDP, Final Report

The diseases observed in Bhubaneswar city in the year 2001-2002 include skin diseases, infections of intestine and respiratory tract, anemia, mental diseases, tooth decay, eye diseases, ear diseases and tuberculosis. Poor sanitary conditions and bad environmental quality could be the major causes for the spread of these diseases. The name and location of the dispensaries is given in Annexure 7.

5.4. Electricity

The sources of electricity supply to Bhubaneswar city are from Chandaka, Mancheswar and Ransinghpur grid stations. The capacity and actual supply are given below.

Sources	Capacity	Supply
Chandaka Grid	3 x 100 MVA	33 K.V.
Mancheswar Grid	3 x 100 MVA	33 K.V.
Ransinghpur Grid	3 x 100 MVA	33 K.V.

Source: CDP, Final Report

The power distribution through out the city is controlled and maintained by three electrical divisions namely, Bhubaneswar Electrical Division (BED), Old Town, Bhubaneswar City Distribution Division No-I, CESCO and Bhubaneswar City Distribution Division No-II, CESCO. The distribution network can cover a distance of 1,302 km. The sources of electricity supply, the capacity and the distribution of the transformers is given at annexure 9 and shown in Map-6.

There is at present, 66.8 MVA, 33/11 KV S/S as detailed in Annexure 8 & 9. Table 5.5 and fig 5.2 shows the consumption pattern of the electricity in Bhubaneswar.

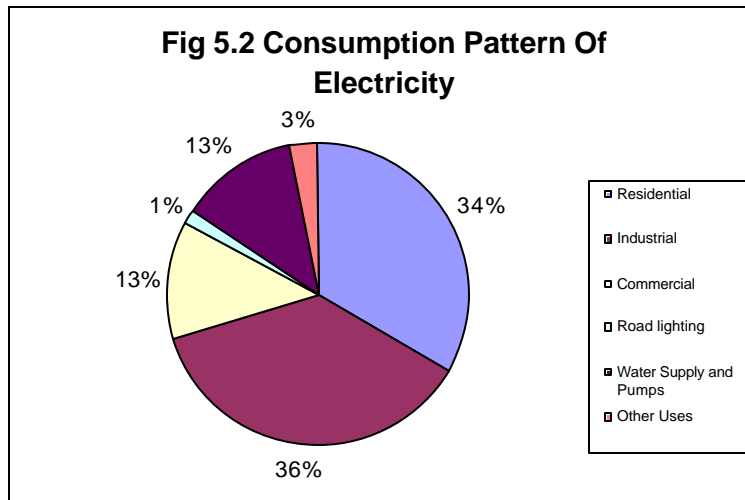
There are a total of 62,462 consumers, which include domestic, commercial, industrial, lighting points, public water supply and railway etc. The no. of power cuts per day in the entire city is only 1 Hour as per rotation basis. The consumption pattern of electric power by different categories of consumers has been outlined in the following.

**Table 5.5
Consumption Pattern of Electricity In Bhubaneswar**

Sl. No.	Type of Use	Power Supplied in MU	Percentage of Total Supply	No. of Consumers
1	Residential	53.095	33.635	52.205
2	Industrial	57.203	36.237	1.480
3	Commercial	20.500	12.987	7.727
4	Road lighting	1.914	1.212	77
5	Water Supply and Pumps	20.435	12.946	117
6	Other Uses	4.709	2.983	856
Total		157.856	100.00	62.462

Source: State Electricity Board.

The above analysis reveals that the industrial establishments are the largest consumer of electricity in Bhubaneswar, which consumes 36.237 percent of the total supply. This would point at growth of industries at Bhubaneswar. Next to industries the residential sector consumes electricity to the extent of 33.63 percent of total supply. This is followed by commercial establishment and water supply which constitute 12.99% and 12.95% respectively of the total supply. Comparatively speaking, public water works and pumps consume highest percentage of electricity as a single sector.



Present quantum of electric supply to the city is 38 Mega Watt and the total consumption of power is 157.856 million unit i.e. 18 Mega Watt, which is less than 50% of the supply. The rest 20-mega watt is getting lost due to illegal connections and theft. Such high loss of electricity has an adverse impact on the development process and expansion of the new area and new economic activities. Immediate and drastic steps for check on such national loss are a pre-requisite for developing new areas with the same supply.

The problems related to electricity in the city area are given in the Table-5.6

**Table-5.6
Problems Related To Electricity**

Problem	Area affected	Actions undertaken by Electricity Department
Low Voltage	Rural areas of Khandagiri, Baranga and Suburban Areas	Up gradation of S/SS conversion of lines. Changing of conductor distribution and load between phases.
Interruption	Rural areas of Khandagiri, Baranga and Suburban Areas	Tree cutting, line checking etc.
Consumer Billing Complain on meter reading	All areas of the Division	Monitoring of meter reading strongly. Quick disposal of Bills, Prompt revenue collection.

5.5 Water Supply

The major sources of water supply for Bhubaneswar City are River Kuakhai, Daya, Springs and ground water. Kuakhai and Daya River serve as the principal water sources for domestic and industrial use for major period of time. Spring tanks serve the purpose during lean season. The water intake point for public water supply for Bhubaneswar city is at 500 m from the NH-5. The location of the water supply intake point is shown in figure 5.3.

The Public Health and Engineering Department (PHED) Govt. of Orissa, Bhubaneswar Division maintains water supply through a conventional water treatment plant. The rural people at the outer segment rely more on tapping of the ground water from dug-wells, hand-lift tube-wells and the ponds and lakes in the surrounding area.

The Kuakhai and the Daya River are also used for treated wastewater disposal from the industrial estates and waste water from the open drains of Bhubaneswar city.

The Kuakhai River is classified as Class 'C' best-designated-use as per the Water Quality Atlas of India. River Daya, being not major rivers, are not classified as per best-designated use in the Water Quality Atlas of India. However, the rivers are put to drinking and bathing uses for the city.

Presently, water supplied to the city about 182 MLD. With the commissioning of the water supply from the Naraj Water treatment Plant at Mundali from Mahanadi River the quantity of water supply has now increased to 218 MLD. About 40 MLD water is extracted from ground. The location, capacity and the areas of water supply covered by the water treatment plant is given in Table 5.7. The location and storage capacity of overhead tanks in the city are given in the Annexure 11.

**Table 5.7
Water Collection And Treatment Details**

Sources Of Water	Mode Of Extraction	Actual Supply (In Mld)	Treatment Details		
			Location of treatment plant	Treatment Plant Capacity (In Mld)	Areas covered
Kuakhai River	Surface Water	106.80	Palasuni water works	3 mgd	Rasulgarh area, Satyanagar, Unit-3, high level tank at Unit-5, partly to the industrial areas at Bomikhal and Rasulgarh
				6 m gd	Partly to Rasulgarh, Old station area, Bhudheswari, Laxmisagar, Kalpana area, over head tanks of Mancheswar Industrial Estate, V. S. S. Nagar Sainik School, Vani Vihar, Acharya Vihar, C. R. P. Campus, Unit-9 (flat), Regional college of Education Campus , nit-4 and Unit-5
				9 mgd	Baragada Housing Colony, Gada Gopinath Prasad Housing Colony, Nayapalli Baramunda, some areas south of National Highway-5 and Mancheswar Industrial Estate
Daya River	Surface Water	16.34	Bhuasuni water works	13.64	Old town, Bargarh, Brahmeswarpatna, Bhimatangi, Santarapur Tankapani Road, Mulapadia, Kalpana and Bapujinagar
Mahanadi River at Mundali High Level Tank	Surface Water	38.00	Naraj	113.65	Overhead tank of Unit-2, Unit-5, unit6, Unit-3 and Unit-1.
	Overhead tank	6.80	High level tanks	6.82	
Spring Tank	Sub-Surface Water	2.27		2.27	Unit-6 hospital and same part of Unit6 area.
Chandrasekharapur	Sub-Surface Water	2.27	Chandrasekharapur treatment plant	6.82	To housing colonies of Chandrasekharapur
Ground Water (Production Well)	Sub-Surface Water	46.24	Siripur	51.32	To overhead tank at Siripur
Total		218.72		212.52	

The areas covered under different water supply distribution network and the quantity supplied to each area during 1988 is given in Annexure 9. Though the water supply is 182 MLD, considering 40% losses during the distribution, the actual supply is only about 104 MLD.

Based on consultation of the people, it is found that the entire city has not yet been covered with safe drinking water. A number of areas are yet to be covered adequately by the water supply network. Moreover villages within the green belt and slum pockets are not fully covered by the present

distribution system, since these areas are provided with only public stand posts / tubewells. The problem becomes more acute during the summer especially in slums and newly developed areas. The urgent need of the hour to provide safe drinking water to all the citizens of the city. The areas affected due to the water supply distribution network are given in Table 5.8

**Table-5.8
Areas Affected due to Water Supply Distribution**

Water Supply network	Areas
Areas where no distribution network exist	Rural areas of Khandagiri, Baranga, Begunia, Aiginia, Ghatika, Sankarpur, Sundarpada, slums and Suburban Areas
Areas where adequate distribution network does not exist	Jharpada, Rasulgarh, Laxmisagar, Old Town, Sastrinagar, Jayadev Vihar, Madhusudan Nagar, Baramunda and Siripur, Jagamara

The water quality is shown in Table 5.9.

**Table 5.9
Analysis Result of Piped Drinking Water of Bhubaneswar City**

Sl.	Location	Parameters								
		pH	DO (mg/l)	TC MPN/100 ml	FC MPN/100 ml	SO ₄ (mg/l)	Cl ⁻ (mg/l)	PO ₄ ⁻ (mg/l)	NO ₃ ⁻	IRON (mg/l)
1.	VSS Nagar	7.4	7.3	2	<2	64	52	ND	2.19	0.07
2.	Baramunda Bus Stand	7.7	7.4	2	-	28	23	ND	5.9	0.13
3.	Sailashree Vihar	7.1	7.5	<2	<2	40	32	ND	1.67	0.96
4.	Sahid Nagar	7.7	8.7	<2	<2	59	33	.001	0.74	5.37
5.	Air Port	7.5	6.6	<2	<2	39	15	.008	8.52	0.46
6.	Old Town	6.9	7.5	<2	<2	82	52	ND	2.7	0.04
7.	Laxmi Sagar	6.9	6.9	<2	<2	68	31	.005	1.92	0.42
8.	Niladri Vihar	6.9	6.8	<2	<2	65	28	ND	0.19	0.07.

T.C. – Total Coliform, F.C. – Fecal Coliform

When compared with the standards prescribed for “Class A” i.e. source of water without conventional treatment but after disinfection, it is revealed that the water quality is fairly good at many places excepting at VSS Nagar, Baramunda Bus Stand, Sailashree Vihar, Niladri Vihar etc., where some local contaminations might have occurred.

5. Sewerage System

It is estimated that 182 MLD of water is daily supplied to the City, out of which 145.6 MLD sewage is generated i.e. 80 % of the water supplied. There is no integrated sewage treatment. The City sewage is being treated locally by septic tanks, aerated lagoon, oxidation pond etc. and the effluent is discharged to different natural Nallah, which ultimately flow in to Gangua Nallah at the eastern side of the City. The Gangua Nallah is ultimately flowing into river is being into Daya River that finally meets Chilka lake after traversing a distance of 15 kms.

The disposal of wastewater is one of the major problems of Bhubaneswar. The disposal of the city sewage is mainly governed by the undulating land that divides the main city into 4 drainage valleys. The open drains in the valley find their way to the Gangua Nallah, which finally meets the River Daya. In other areas the discharge is through septic tanks and oxidation ponds. Most of the sewage gets collected through the septic tanks and oxidation ponds, which finds their way to the nearby open drains.

At present the city sewerage is disposed off in the following three different ways.

- a) Open Discharge of Raw Sewerage to Valleys
- b) Septic Tank and Oxidation Pond

a) Open Discharge of Raw Sewerage to Valleys

The untreated sewage from Unit-III, IV, VIII, IX, Vanivihar, Regional Institute of Education, Bhudheswari area, Bargarh area, Kalpana area, Ashok Nagar, Madhusudan Nagar, Gautam Nagar, Jagmara, Chandrasekharpur etc. are openly being discharged into four nos. principal valleys. All the sewage from the 4 valleys discharge into open drains without any treatment, which is ultimately discharged to Gangua Nallah and then directly/indirectly, gets discharged to river Daya. The Gangua Nallah joins river Daya near Birimula Village about one kilometer downstream of Kukuria Bridge. River Daya serves as the ultimate for the wastewater of Bhubaneswar city. The areas covered by the 4 drainage are given below:

- a. The 1st valley starts from the Ekamra Kanan and Chandrasekharpur area and crosses the NH-5 near Vanivihar and again near Rasulgarh check gate (Palasuni) and ultimately joins Gangua nallah.
- b. The 2nd valley starts from Nayapalli and crosses the Cuttack-Puri Road near Bomikhal and joins Gangua nallah.
- c. The 3rd valley starts from the Kharvela Nagar, crosses Cuttack-Puri Road near Laxmisagar chhak and ultimately joins Gangua nallah.
- d. The 4th valley starts from Siripur area and crosses Cuttack-Puri Road near Kedargouri and ultimately joins Gangua nallah.

Besides these 4 valleys leading to Gangua, the wastewater from the north-west slope of Chandaka Industrial Estate and Patia is being discharged directly into a small rivulet that crosses Bhubaneswar-Nandankanan road after Patia joining Kuakhai U/S, the Palasuni water supply intake point, pollution in this rivulet will directly affect the intake water quality of Bhubaneswar.

b) Septic Tank and Oxidation Pond

In other areas the discharge is through septic tanks and oxidation ponds. Most of the septic tanks are mainly connected to the near by open drains which finds their way to Gangua nallah. With fast growing water consumption, the existing septic tanks and oxidation ponds could no longer take up the load of wastewater. Most of the septic tanks are at present overloaded and partially filled up with sludge. All the drains discharge both domestic and industrial wastewater from densely populated city areas.

The status of the existing septic tank and the oxidation pond in the city is given in Table – 5.10

**Table – 5.10
Existing Sewerage Disposal Arrangements**

Sl. No	Ward No	Location of Septic Tank/Oxidation pond	Areas Covered	Disposal			Remarks
				Septic Tank	Oxidation Pond	Open Discharges	
1.	2	Gift Press	Damana, Chandrasekharpu	--	100%	-	Septic Tank overloaded

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Sl. No.	Ward No	Location of Septic Tank/Oxidation pond	Areas Covered	Disposal			Remarks
				Septic Tank	Oxidation Pond	Open Discharges	
			Village, Chandrasekharpur Housing Board (Phase-2), Gadakana, Rangamatia,				
2.	2	Sainik School	Sainik School, Govt. Press, Gadakana Railway Colony, Railway Repairing Centre, OMFED Colony	100%	--	-	Septic Tank overloaded
3.	5	Sahidnagar	Sahid Nagar	--	--	100%	Open discharge to valley
4.	6	Vanivihar	VSS Nagar, Second Postal Colony, Patharabandha Area, Satsanga Vihar, Vani Vihar, Laxmi Vihar,	70%	--	30%	Septic Tank overloaded
5.	7	R.R.L.	Gajapati Nagar, RRL Colony, Survey of India, 7 th Battalion Area, Oberoi Hotel Area, Salia Sahi, Jayadev Vihar, Munda Sahi, Nilachakra Nagar	100%	--	-	Septic Tank overloaded
6.	8	Regional College of Education	Acharya Vihar, OSEB Colony, Regional College Area, New AG Colony, Nuapalli Sevasrama Area	50%	--	50%	Septic Tank overloaded
7.	8	Acharya Vihar	Acharya Vihar, OSEB Colony, Regional College Area,	100%	--	-	Septic Tank overloaded
8.	8	Madhusudan nagar	New AG Colony, Nuapalli Sevasrama Area	50%	--	100%	Disposal through private Septic Tank
9.	9	Unit – IX, Bhoi Nagar, Gridco Colony	Unit – 9 Flat Quarters, Unit – 9 Single Quarters (Govt.), Unit – 9 Private Plot (Chitrakuta Ashrama Area and Bayababa Matha Area)	30%	--	70%	Septic Tanks not maintained properly and overloaded. Open discharge to paddy field
10.	10	Satyanagar	Satyanagar, Press Colony, Old Malisahi, Station Bazar (Kharabela	--	--	100%	Open discharge to Sahidnagar railway culvert

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Sl. No	Ward No	Location of Septic Tank/Oxidation pond	Areas Covered	Disposal			Remarks
				Septic Tank	Oxidation Pond	Open Discharges	
			Nagar Estate Area), Ashok Nagar (Private Plot)				
11.	11	Unit – II	Unit – 2 (Govt. Quarters)	100%	--	–	Disposal through Malisahi Tank No.1 septic Tank overloaded
12.	11	Unit – III	Unit – 3 (Govt. Quarters), Unit – 3 (Kharavela Nagar Private Plot, West Side)	50%	--	50%	Malisahi Septic Tank No.2 already overloaded. Open discharge to drains
13.	11	Malisahi Area	Unit – 2 (Govt. Quarters), Unit – 3 (Govt. Quarters), Unit – 3 (Kharavela Nagar Private Plot, West Side)	50%	--	50%	Septic Tank overloaded, Oxidation pond not function
14.	12, 13	Unit – IV	Nuapalli Village, Nuapalli Behera Sahi, Nuasahi, Nuapalli Brit Colony, Shastri Nagar, Nilakantha Nagar, Kalinga Stadium Area	100%	--	–	Septic Tank overloaded
15.	14	C.R.P.	IRC Village, N1, N2, N3, N4, N5	--	100%	–	Septic Tank overloaded Under construction
16.	15	Unit – VIII, Delta Area	Unit-8(Rajbhawan Colony, Power House Colony, Bachelor Barrak, CBI Colony, DPI Colony, Eng. Colony, OMC Colony, Paradeep Colony)	40%	60%	–	Disposal through a number of small septic tanks, all overloaded. Oxidation ponds not functioning
17.	21	Unit – V	Unit – 8 (Keshari Nagar), Unit – 6 (Ganga Nagar), Unit – 7 (Surya Nagar)	100%	--	–	Disposal through Unit-IV. Septic Tank overloaded
18.	21	Unit – VI, Ganga Nagar, Capital Hospital	Unit – 8 (Keshari Nagar), Unit – 6 (Ganga Nagar), Unit – 7 (Surya Nagar)	100%	--	–	Disposal through Unit-1 Septic Tank
19.	21	Unit – VII	Unit – 8 (Keshari Nagar), Unit – 6 (Ganga Nagar), Unit – 7 (Surya Nagar)	100%	--	–	Disposal through common septic tank of Unit-I and Jagamara

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Sl. No.	Ward No	Location of Septic Tank/Oxidation pond	Areas Covered	Disposal			Remarks
				Septic Tank	Oxidation Pond	Open Discharges	
20.	22	Forest park Area	Forest Park, Unit – 1 (Govt. Quarters), Bapuji Nagar, Kedarpalli Area & Private Plot, Frontal area of Forest Park	100%	--	-	Disposal through Unit-I, Septic Tank
21.	22	Unit – I,	Kedarpalli Area & Private Plot, Frontal area of Forest Park	100%	--	-	Septic tank overloaded.
22.	22	Bapujinagar	Bapujinagar	100%	--	-	Disposal through Unit-I Septic Tank
23.	22	Ashoknagar	Ashoknagar	50%	--	50%	Disposal through Malisahi Septic Tank No.1 open discharge to station side drain
24.	23	Budheswari Area	Goutam Nagar, Budha Nagar, Old Station Bazar, Buddheswari Colony, Sarala Nagar, etc	--	--	100%	Discharge to Laxmisagar drain
25.	23	Gautamnagar	Goutam Nagar, Budha Nagar, Old Station Bazar, Buddheswari Colony, Sarala Nagar, etc.	--	--	100%	Disposal through 75 c.m sewer No.1
26.	25	Bargarh Area, Behind Kalpana	Baragada Village, Housing Board Colony, Pandava Cave, Daya (East), East Side of Canal	50%	--	50%	Septic Tank overloaded. Open discharges to canal side ditches

Based on the above information, field checks and consultation with the local people, the areas having sewage problem area:

**Table-5.11
Areas Having Sewerage Problem**

Sewerage System	Areas
Areas where discharge is through septic tanks to the open drains but the septic are overloaded.	Unit – I (except Bapuji Nagar, Forest Park, and parts of Ashok nagar), II (except Kesari nagar), III, IV, V, VI, VII, VIII, IX Jharpada, Jayadev Vihar, Bhauma Nagar, Bhudha Nagar, Old Bhubaneswar
Areas where discharge is through oxidation ponds to the open drains but the oxidation ponds are overloaded	Unit –III, VIII, IX, Bhudeshwari Area, Bargarh, Ashok Nagar, Malishahi area, Satya Nagar, Shahid Nagar, Madhusudan Nagar, Gautam Nagar, Regional College of Education, parts of Vani Vihar, Gridco Colony, Kharvela Nagar, Nayapalli
Areas where there is no proper disposal system and the sewage is discharged into open drains/open areas	<p>Ward 1- (Patia Village, Kanan Vihar, Patia Industrial Area, Patia Housing Board Area, Sikharachandi, Munda Colony, Chandrasekharapur Housing Board (Phase – I), Sailashree Vihar, Niladri Vihar, Railway Colony Area)</p> <p>(Ward 2- Bhatapara, Chakeisiani, Sameigadia, Palasuni, Rasulgarh New Industrial Estate, Kalaraput Revenue Village (Rasulgarh), Bada Govindprasad Village, Housing Board Colony, Pandara Village)</p> <p>(Ward 16 -) Paika Nagar, Baramunda Village, Baramunda H.B. Colony, New Bus Stand Area, Jagannath Vihar</p> <p>(Ward 17 -) CRPF Central Colony, Ekamrakanan Area, Bharatpur Revenue Area Shampur, Ghatikia, Jokalandi Basti Area, Kalinga Nagar</p> <p>(Ward 19 -) Aiginia, Dumuduma, Jadupur, Jadupur Housing Area, Begunia, Raghunath Nagar, Jagamara Village, Barabari, Dharm Vihar, Khandagiri, Pokhariput Revenue Village, Gandamunda, Udaygiri</p> <p>(Ward 20 -) Unit – 8 (Krushi Vihar), Siripur, PG Hostel, Farm Area, Aerodrome Interior Area and Bhimpur</p> <p>(Ward 24 -) Laxmisagar HB Colony, Haladiapadia, Laxmisagar Village, Old Budheswari Post Office Area (Cold Storage), Fish Market Area, Charbatia etc.</p> <p>(Ward 26 -) Chintamaniswara, Champapokhari, Sabara Sahi, Kalpana Government Quarters and Private Plots, BJB Nagar, Gadhiakhal, Mainsiakhal and Museum Colony</p> <p>(Ward 27-) Brahmeswar Patna, Ratnakarbag, Rajarani Colony, Nageswar Tangi, Maharana Sahi, Gyana Nagar, Boitala Temple, Badu Sahi, Jagannath Matha Line, Hata Sahi, Gouri Nagar, Gosagoreswara</p> <p>(Ward 28 -) Rameswarpatna, Barik Sahi, Kunchapatna Sahi, Mishra Sahi, Harachandi Sahi, Pujapanda Sahi, Mangala Sahi, Narada Sahi, Behera Sahi, Chemadi Bhoi Sahi, Punama Gate (Bhoi Nagar), Pallaspalli, New Bapuji Nagar (Aerodrome Area)</p> <p>(Ward 29 -) Sundarpada, Kapilprasad Village, Yogeswar Patna, Keuta Sahi, Bhimtangi, Housing Board Area, Baunsakhani, Noliasahi, Lingaraj Station Area</p> <p>(Ward 30 -) Samantrapur, Bhuasuni, Nuagaon, Garrage Square, Sriram Nagar, Sasan Field, Kedar Lane, Basistha Nagar, Kharakhai Baidyanath Sahi, Kapileswar Village (Total)</p>

6. Housing Areas

The Capital City of Bhubaneswar has experienced a population growth rate of 159.75 percent as per 2001 census. Households have increased by 20.54% per year during the decade. Information on buildings of Bhubaneswar city as per the data of development authority is given in Table- 5.12.

Table 5.12.
Information on buildings of Bhubaneswar city

Year	No. of 1,2/3 storied Building	No. of Multistoried Buildings	Total
1990	1178	2	1186
1991	1222	0	1222
1992	2095	1	2097
1993	1524	3	1527
1994	1224	6	1230
1995	1504	7	1511
1996	1719	10	1729
1997	1937	8	1945
1998	2248	11	2259
1999	2360	6	2366
2000	2041	1	2042
2001	2263	2	2265
Total	21316	57	21373

Source: CDP, Final Report

Based on the field survey and discussions with the local officials dealing with housing development projects, the existing residential areas, depending on the infrastructure available for sewage, garbage, road conditions etc., have been categorized into good, average, poor and very poor as below.

TYPE	DESCRIPTION	AREA
Good	Residential areas having house holds with finished exterior walls, clean road corridors, water supply and sewerage facilities, minimum garbage related problems, reasonably sufficient greenery	Saheed Nagar, Forest park, IRC Village, Unit-1, 2,3,4,6,7,9, BJB Nagar, Bapuji Nagar
Average	Semi-finished households, many vacant plots in the vicinity, private dairies within households, semi-operational/non-functional sewerage system regular problems with water stagnation on roads, improper garbage collection, poor state of interior roads etc.	IRC Village, N2, N3, Bargarh Brit, Nageswar Tangi, VSS Nagar
Poor	Very old and congested residential areas where most of the houses are in the state of dilapidation, congested roads, poor ventilation, mixed use with commercial activity etc. OR very new housing localities with no basic infrastructure, the developing areas around the village settlements within the city boundary	Bargarh, Laxmisagar, Old Town, Bomikhal, Rasulgarh, Cuttack Road
Very Poor	Slum areas/Village settlements lacking roads, water supply network and drainage, majority of population are of below poverty line.	Salia Sahi, Mainsi Khal, Gadhia Khal, Mali Sahi, Pathuria Bandha, Chakei Sahani

The central city areas have some very architecturally appealing buildings. The city has nearly 30 % population in Slums. Inadequate housing areas for the economically weaker sections and inadequate employment opportunities are of major concern for preventing slums.