EPCA Report No. 33 (March 2007)
Report on intercity public transport needs
In the matter of W.P. (C) No.13029 of 1985; M.C. Mehta v/s UOI & others

1. **The city of Delhi is getting measures to combat its ever growing and toxic air pollution. But these measures are being negated by the growth of vehicular traffic. EPCA has in the past recommended measures that need to be taken to control air pollution in the city, through different actions.**

2. **This report examines another key dimension of the problem: the growing traffic between Delhi and its neighbouring areas. In the past some years, there has been a growth explosion in the neighbouring areas of Delhi – Gurgaon, Faridabad etc. This growth is also leading to phenomenal increase in traffic between these towns.**

3. **The assessment shows that even by the late 1990s, huge traffic moment was taken place between these towns and that if public transport did not keep pace with the growth of demand, it would lead to increased movement by private transport.**

4. **This report seeks directions from the Hon'ble Court to reverse the slide of public mass transport in the National Capital Region.**

Environment Pollution (Prevention & Control) Authority
for the National Capital Region

1. Background

In the past years, Delhi has initiated programmes, at the intervention of the Hon'ble Supreme Court, to control and mitigate air pollution. These measures have helped to stabilise pollution levels in the city. But now, pollution levels are beginning to increase again and unless comprehensive measures are taken urgently to check pollution, all the efforts of the past years will be negated.

In this context EPCA would like to draw attention of the Hon'ble Court to yet another dimension of the emerging problem in Delhi. In addition to the city's increasing number of vehicles, the daily influx of vehicles coming from the neighbouring towns is also adding enormously to the pollution load. All pollution control efforts in Delhi can be seriously undermined if this daily influx of vehicles from outside the city is not controlled.

So far the Hon'ble Court has addressed the problem of heavy commercial vehicles in transit through Delhi and has issued a series of directions to divert the non-destined truck traffic away from Delhi. At the instruction of the Hon'ble Court, bypasses and expressways are being constructed to divert the non-destined transit traffic. However, the daily influx of personal vehicles and small commercial vehicles including taxis and commercial car fleet from the surrounding towns of the National Capital Region (NCR) has not been addressed. A large number of personal vehicles enter the city in the morning and leave in the evening. Since this traffic is mainly generated due to the concentration of jobs and businesses in Delhi, this cannot be diverted from the city but steps have to be taken to minimise this traffic and to mitigate its pollution potential.

The pollution data available for the satellite towns of Gurgaon, Faridabad, Meerut show alarming levels of pollution. Significant health benefits can only be achieved if joint efforts are taken at the NCR level. EPCA is looking at augmenting and improving the public transport system in the NCR towns and Delhi and integrating the different modes of public transport to facilitate access.

2. Assessment of the problem

The NCR is an area of 33,578 sq km covering the National Capital Territory (NCT) of Delhi, Haryana sub-region, Rajasthan sub-region and Uttar Pradesh sub-region. It is important to note that NCT-Delhi is a small part of the region, less than 5 per cent, while regions of Haryana comprise roughly 40 per cent, Rajasthan 23 per cent and Uttar Pradesh 32 per cent of the NCR area respectively.

Currently, the transport system of the National Capital Region consists of a road and radial rail corridor, which caters to intercity and intra-city commuters and long distance traffic. The existing road network in the NCR shows convergence of five national highways --- NH1, NH2, NH8, NH10 and NH24 on Delhi and two national highways NH58 and NH91 meet NH24 at Ghaziabad, before entry into Delhi. In addition, there are ten state highways in the regional road network.

The NCR rail network covers three zonal railways (northern, western and central) zones and five divisions. The rail network consists of both broad and metre gauges. Five broad gauge railway lines converge at Delhi. The rail network has two specially identified lines

known as goods avoiding lines (GAL) and Delhi avoiding lines (DAL). While the former provide a direct entry from Ghaziabad to New Delhi bypassing the congested Delhi Railway station complex, the latter provides a direct passage from the major years – Tughlakabad and Ghaziabad directly into the Delhi-Ambala-Kalka section and through Lajpat Nagar, Patel Nagar, Daya Basti and Azadpur link.

The problem arises as this road and rail network has not accounted for the phenomenal economic growth in the region, which generates inter-city traffic.

2.1 Influx of vehicles from NCR

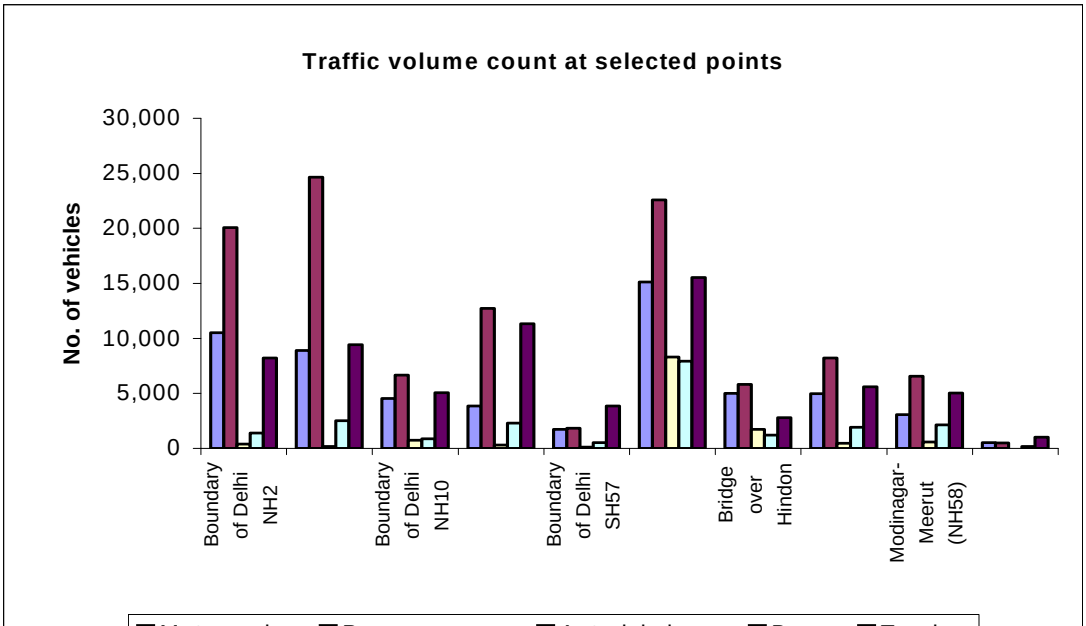
While it is understood that a large number of vehicles come to Delhi and leave the city during peak hours, there is no proper assessment of the actual numbers. Disparate data available from different studies and over time are not always directly comparable. These are indicative but represent the enormity of the problem.

2.1.1 Volume of incoming traffic: According to a 2005 RITES Report, surveys conducted at 15 locations of Delhi border in 2001 revealed an average of 1.53 million daily inter city trips are made to Delhi. Out of these, about 67 per cent are met by public transport and the rest by private modes (22 per cent by cars and 10 per cent by two-wheelers). About 13 per cent of the total intercity trips are estimated to be through-trips. Surveys conducted at 43 railway stations in Delhi reveal that about 1 million daily trips are carried by rail. Of these, only 9 per cent trips are made within the city while the rest 91 per cent are estimated to be intercity trips.

Even though personal vehicles meet only 32 per cent of the travel demand, they form the largest share of the transit traffic.

Earlier estimates from the traffic volume studies of the 1990s indicate that the highest traffic volume is at NH24 – between Delhi and Ghaziabad; followed by NH8 – between Delhi and Gurgaon, NH2 connecting Delhi with Faridabad, and the lowest at state highway 57 (Delhi-Loni) (see Graph 1: *Traffic volume counts at selected points*). There is very little information to indicate the growth that has taken place in the past few years on these routes. This growth is expected to be phenomenal given the recent development in these satellite towns.

Graph 1: Traffic volume counts at selected points

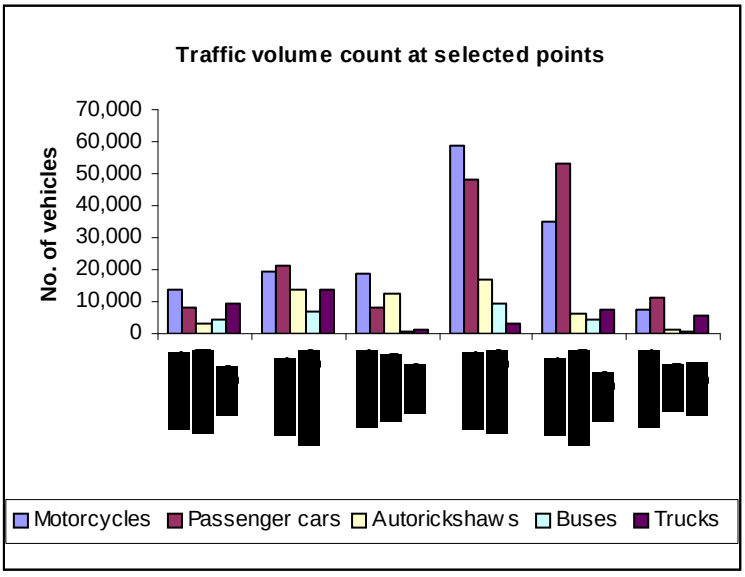


Source: Anon 2005, *Regional plan 2021 National Capital Region*, National capital Region Planning Board, Ministry of Urban Development, Government of India.

2.1.2 Transit traffic dominate key corridors in Delhi: Large numbers of vehicles enter Delhi from NCR through 10 key entry points. Some of the busiest entry points include Singhu border, Gurgaon, Badapur, Maharajpur, Shahdara border, Noida, Nandnagri, Tikri border, Dhansa border among others.

The directional split of passengers clearly demonstrates that people commute to Delhi for work in the morning and return in the evening. This traffic dominates the commuting traffic on these key routes (see Graph 2: *Transit traffic dominates key link corridors in Delhi*). The commuter behaviour is extremely pronounced at the Nizamuddin bridge where nearly 80 per cent of the traffic in the morning is towards Delhi. In the evening peak hour, ITO bridge shows the highest directional split in favour of movement from Delhi (approximately 75 per cent). This means only 20 to 25 per cent of the vehicles on this route are from within Delhi and the majority are from outside.

Graph 2: Transit traffic dominates key link corridors in Delhi



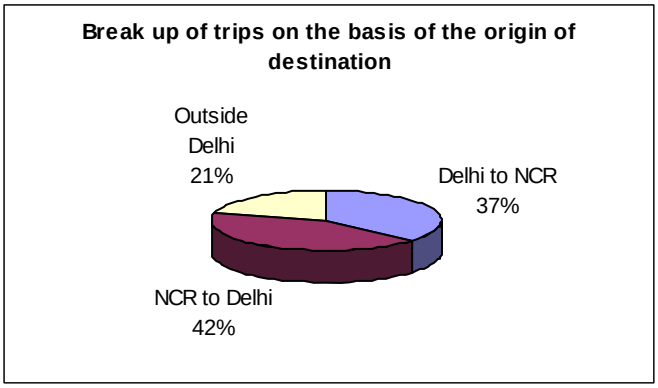
Source: Anon 2005, *Regional plan 2021 National Capital Region*, National capital Region Planning Board, Ministry of Urban Development, Government of India.

The origin of destination survey shows that a majority of trips are from NCR to Delhi followed by Delhi to NCR and then outside Delhi. Out of the total of 3.42 million trips 37 per cent of the trips are made from Delhi to NCR, 42 per cent from NCR to Delhi and the rest of the trips occur in NCR but outside Delhi (see Graph 3: *Break up of trips on the*

basis of the origin of destination). The survey also indicates that in the 1990s, nearly two-thirds of the trips are carried by public transport. Public transport met 71.54 per cent of the trips, while private mode carried the remaining 28.46 per cent (see Graph 4: *Break up of trips on the basis of mode used*).

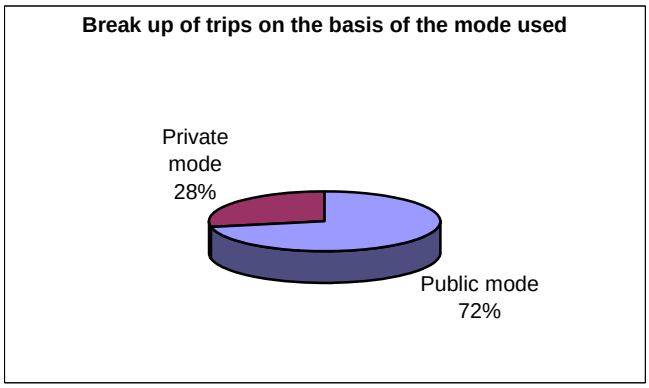
The problem is that during the last 7-8 years, traffic volumes have increased in the region. But mass transportation – bus and rail – has not kept pace with this growth. This has driven the growth to private and personal transport modes, which in turn, has added to pollution and congestion. The region desperately needs a public inter-city transport plan.

Graph 3: Break up of trips on the basis of the origin of destination (1999)



Source: JICA Study Team, Pacific Consultants International 2000, quoted in Anon 2005, *Regional plan 2021 National Capital Region*, National capital Region Planning Board, Ministry of Urban Development, Government of India.

Graph 4: Break up of trips on the basis of mode used (1999)

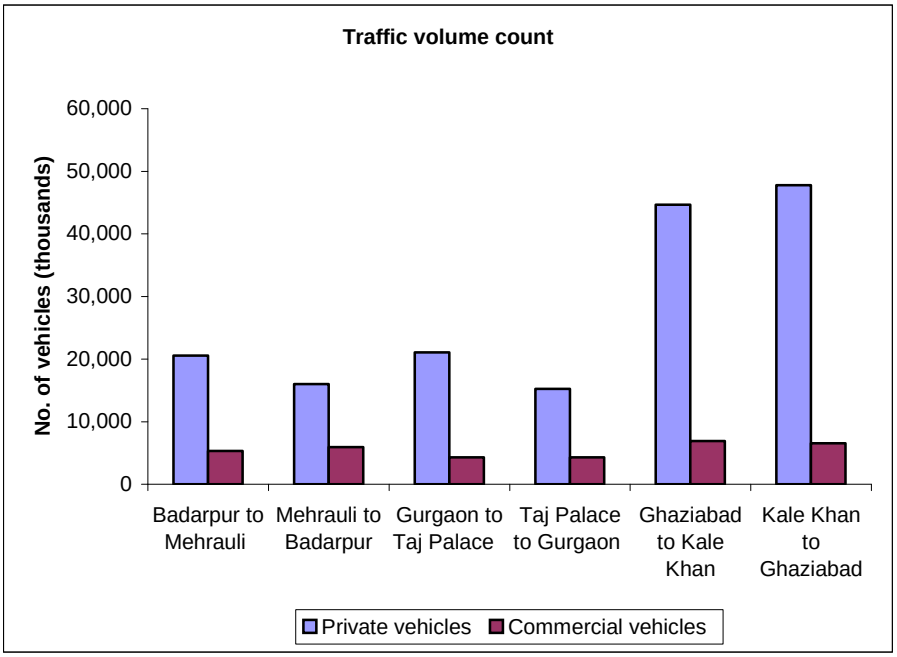


Source: RITES 1999, quoted in Anon 2005, *Regional plan 2021 National Capital Region*, National capital Region Planning Board, Ministry of Urban Development, Government of India.

Influx of vehicles from Gurgaon and Faridabad are adding to the massive congestion in South Delhi. The 2005 study *Strategic Options cum Feasibility Study for the Elevated Ring Road in Delhi* conducted by Wilbur Smith Associates Inc. has estimated the traffic

volume count from some of the neighbouring towns to Delhi and vice-versa (see Graph 5: *Traffic volume count*). This shows dominance of personal vehicles in the transit traffic.

Graph 5: Traffic volume count



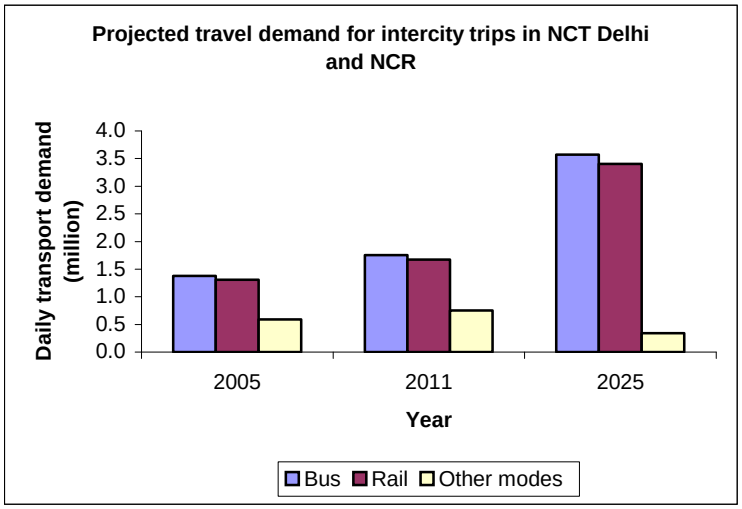
Source: Wilbur Smith Associates Inc. 2005, Strategic options cum feasibility study for the elevated Ring road in Delhi, Government of National Capital Territory of Delhi and Infrastructure Leasing and Financial Services Limited, February 2005.

The numbers of vehicles are disproportionately large compared to the trips that they cater to on these routes. For instance, according to a project report prepared by RITES, Delhi Metro Rail Corporation (DMRC) and Haryana Urban Development Authority (HUDA), at present 1.1 million vehicles make trips in Gurgaon. Of these 0.3 million vehicles feed intra-city routes and 0.8 million intercity routes. Nearly 62 per cent of commuters travelling between Gurgaon and Delhi use buses, 1 per cent use rail, 10 per cent use chartered buses and shared vehicles, 3 per cent use car and jeeps and 1 per cent use other modes of transport such as two-wheelers and private vehicles. Thus such huge volume of personal vehicles ply to meet only 3 per cent of the demand on the Gurgaon road.

2.1.3 Inadequate public transport: The problem of burgeoning number of personal vehicles cannot be addressed unless there is quality and reliable public transport system in place linking these neighbouring towns with Delhi. The immediate option is to build bus transport system. It is important to note that according to a study carried out by RITES in 1999 nearly 72 cent of the daily trips to Delhi were met by public transport – buses and rail. The split between the buses and rail was nearly the same with the share of buses a little higher. The same trend is expected to continue even in 2010 and 2025. Yet such a large number of personal vehicles are coming on the road only to meet 28 per cent of the travel demand. The projections show that by 2025, more than 8 million trips will be intercity in the NCR. Of these, 40 per cent trips will be carried by bus and rail modes each and remaining 20 per cent share will be carried by private modes (see

Graph 6: *Projected travel demand for intercity trips in Delhi and NCR*). Buses will cater to a little higher share of the trips made.

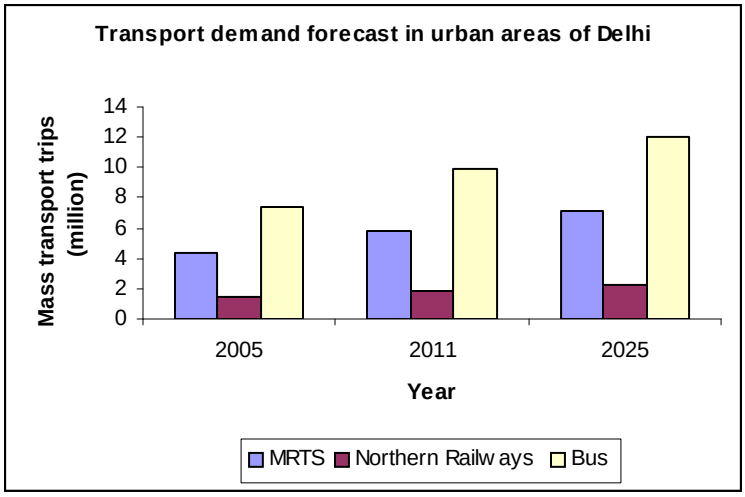
Graph 6: Projected travel demand for intercity trips in Delhi and NCR



Source: RITES 1999, quoted in Anon 2005, *Regional plan 2021 National Capital Region*, National capital Region Planning Board, Ministry of Urban Development, Government of India.

This points out to the fact that a though a large proportion of the trips in 2025 will be met by public transport yet a small share of the trips will still be met by a very large number of personal vehicles. Clearly, this points to the great potential of further improving the public transport and shift commuters from personal modes of transport to public transport. This strategy is even more important keeping in view the fact that the transport demand even within NCT Delhi is expected to increase several fold over the next decade (see Graph 7: *Transport demand forecast in NCT Delhi*).

Graph 7: Transport demand forecast in NCT Delhi



Source: RITES 1999, quoted in Anon 2005, *Regional plan 2021 National Capital Region*, National capital Region Planning Board, Ministry of Urban Development, Government of India.

2.1.4 Pollution monitoring of incoming traffic: All the key entry points will have to be taken up for rigorous pollution monitoring. A large number of vehicles entering Delhi have high visible smoke. The current system is not rigorous enough to make an impact. Immediate steps should be taken to ensure that the vehicles are properly inspected and maintained. There should be zero tolerance for these vehicles. It is to be ensured that all vehicles that enter Delhi have valid PUC certificates meeting the 2004 norms. EPCA is working with the governments of Delhi and state governments of Haryana and Uttar Pradesh to resolve these issues and will bring to the Hon'ble Court its recommendations on this matter.

3. Consultation with concerned agencies

EPCA is looking at strategies for integration of the NCR towns with Delhi through a well-developed public transportation network to reduce the numbers of personal vehicles that are responsible for very high level of pollution and congestion. In addition to augmentation in dedicated bus system, railways will play a very important role in improving the transportation linkages and reducing pressure on roads and highways. In order to deliberate on the matter, EPCA convened two meetings with the concerned officials of the NCR and a meeting with railway officials.

The first meeting was held on November 3, 2006 to discuss the action plan to combat vehicular pollution in the NCR towns as well as reducing the impact of transit traffic on pollution and congestion in all towns including Delhi. This meeting was discussed connectivity issues of NCR towns of Haryana --- Faridabad, Sonepat, Gurgaon and Rohtak. EPCA was informed that vehicles from these towns enter Delhi through various entry points. Deliberations were held on key issues --- the number of registered vehicles in these towns, the PUC system and the tests done and the bus based systems catering to public transport. It was noted that buses and railways meet a large proportion of the passenger travel demand in most of these towns. Extensive deliberations were held on the present bus based transport systems in these towns and how these could be augmented and improved.

EPCA observed that the NCR towns should look at means of improving the public transportation system. EPCA has directed Faridabad, Sonepat and Gurgaon to plan for

dedicated CNG bus service. It emerged clearly from these deliberations that the proportion of the railway passenger traffic is enormous on routes linking all the key towns of NCR including – Sonepat, Faridabad, Rohtak, among others and further augmentation in capacity can help towards decongesting the roads. It was decided that EPCA would convene a separate meeting with the Railways to discuss the issue of integration of the NCR towns with Delhi.

In the second meeting held on November 18, 2006, deliberations were held with regard to the metro connecting the NCR to Delhi. DMRC informed that Delhi-Gurgaon metro route (14 kms) has been finalised and will be completed by July 2010. Sushant Lok in Gurgaon would be the last station of this metro line. When EPCA pointed out that Gurgaon extends beyond Shushant Lok, it was informed that Gurgaon area beyond Shushant Lok will be connected by LRT. DMRC also informed EPCA that a study for the metro route from Badarpur to Faridabad (extending to Badli) had been sanctioned and Delhi government has approved the project in principle. EPCA observed that DMRC should integrate the NCR towns as much as possible and also expedite the process.

EPCA convened its third meeting on November 25, 2006 to discuss the issue of integration of NCR towns with Indian railways. The officials informed EPCA that the railway network in these towns transported nearly 0.5 million passengers daily each way in the 8 rail corridors. However, what was clear was that the railway services could be vastly upgraded so that they could cater to the growing traffic. The trains running in this region needed to be planned for inter-city travel, be convenient, be fast and provide services like parking and ride.

Deliberations were held on the ring railway in the city. The 35 km ring railway route passes through the heavily congested and central areas of the city -- Lajpat Nagar, Safdarjung, Brar Square, Shakur Basti and Patel Nagar – and would provide an alternative transport network. However, it is currently underutilised for public transport, as it has poor connectivity from the stations. Additionally, because this line is used for transportation of freight, the intra-city travel gets low priority. It was agreed that a dedicated corridor would improve the service and provide an important addition to the city's transport network.

EPCA has also considered the proposal to set up Integrated Rail cum Bus Transit (IRBT). According to this proposal the regional rail network in the NCR will be strengthened with the construction of dedicated railway corridors. IRBT project along with the three existing railway lines is being taken up in partnership with the neighbouring state governments of Haryana and Uttar Pradesh and the Government of India. The three IRBT corridors of 61.66 km include i) Ghaziabad-Sahibabad-Shahdara Rail Link (14.9 km), ii) Sahibabad-Tilak Bridge-Shivaji Bridge (17.36 km) and iii) Trinagar (Daya basti) – Bijwasan – Gurgaon Rail link (29.40 km). Estimated at a cost of Rs. 2239 crore, this project is to be implemented by special purpose vehicles. Equity contribution will be made by the stakeholders (Ministry of Urban Development, Ministry of Railways and Government of NCT, Delhi, Government of Haryana and Government of Uttar Pradesh). The interstate contribution of the state governments will be in the ratio of the length of the commuter rail systems in the respective states. The Memorandum of Understanding (MoU) has been signed by all the stakeholders and the project is pending for approval with the Planning Commission.

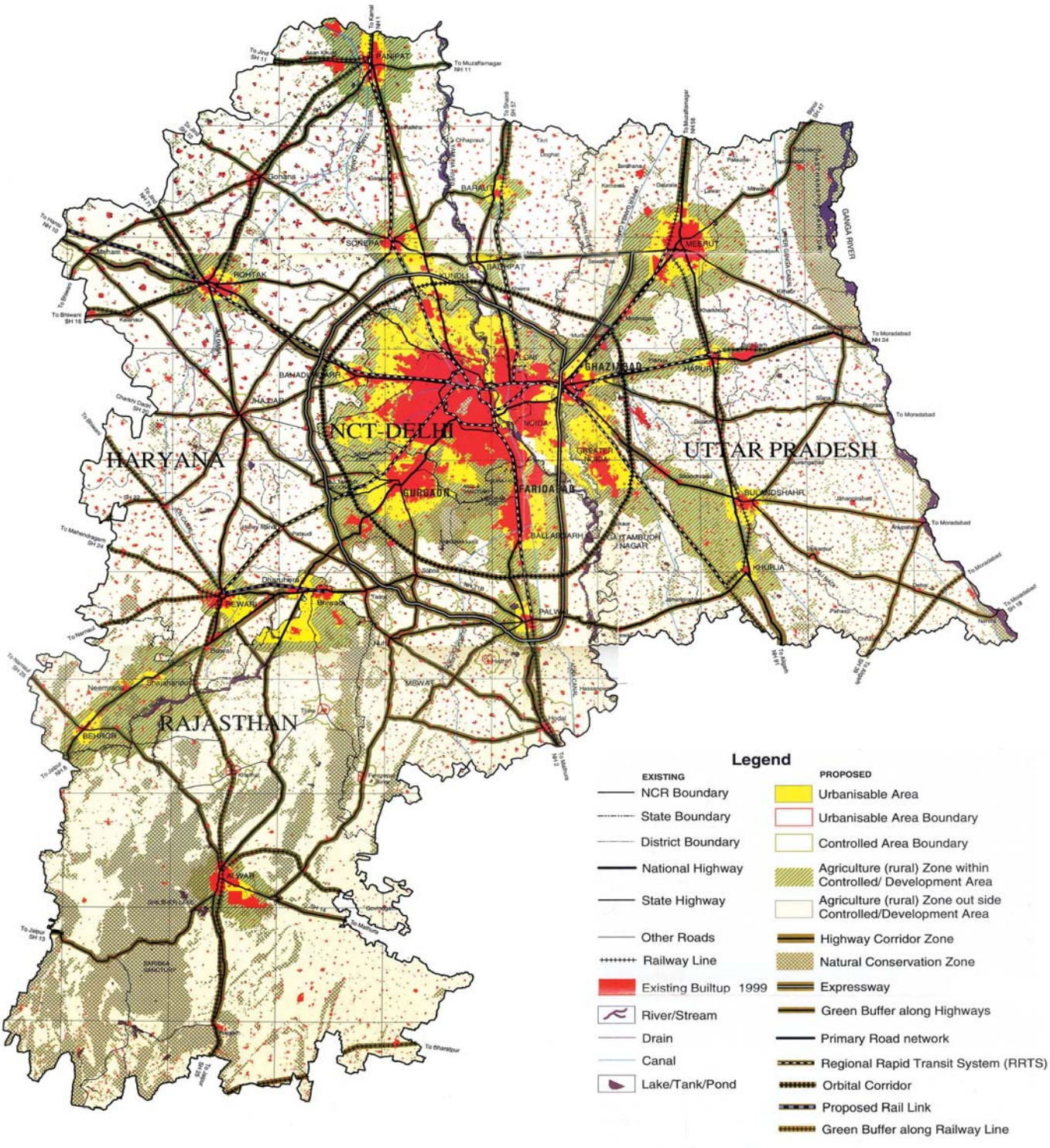
4. EPCA Recommendations

The review of the problem of inter-city traffic has convinced EPCA that an NCR-wide view of the mitigation plan is needed to curb vehicular pollution in the region. All the surrounding towns are witnessing phenomenal increase in the numbers of the vehicles largely due to the policy failure to develop good public transportation system inter linking these towns. The only way this trend can be reversed is to improve connectivity through a good public transportation network. In view of this EPCA would like to make the following recommendations:

i. Develop and strengthen the public bus transportation system: The concerned state transport departments under the state governments of Haryana and Uttar Pradesh and also Delhi government be directed to submit a plan for augmentation of dedicated bus services linking the key towns and Delhi. The key NCR towns include Gurgaon, Faridabad, Sonepat and Rohtak in Haryana; Ghaziabad, Noida, Meerut in Uttar Pradesh.

ii. Improve rail connectivity: The review has also indicated that the rail traffic is already considerable in this region. This is preferred and efficient mode of public transport. There is strong potential to develop this further. Northern Railways be directed to submit a plan on how to increase the connectivity between the NCR towns and Delhi and integrating these towns to Delhi. The plan should indicate the ways the train services can be further augmented, the capacity of the current trunk lines can be further expanded, and dedicated corridors that can be created to link these towns and enable fast movement of trains.

iii. Improve ring railway in Delhi: Northern railways should give a time-bound plan for improving the existing ring railway in Delhi for passenger traffic.



Map of National Capital Region of Delhi

Key intercity routes connecting Delhi with other cities in the NCR