

West Bengal Pollution Control Board

Brief report on Status of Road Traffic Noise Levels during summer-2006 and winter- 2005 in Kolkata Metropolis

In recent years, noise as an environment pollutant, has been receiving increased attention. Concerns were expressed about the ill effects of noise and subsequently legislative regulations to control noise in western countries were enacted in the sixties and seventies of this century. But in the developing countries, the control exercise was initiated only in the eighties. In India, noise pollution was deemed to be an offence only recently through the promulgation of the Environment (Protection) Act, 1986. Every industry, trade, transports and process using equipment, apparatus, material and methods that produce unwanted and unpleasant sound, constitute a source of noise. In India, the major sources of noise are the industries, automobiles, domestic appliances and public address systems.

The West Bengal Pollution Control Board has been conducting road traffic noise survey in some selected locations in Kolkata in the past, for example in 1993, 1994, 1999 and 2004. In the year 2005-06, a similar study has been undertaken to assess impact of road traffic noise on the ambient noise level not only in Kolkata but also in Howrah during winter (Nov 2005-March 2006) and summer (May-August 2006). Apart from this, a health impact survey has been conducted to understand sources of disturbing noise followed by degree of possible impact of such noise on human health.

Methodology:

The monitoring was carried out close to the window/opening of residential building/ health care unit in all the 35 selected locations in Kolkata & Salt Lake and 5 locations in Howrah. The Sound Level meter was placed in a tripod stand at a height of 1.25m from the ground level and at least 3.5m away from any wall surface. The Sound Level Meters used in this survey are Webel dB-01 Type 2 and B&K 2238 Type 1 instruments. The sound pressure level (SPL) data were recorded continuously for 24 hours with an interval of 30secs with simultaneous recording of traffic volume and honking of horn. The weather parameters such as temperature, humidity, winds speed and wind direction were also recorded. The noise data were recorded at the traffic intersections in Kolkata & Salt Lake such as Dunlop Bridge, Chiria More, Nagerbazer, Lake Town, Shyambazar V Point, Ultadanga, Manicktola, Girish park, Ganesh Takie-Chitpur, Strand Rd-Howrah Bridge Approach, Sealdah-Mirjapur, Bowbazer-College St., B.B.D. Bag SE corner, Esplanade-Lenin Sarani, Moulali More, Chowringhee-Park St., Park St.-A.J.C. Bose Rd., Park Circus-VII Point, Minto Park-Lansdown, J.N. Rd.- AJC Bose Rd., Khidirpur-D.H. Rd., Hazra More, Gariahat More, Rashbehari Crossing, Taratola Crossing, Jadavpur-Sulekha, Behala 14 No. Bus Stand, Tollygunge Metro Crossing, Garia More, Karunamoyee-Salt lake, B.J. Block-8No. Island, CAP Camp, Bichitra Abasan BC Block, Labony and Purbachal. The rest are in Howrah such as Bankim Park near Bangabasi, Howrah District Library, Jaiswal Hospital, salkia Chowrasta and Andul More. The result of the study is indicated below:

Results:

The salient features of the study report are highlighted below:

In general:

1. The temperatures of the monitoring locations varied between 23-38 degree Celsius during summer and 12-35 degree Celsius during winter, whereas humidity varied between 44-100% and 28-96% in respective seasons.
2. The total traffic count in pre-selected 40 monitoring locations was 5,27,484 in summer and 5,99,645 in winter. The highest and lowest total traffic counts during peak hours in summer were observed at Chowringee-Park Street Crossing and Taratala Crossing. Similarly in winter, highest and lowest counts during peak hours were observed at JLN Nehru Rd-AJC Bose Rd. Crossing and at Howrah Bankim Park. Car and taxi were the dominant traffic components in most of the monitoring locations. However, Bus and three wheelers were dominant at Chiria More-Kashipur, Taratala, Esplanade, BJ Block-8No Island and Howrah Bankim Park.
3. The total traffic volume in the Central Business District (CBD) was much more than that in the North and South Kolkata. Traffic volume in the South was lower than that in the North.
4. The total honking events in the CBD were much more than in the North and South. The honking events in the North were lower than that in the South.

Summer season (May-August 2006) monitoring:

1. During 2006, the 24hours equivalent continuous noise level (L_{eq24}) are slightly less in comparison to 2004 summer value with some exception at monitoring locations such as Dunlop, Chiria More and B.B.D. Bag. The trend at these three locations may be due to increase in the vehicular traffic along with the increase in honking in those areas compared to 2004(Fig-1).
2. During 2006, the 24hours equivalent continuous noise level(L_{eq24}) are considerably less in comparison to 1999 & 1993 summer values as well.
3. During 2006, the day time equivalent continuous noise level(L_D) values are less compared to 2004, 1999 and 1993 values(Fig-3).
4. During 2006, the night time equivalent continuous noise level(L_N) values are less compare to 2004 values except in locations Chiria More, Nagerbazer, Ultadanga, Manicktola and B.B.B.D. Bag(Fig-5). However, the 2006 values are considerable less compared to 1999 and 1993 values.

Winter season (Nov. 2005-Mar. 2006) monitoring:

1. During 2005, the 24hours equivalent continuous noise level(L_{eq24}) are in similar trend compared to 2004 but considerably less in all the monitoring locations comparison to 1994 winter values except in Gariahat (Fig-2).
2. During 2005, the day time equivalent continuous noise level(L_D) values are in similar trend compared to 2004 but considerably less in all the monitoring locations comparison to 1994 winter values except in Gariahat (Fig-4).

3. During 2005, the night time equivalent continuous noise level(L_N) values are less compare to 1994 winter values however, higher in some locations in cental and south Kolkata(Fig-6).

It has been observed in the present survey that the trend of honking of vehicular horn is slightly decreasing compared to earlier surveys. Further, the study in 2006 reveals that the road traffic noise levels in Kolkata are more or less same comparison to 2004 results and less in comparison to 1999 and significantly less in comparison to 1993 and 1994 results. This is due to better traffic management, increase of average speed of the vehicles, and construction of flyovers etc. in the last couple of years. This time the North of the Central Business District of Kolkata City is noisier than that in the South (Maps-1-4). The trend was reverse in 2004. This, as it appears from the present study, is due to increase in number of vehicles as well as excessive honking of horns.

The observations of health impact survey conducted at 20 location reveals the following interesting responses of people living in those areas:

- 38 per cent of the respondents identified vehicular horn noise is the most disturbing source of noise;
- 91 per cent of the respondents at locations such as Dunlop, Nagerbazer, Shyambazer, Moulali, Park Circus and Howrah Bridge approach have annoyed due to high level of noise;
- 71 per cent of respondents felt that they have difficulty in sleep due to noise.

N.B.: Detailed report available in WBPCB Library. A brief report posted at website: www.wbpcb.gov.in

Table 1 : Comparison of Noise Levels during summer

Monitoring Location	L _{eq} 24				L _D				L _N			
	1993	1999	2004	2006	1993	1999	2004	2006	1993	1999	2004	2006
Dunlop	92.0	67.0	67.5	68.7	93.7	77.0	67.9	69.3	84.3	73.1	65.1	65.0
Chiria More	90.3	67.6	66.3	69.1	91.8	78.0	66.9	69.7	85.2	71.1	62.6	65.0
Nagerbazar	92.1	70.3	67.3	67.7	93.5	79.7	68.5	65.5	87.4	77.7	56.4	62.7
Shyambazar	91.1	69.0	68.4	67.4	92.8	78.8	69.1	68.0	83.7	75.8	64.0	63.6
Ultadanga	88.5	68.2	69.2	67.3	90.4	78.6	70.2	68.0	79.3	72.0	60.9	62.6
Maniktala	87.5	71.0	68.8	66.0	89.0	81.0	69.6	66.3	82.3	77.2	62.7	63.7
Howrah Bridge Approach	85.1	72.9	95.7	81.6	86.7	83.1	96.9	81.7	79.3	78.3	76.4	72.0
Sealdah	86.8	70.1	71.5	62.5	88.5	79.9	72.2	63.3	80.4	76.7	66.7	57.2
Bowbazar	86.8	70.3	70.3	68.6	88.4	80.9	70.6	69.6	80.4	72.6	68.0	59.8
B.B.D Bag	84.4	70.3	71.1	75.6	86.1	80.3	71.8	76.3	77.5	74.2	66.8	70.9
Esplanade	85.5	80.3	68.1	68.4	87.2	80.8	68.9	69.3	77.8	73.3	62.8	61.8
Moulali	86.3	71.4	93.2	75.7	87.9	81.7	94.4	76.8	80.7	76.1	71.1	63.5
Hazra	84.0	68.1	77.6	75.4	89.6	78.7	78.7	76.4	77.8	69.7	68.1	68.5
Jadavpur	82.2	89.5	76.8	72.7	83.8	80.4	77.9	73.6	76.0	77.1	67.1	67.2
Garia	83.0	69.2	70.9	66.8	84.6	79.9	71.6	67.4	77.1	70.4	66.7	63.1

Table 2 : Comparison of Noise Levels during winter

Monitoring Locations	L _{eq} 24			L _D			L _N		
	1994	2004	2006	1994	2004	2006	1994	2004	2006
Dunlop	86.0	69.4	68.5	87.7	70.3	69.5	80.0	63.1	61
Chiria More	84.8	66.8	69.6	86.3	67.1	70.3	79.9	64.7	65.4
Nagerbazar	85.3	69.1	69.8	87.1	70.0	70.7	75.5	62.0	63.1
Shyambazar	82.5	70.8	72.1	83.4	71.6	73.1	80.1	66.1	64.5
Ultadanga	81.8	70.5	68.8	83.5	71.6	69.9	75.6	61.5	58.3
Maniktala	84.5	68.1	67.5	86.1	68.1	67.7	78.4	66.7	65.2
Ganesh Talkie	84.8	68.3	68.7	86.5	69.0	69.7	78.1	63.6	59.6
Howrah Bridge Approach	87.6	80.2	78.3	89.0	81.2	79.2	83.3	72.8	72.3
Sealdah	84.8	66.2	69.3	86.2	67.2	70.3	80.5	57.7	61.8
Bowbazar	81.7	69.6	68.8	83.3	70.7	69.8	75.8	59.4	61.2
B.B.D Bag	81.3	72.9	74.7	82.5	73.9	75.5	78.2	65.9	69.2
Esplanade	80.7	69.6	71.5	82.3	70.2	72.3	74.3	65.6	66.7
Moulali	85.2	78.8	75.7	86.7	79.9	76.7	79.7	68.6	67.7
Chowringhee	82.8	75.6	75.2	84.4	76.5	76.3	77.4	69.4	66.7
Park Circus	82.8	74.8	76.3	84.6	75.6	77.1	75.3	68.5	70.5
J.L.N. - A.J.C.Crossing	83.1	80.3	80.2	83.5	81.3	NA	NA	71.4	74.1
Khidirpur	81.1	68.8	70.3	82.2	69.7	71.3	78.0	62.8	62.4
Hazra	83.6	74.2	77.1	85.4	75.2	78	76.1	66.5	70.6
Gariahat	79.7	78.1	82.3	80.9	79.2	83.4	75.2	67.3	73.4
Rashbehari	79.5	68.7	70.9	80.1	69.7	71.7	74.6	61.7	65.8
Taratala	84.7	71.9	74.4	86.2	73	75.3	79.5	63.3	68.7
Jadavpur	83.0	74.5	77.1	84.1	75.7	77.8	79.9	61.7	72.7
Behala	81.9	75	74.4	82.6	76.1	75.3	77.8	64.8	67.9
Garia	82.6	68	72.5	83.7	68.7	72.7	75.2	63.4	70.4

L_{eq} 24 = 24hours equivalent continuous noise level in dBA

L_D = day time equivalent noise level i.e. L_{Aeq(16h)}

L_N = night time equivalent noise level i.e. L_{Aeq(8h)}

Figure 1 : Comparison of L_{eq24} values of different years during summer

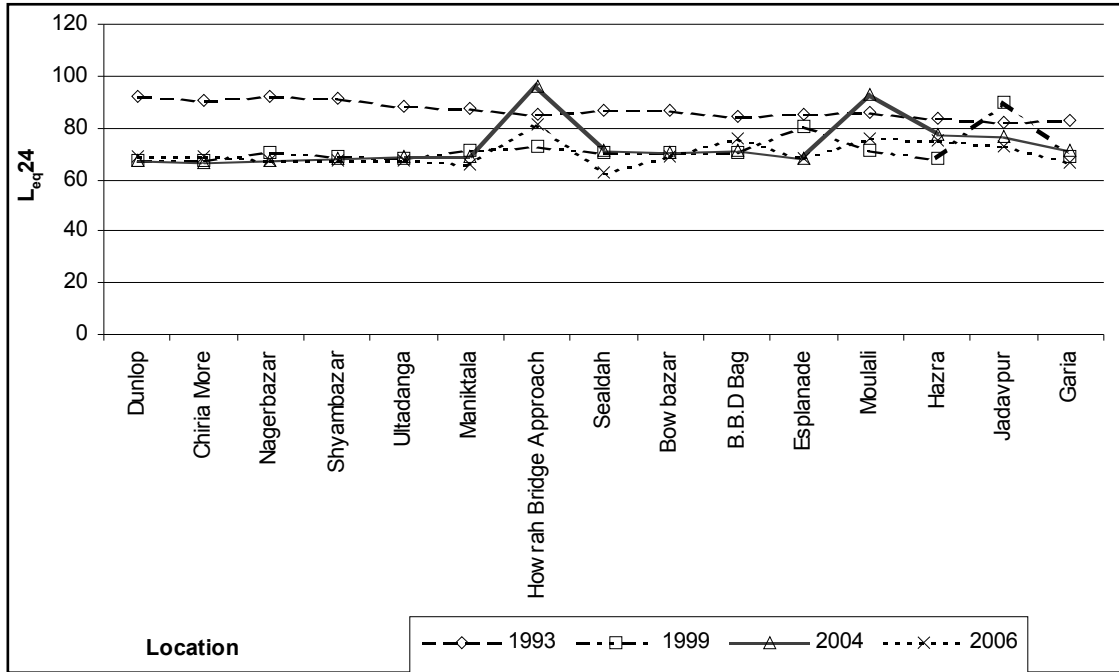


Figure 2 : Comparison of L_{eq24} values of different years during winter

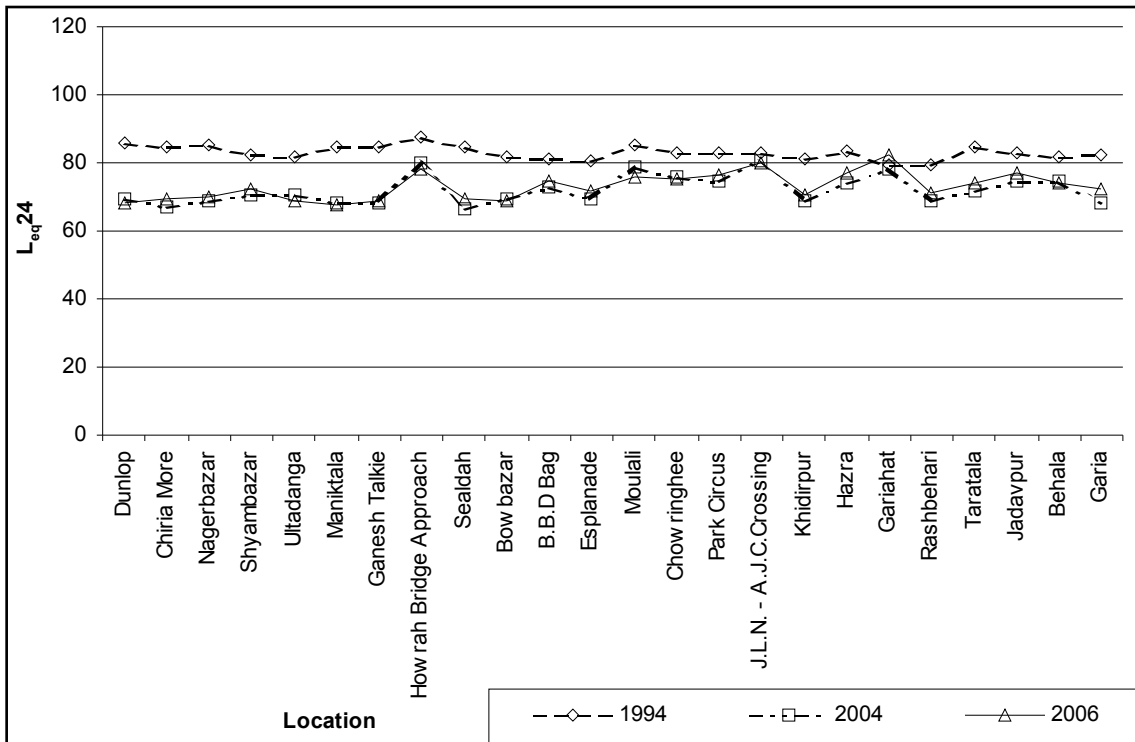


Figure 3 : Comparison of L_D values of different years during summer

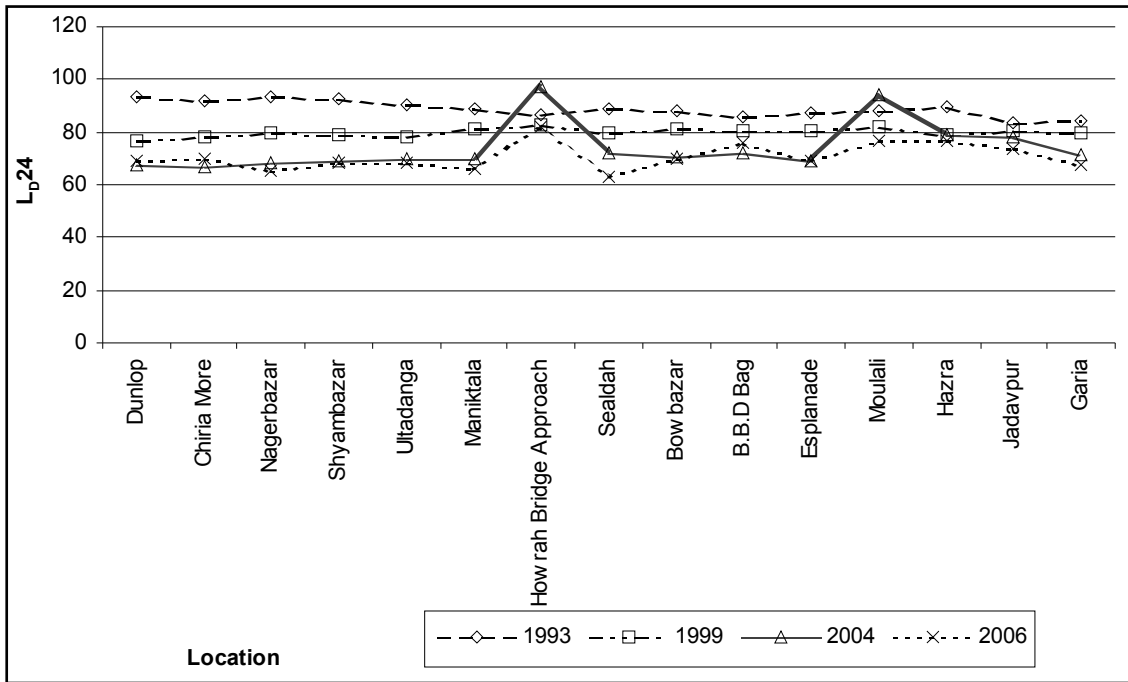


Figure 4 : Comparison of L_D values of different years during winter

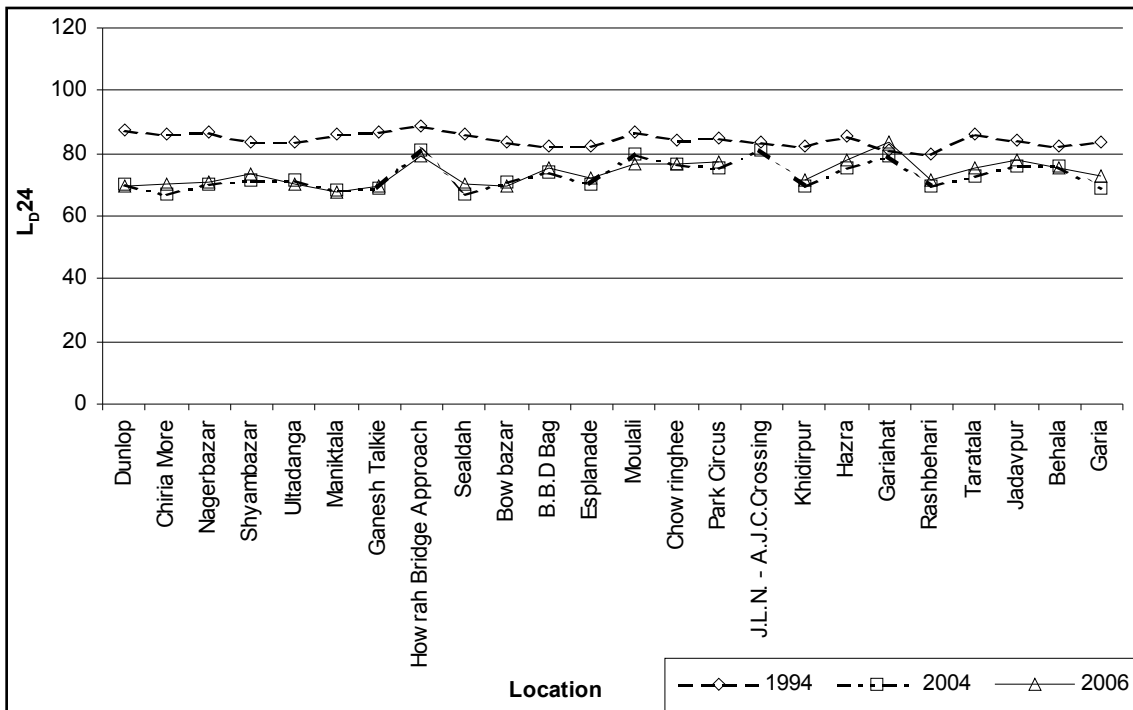


Figure 5: Comparison of L_N values of different years during summer

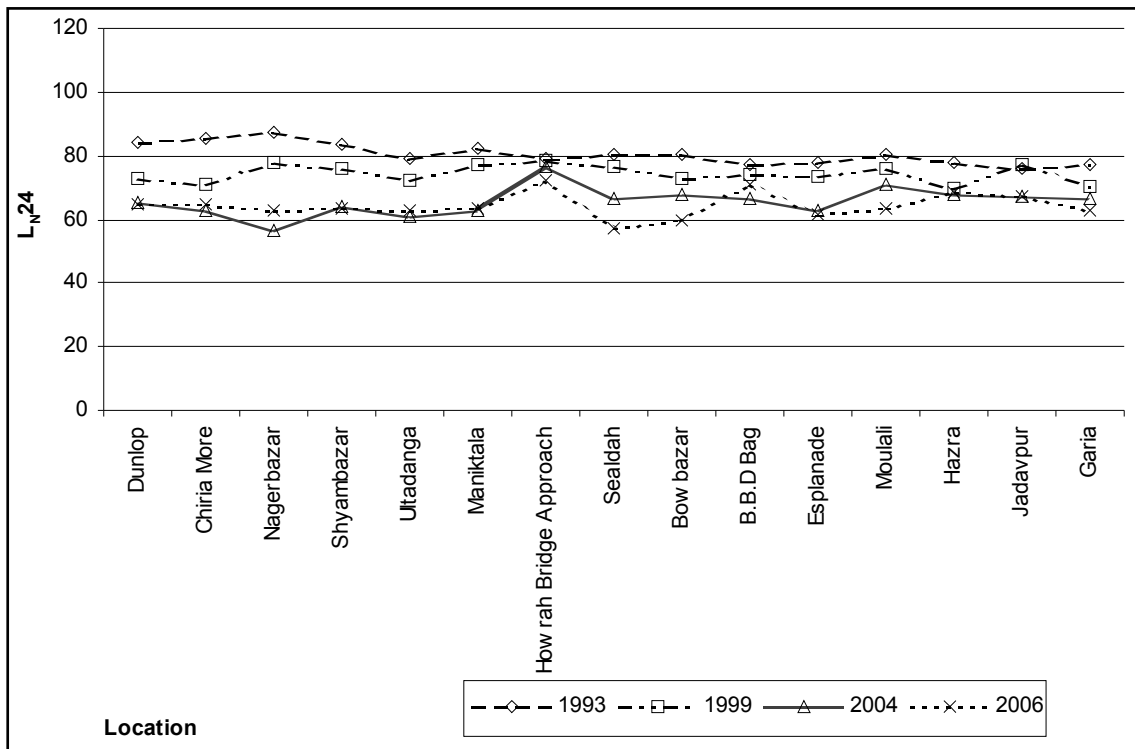
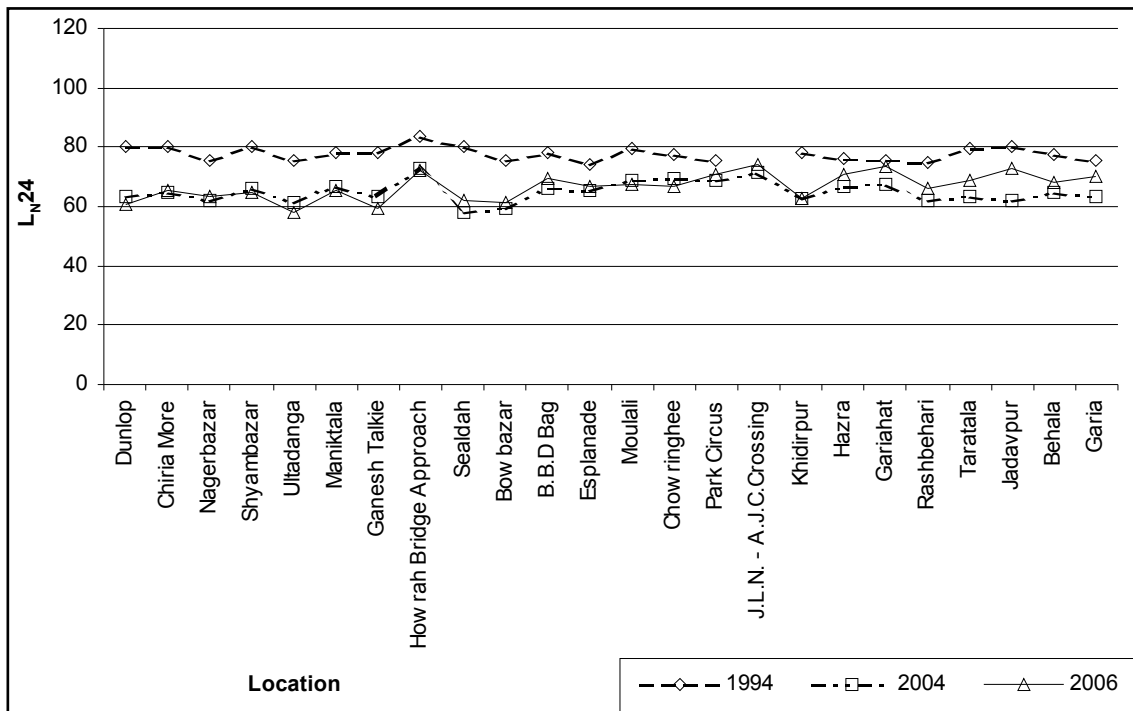
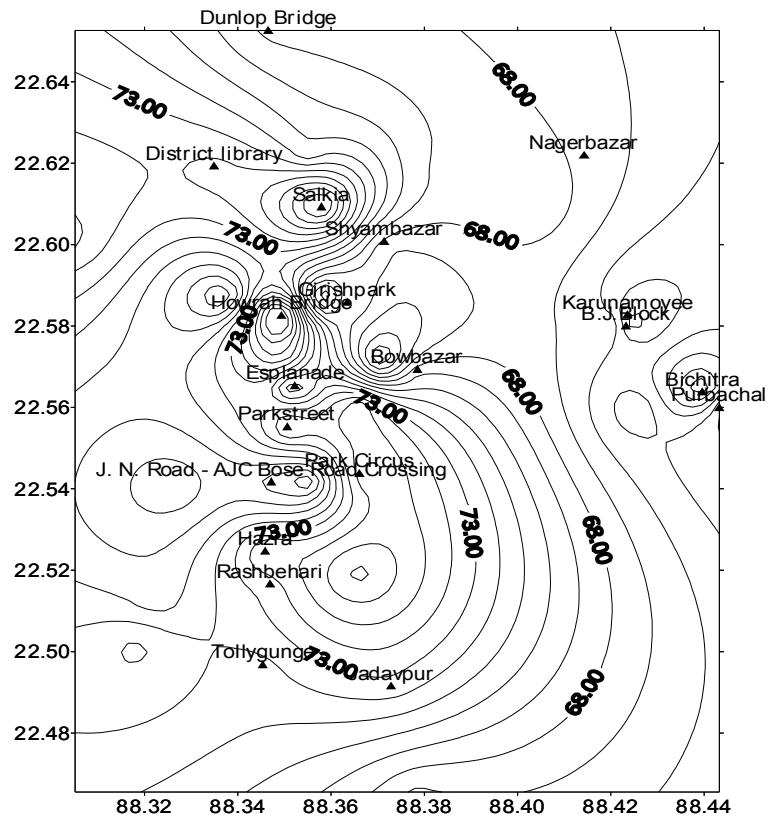


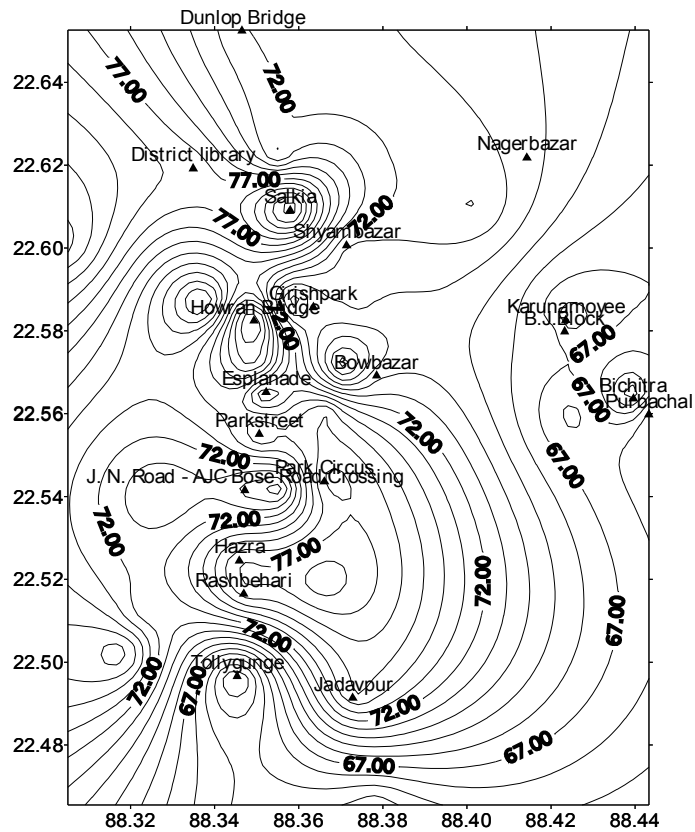
Figure 5 : Comparison of L_N values of different years during winter



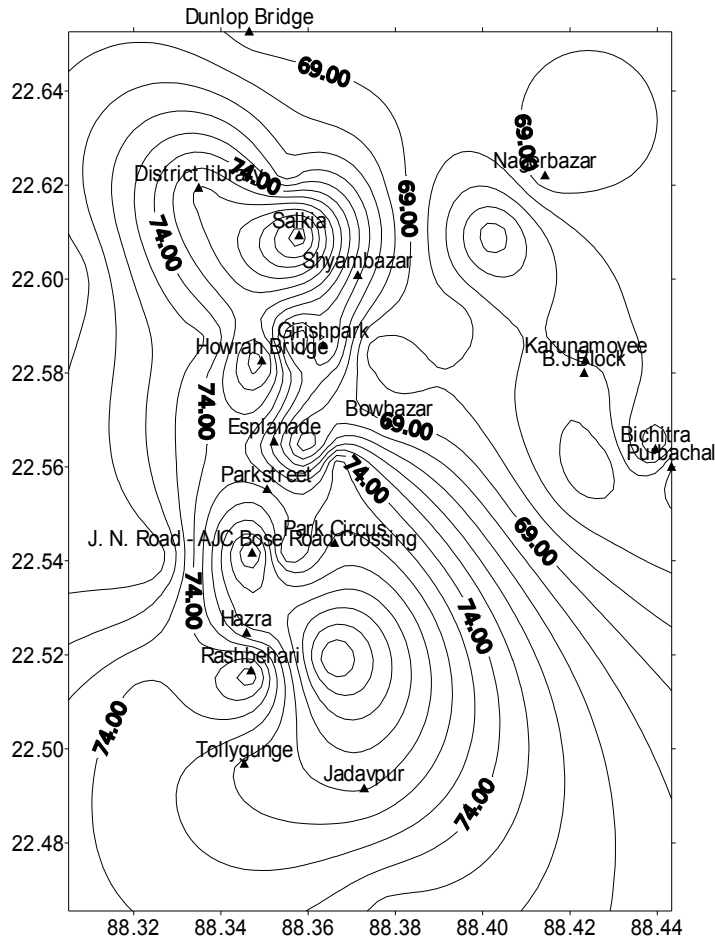
Map 1: L_{eq} 24 Hours Contour of summer at Kolkata and Salt Lake



Map 2: Day Night noise average noise level contour at Kolkata and Salt Lake during summer



Map 3: L_{eq} 24 Hours Contour at Kolkata and Salt Lake during winter



Map 4: Day Night noise average noise level contour at Kolkata and Salt Lake during winter

