4 *Railway Network in NCR*

The railway network in NCR consists of complex rail radials and hubs which have got developed over the last hundred years. It serves the National capital – New Delhi and strives to meet transportation needs of India's populations, people visiting it for business and social requirements. Unlike other major metros of the country, rail network in the capital also operates as a transit point for passengers and freight volumes moving between Punjab, Haryana, Himachal, J&K, Rajasthan on one side and rest of the country on the other.

4.1 Rail Radials around NCT-Delhi

NCT-Delhi is served by the following 8 rail radials:

5 Major Radials

i. New Delhi – Faridabad – Palwal (to and from Central India)
ii. New Delhi – Sonipat – Panipat (to and from Northern States)
iii. New Delhi – Rohtak (to and from parts of Haryana & Punjab)
iv. New Delhi – Gurgaon – Rewari – Alwar (to and from Western India)
v. New Delhi – Shahdara – Shamli (to and from Western UP)

3 Radials converging at Ghaziabad

i. Delhi – Ghaziabad – Khurja – Aligarh (to and from Eastern India)
ii. Delhi – Ghaziabad – Hapur – Garhmukteswhwar (to and from UP and Utrakhand
iii. Delhi – Ghaziabad – Meerut (to and from Western UP)

The following sub sections complete the rail network in NCR and around NCT:

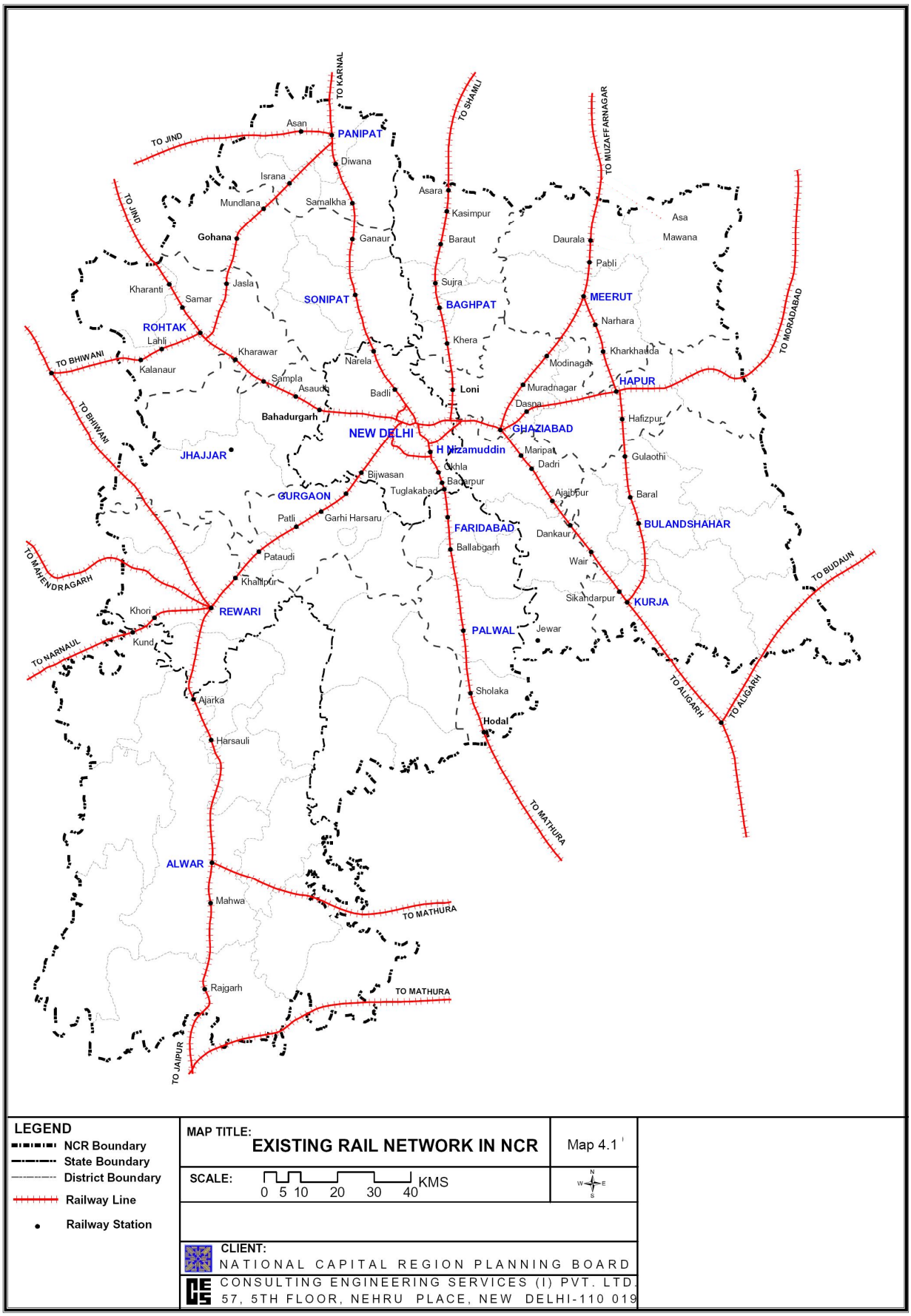
i. Delhi – New Delhi – Nizamuddin – Patel Nagar – Delhi Kishanganj – New Delhi/DLI (GAL)
ii. Delhi – Shahdara/Sahibabad – Anand Vihar- New Delhi/Delhi (DAL)
iii. Khurja – Hapur – Meerut (connecting DLI-Howarh route with DLI-Meerut- Saharanpur and Delhi-Moradabad links)
iv. Panipat – Rohtak (Branch line)
v. Sub sections of Rohtak – Jind, Rewari – Bhiwani, Rewari – Mahendragarh and Rewari – Narnaul sections

The rail network in NCR is shown in **Map 4.1.**

4.2 Passenger Terminals in the Capital

The four passenger handling terminals in the capital are:

(i) New Delhi
(ii) Delhi
(iii) H. Nizamuddin
(iv) Delhi Sarai Rohilla


TO KARNAL
TO SHAMLI
TO MUZAFFARNAGAR
TO JIND
TO JIND
TO BHIWANI
TO BHIWANI
TO MAHENDRAGARH
TO NARNAUL
TO MORADABAD
TO BUDAUN
TO ALIGARH
TO ALIGARH
TO MATHURA
TO MATHURA
TO MATHURA
TO JAIPUR
PANIPAT
Asan
Diwana
Israna
Mundlana
Samalkha
Gohana
Ganaur
Asara
Kasimpur
Baraut
Daurala
Asa
Mawana
Pabli
Sujra
Jasla
Kharanti
Samar
SONIPAT
BAGHPAT
MEERUT
ROHTAK
Lahli
Kharawar
Narela
Khera
Narhara
Kharkhauda
Modinagar
Kalanaur
Sampla
Asaudh
Badli
Loni
Muradnagar
HAPUR
Dasna
Bahadurgarh
NEW DELHI
GHAZIABAD
Hafizpur
JHAJJAR
H Nizamuddin
Maripat
Dadri
Gulaothi
Okhla
Bijwasan
Badarpur
Tuglakabad
Ajaibpur
Baral
GURGAON
Patli
Garhi Harsaru
FARIDABAD
Dankaur
BULANDSHAHAR
Ballabgarh
Pataudi
Wair
Khalilpur
Sikandarpur
KURJA
Khori
REWARI
PALWAL
Jewar
Kund
Sholaka
Ajarka
Hodal
Harsauli
ALWAR
Mahwa
Rajgarh
LEGEND
NCR Boundary
State Boundary
District Boundary
Railway Line
Railway Station
MAP TITLE:
EXISTING RAIL NETWORK IN NCR
Map 4.1
SCALE:
0 5 10 20 30 40 KMS
CLIENT:
NATIONAL CAPITAL REGION PLANNING BOARD
CONSULTING ENGINEERING SERVICES (I) PVT. LTD.
57, 5TH FLOOR, NEHRU PLACE, NEW DELHI-110 019

Their profile have been undergoing significant changes during the last five decades and the capacity enhancement works have been undertaken , basically to serve the needs of long and medium distance travellers using services. Traditionally, two rings have got formed viz one linking Delhi-Shahadra Anand Vihar – Tilak Bridge – New Delhi-Delhi and the other formed by joining New Delhi-NZM-PTNR-DSJ-Brar Square-PTNR-DKZ-NDLS. Historically, the first ring (GAL) got constructed when NDLS was approached directly without touching Delhi, from eastern sector (Aligarh, Moradabad, Meerut side). The second ring (so called Ring Railway) got developed, when the freight traffic could be moved from Central and/Western India to Punjab, Haryana without touching New Delhi/Delhi and conserving the terminals primarily for passenger operation.

4.3 Coaching and Freight Traffic in Delhi & NCR

NCR, particularly Delhi area handles tremendous volumes of coaching and freight traffic. The coaching traffic has grown at an exponential rate during the last two decades with addition of large number of mail, express, Shatabdi and Rajdhani trains catering to long distance, inter-city movements and EMUs, main line EMUs and diesel push-pull trains catering to fast growing commuter traffic between Delhi and the satellite towns of the National Capital Region. The freight traffic has also grown at a fast pace. Delhi Area is a complex network of railway lines with coaching and freight traffic pouring in and out of eight radials. A large volume of traffic terminates within the area, but an equally large volume of traffic moves across from one radial to another. There are three main goods terminals at Tughlakabad, Shakurbasti and Delhi Kishanganj apart from power houses, viz., Badarpur and Indraprastha which are served through their exclusive sidings. Tughlakabad harbours an International Container Depot (ICD) which has grown at a fast pace and is already bursting at its seams. It handles a growing volume of domestic container traffic as well and is also the only marshalling yard now operational on Northern Railway. Two electric loco sheds, one at Tughlakabad and the other at Ghaziabad and two diesel loco sheds, one at Tughlakabad and the other at Shakurbasti are also situated in NCTD.

4.4 Operational Complexities

The operational problems confronting Delhi Area arise mainly from over-saturation of line capacity in certain sections like Delhi – Ghaziabad, Delhi –Shakurbasti and Delhi – New Delhi –Sahibabad etc. These are not only hindering traffic flows but could put future growth of traffic in jeopardy. Unfortunately, these congested sections pass along heavily built up urban areas. Capacity expansion of these sections is either physically impossible or prohibitively expensive.

4.5 Description of Radials in Delhi Area

The brief account of major 8 radials is given below:

(i) Delhi – Ghaziabad – Aligarh Section

Ghaziabad, an important CNCR town, is situated at a distance of 20 km from Delhi. Delhi – Ghaziabad corridor is an electrified section with double lines between Delhi – Sahibabad and quadruple lines between Sahibabad – Ghaziabad. From Ghaziabad, the lines branch off into three directions/divisions touching important rail heads of NCR, controlled by one Division of Northern Railway and two divisions of North Central Railway. The segments are:

- Ghaziabad – Khurja Jn. – Aligarh Section on Allahabad Division (North Central Railway)
- Ghaziabad – Hapur – Garmukteshwar Section on Moradabad Division (NR)

- Ghaziabad – Meerut Section on Delhi Division (NR).

The NCR limit on Ghaziabad-Aligarh rail corridor extends upto Somna station at a distance of 104 km from Delhi. The section beyond Ghaziabad and up to Aligarh is presently a double line electrified route under the administrative control of Allahabad Division of North-Central Railway. It handles long distance mail / express trains, passenger shuttles and long distance freight trains on electric traction.

On the critical sub section (viz Sahibabad- Ghaziabad) of this radial, 120 trains each way is the installed sectional capacity whereas LC utilization is already above 130%. 116 passenger carrying trains and over 40 freight trains each way are operational on the critical sub-section.

Major contribution of unreserved passenger traffic is made by Ghaziabad, Delhi Shahdara, Sahibabad, Dankaur, Khurja, Dadri and Aligarh Jn. stations etc.

(ii) Ghaziabad – Hapur – Garmukteshwar –Section

The NCR limit on this rail corridor extends upto Garmukteshwar station at a distance of 87 km from Delhi. Hapur station is situated at a distance of 37 km from Ghaziabad. The section between Ghaziabad and Hapur is a double, non-electrified line route and is under the administrative control of Moradabad Division of Northern Railway. It handles 25 long distance mail / express trains, passenger shuttles and 3 freight trains each way on diesel traction. With doubling completed upto Hapur, LC utilization on the sub-section between Hapur-Ghaziabad is eased and utilization is over 60%. Being a non-electrified section, inter-radial EMU operation for commuter traffic on this sub section, is at present, not feasible. Hapur and Pilkhuwa generate significant commuter traffic.

(iii) Ghaziabad – Meerut

The NCR limit on this rail corridor extends upto Khatauli station at a distance of 101 km from Delhi. Meerut City station is situated at a distance of 69 km from Delhi and 48 km from Ghaziabad. The section between Ghaziabad and Meerut is double line non-electrified. The section handles 19 long distance mail / express, passenger shuttles and 8 freight trains each way on diesel traction system. The section is under the administrative control of Delhi Division of Northern Railway. Present utilization of Ghaziabad-Meerut sub section is comparatively lower (in the range of 50%). To make it commuter friendly, non-electrified territory may come in the way in the long run. Modinagar, Muradnagar, Meerut City and Meerut Cantt. generate substantial commuter traffic.

(iv) Delhi – Shahdara – Shamli section

The NCR limit on this rail corridor extends upto a distance of around 75 Km from Delhi. This is a single line non-electrified section operated by Diesel traction. This is relatively lightly loaded section with predominantly passenger traffic and very low goods traffic. The section is under the control of Delhi Division of Northern Railway. Line capacity, at present on the sub section (Delhi Shahdara-Shamli) is not a constraint. However, beyond Delhi Shahdara towards Delhi Jn, LC does pose a problem for operation. Loni, Khekra, Bagpat Road, Baraut, Shamli have a big share in commuter traffic.

(v) Delhi – Faridabad – Palwal Section

The NCR limit on this rail corridor extends upto Chhata station at a distance of 114 km from Delhi. This is a double line electrified section utilised for running of long distance, inter-city mail / express trains, ordinary passenger trains EMU trains and freight trains. On this section, jurisdiction of Northern Railway extends upto Palwal station (inclusive) and thereafter the section is under the

control of Agra Division of North-Central Railway. This is a major artery, which carries heavy mixed traffic from Central and Western India. 65 passenger carrying trains and over 50 freight trains each way are operated daily on this vital sub section of Indian Railway with 150% line capacity utilization. Introduction of any new passenger/freight train on this sub section becomes a major issue. Palwal, Faridabad, Ballabgarh, Kosi Kalan and Tuglakabad are the major contributors of commuter traffic.

(vi) Delhi – Gurgaon – Rewari – Alwar Section

The NCR limit on this rail corridor extends upto Alwar station is at a distance of 158 km from Delhi. Gurgaon (CNCR town) is situated at a distance of 32 km from Delhi. The entire section is non-electrified running on diesel traction system and catering to inter-city mail / express, trains, ordinary passenger and freight trains. The section upto Rewari (excluding) falls under the administrative control of Delhi Division of Northern Railway. Beyond that, it is under Jaipur Division of North-Western Railway. With complete gauge conversion of double line upto Rewari, the section is operating 20 passenger trains and 6 freight trains each way. Rewari, Pataudi road, Gurgaon, Palam and Delhi Cantt. contribute a major share in unreserved passenger stream.

(vii) Delhi – Shakurbasti – Rohtak Section

The NCR limit on this rail corridor extends slightly beyond Rohtak which station is at a distance of 70 km from Delhi. Bahadurgarh (CNCR town) is situated at a distance of 30 km from Delhi. This is a non-electrified double line section operating on diesel traction system which is utilised for running of mail / express, trains, ordinary passenger and freight trains to and from Haryana, Punjab and Rajasthan. Being a diesel section, seamless operation from and to other vital sections is a challenge for commuter operation. Rohtak, Bahadurgarh, Sampla, Nangloi and Shakurbasti are the major contributors to commuter traffic.

(viii) Delhi – Subzimandi – Sonipat – Panipat Section

The NCR limit on this rail corridor extends upto Panipat station at a distance of 89 km from Delhi. The section is an electrified double line rail corridor which is extensively utilised for running of inter-city mail / express trains, ordinary passenger carrying trains as well as freight trains to and from Haryana, Punjab, Himachal Pradesh and Jammu & Kashmir. In operational priority, this sub section falls at third position in NCR, after New Delhi – Aligarh Jn and New Delhi – Palwal sections. With electrified territory it moves around 70 trains each way, including 38 passenger carrying trains each way. Line capacity is saturated with 135% utilization. Panipat, Sonipat, Narela, Naya Azadpur, Ganaur, Samalkha and Sabzimandi contribute a major share in commuter/unreserved traffic.

4.6 Passenger Traffic Profile

4.6.1 NCR, particularly NCT, has been witnessing a stupendous growth in passenger train handling. Till early, 60s, Old Delhi Station was the only (BG) coaching terminal. In the last 40 years, New Delhi and Nizamuddin have assumed much greater importance. In terms of passenger trains, the three terminals have seen remarkable growth. A sample of growth over the last 25 years may be seen as under:

Table 4.1: Growth of Passenger Trains in Delhi Area (25 years)

Years	Delhi			New Delhi			Hazrat Nizamuddin		
	No of Pass. Trains Orig/Termin	Through	Total	No of Pass. Trains Orig/Termin.	Through	Total	No of Pass. Trains Orig/Termin	Through	Total
1980	110	22	132	54	70	124	20	64	84
1985	108	30	138	68	63	131	36	60	96
1990	104	36	140	72	74	146	36	69	105
1995	116	31	147	91	82	173	47	72	119
2000	148	36	184	103	96	199	59	76	135
2005	154	48	202	133	108	241	79	81	160
2007	150	51	201, Including *52 EMU & 70 Pass trains*	135	117	252, Including *76 EMU & 12 Pass trains*	87	85	172,Including *48 EMU & 8 Pass trains*

Source: Study on Integrated Transportation Plan for NCR,

4.7 Commuter Services in NCR

The present trends of unreserved passenger and commuter traffic in the rail corridors in NCR have been studied. The originating traffic data of unreserved passengers from most of the stations of different railway corridors have been collected. This data has been used for analyzing share of rail traffic vis-à-vis total traffic demand entering / leaving NCR. The daily passenger traffic originating at major stations in NCR is of the order of 7,24,467 passengers.

Analysis of the data of unreserved passenger and daily travelers in the NCR for the year 2007-08 reflects that majority of commuters originate their journeys from the following major stations, and this accounts for a total of 4,30,750 **(Table 4.2).**

Table 4.2: Unreserved Passengers in NCR (Major Stations)

SI. No.	Station Code	Originating Passengers per day
1	BVH (Ballabhgarh)	16180
2	FDN (Faridabad New Town)	16330
3	FDB (Faridabad)	22170
4	PWL (Palwal)	23940
5	PNP(Panipat)	15050
6	SNP(Sonepat)	30190
7	SZM(Subzimandi)	4700
8	NARELA	14700
9	ROK (Rohtak)	17720
10	SSB (Shakurbasti)	7200
11	BGZ (Bahadurgarh)	13000
12	DSA(Delhi Shahdara)	16100
13	SBB (Sahibabad)	19220
14	GZB (Ghaziabad)	40830
15	KHURJA	5030
16	DEC (Delhi Cantt)	7480
17	DEE(Delhi Sarai Rohilla)	4800
18	GGN(Gurgaon)	13000
19	RE (Rewari)	13500
20	HPU (Hapur)	7200
21	BARAUT	13600
22	MEERUT CITY	12190
23	NDLS (New Delhi)	37960
24	NZM(Nizamuddin)	13700
25	DLI (Delhi Main)	36960
26	TKD (Tuglakabad)	8000
	Total	430750

* *Details of the abbreviation used for station codes used in the table are given on last page of this chapter*
Source: Study on Integrated Transportation Plan for NCR

The rail commuter services available at present (March 2008) in NCR are given in **Table 4.3**.

Table 4.3: Commuter Services for Different Stations in NCR

S.No	Section	Type of Trains	Length in KMs	No. of Trains (Commuters + Passenger) per day in each direction.
1. 1A	Delhi-Ghaziabad New Delhi-Ghaziabad	EMU, MEMU, Conventional	20 25	42
2	Delhi-Palwal	EMU, MEMU, Conventional	60	18
3	H.Nizamuddin-H.Nizamuddin (Ring Rail)	EMU	35	7
4.	Delhi-Rewari/Alwar	Conventional, DMU	82	8
5.	Delhi-Shakurbasti-Rohtak	EMU, Conventional	70	9
6.	Delhi-Subzimandi-Panipat	MEMU,EMU, Conventional	88	11
7.	Delhi-Ghaziabad-Meerut	Conventional, DMU	68	7
8.	Delhi-Shamli	Conventional, DMU	87	8
9	Ghaziabad-Hapur	Conventional	36	2
10	Ghaziabad-Khurja-Aligarh	EMU, MEMU	105	8

Source: Study on Integrated Transportation Plan for NCR, CES primary survey 2007

The sectional details and the existing volume of originating passenger traffic in the sections are given in **Annexure 4.1 to 4.12.**

4.7.1 Fare Structure

The 2nd class fare structure of Railway for suburban traffic is same as that for mainline passenger train fare and is as given in **Table 4.4**.

Table 4.4: Fare Structure of 2nd Class Sub-Urban Traffic

Distance (in Km)	Fare		Distance (in Km)	Fare	
	Single Journey (Rs.)	Monthly Season Ticket (Rs.)		Single Journey (Rs.)	MST (Rs.)
0 – 5	4.00	60.00	51 – 55	12.00	180.00
6 – 10	4.00	60.00	56 – 60	13.00	195.00
11 – 15	5.00	75.00	61 – 65	13.00	195.00
16 – 20	6.00	90.00	66 – 70	14.00	210.00
21 – 25	7.00	105.00	71 – 75	15.00	225.00
26 – 30	7.00	105.00	76 – 80	16.00	240.00
31 – 35	8.00	120.00	81 – 85	17.00	255.00
36 – 40	9.00	135.00	86 – 90	18.00	270.00
41 – 45	10.00	150.00	91 – 95	18.00	270.00
46 – 50	11.00	165.00	96 – 100	19.00	285.00

Source: Study on Integrated Transportation Plan for NCR, CES primary survey 2007

These passengers, however, enjoy certain privileges. They can get a Monthly Season Ticket (MST) by paying merely 15 single journey fare between the two stations they want to travel and can make unlimited number of trips in a month. The MST holders are permitted to travel on some express trains also. This helps the intercity passengers to cut down their journey time. There are a large number of instances when these commuter travellers do unauthorisedly travel in reserved compartments of long distance mail/express trains and create discomfort to other railway customers. They can also procure quarterly season tickets at a concessional tariff for a period of three months. It is significant to notice that during the last 10 years, there has not been any increase in the fare structure of second class ordinary passenger fare upto 100 Kms (barring one year where some rationalization was undertaken).

Most of the commuter traffic in NCR falls in this category. As most of the commuters (nearly 70%) travel on highly subsidized season tickets, they do not contribute much to revenues; hence administrative reluctance in creating infrastructure is visible in railways planning process.

4.8 Metro Rail in NCR

Expansion of DMRC in NCR

DMRC has completed the construction of about 65km route within NCT-Delhi and it is operational. Many sub sections of DMRC are sanctioned and are under execution and are likely to be ready for operation by 2010. They are:

Table 4.5: Metro Sections to be Operational by 2010

S. No.	Section	Length (kms)	No. of stations
1.	Central Secretariat - Qutab Minar	12.63	10
2.	Qutab Minar-Sushant Lok (Gurgaon)	14.92	9
3.	Indraprastha-New Ashok Nagar	8.07	5
4.	Delhi Border-Sec-32 (NOIDA)	7.0	6
5.	Vishwavidyalaya-Jahangirpuri	6.36	5
6.	Shahdara –Dilshad Garden	3.09	3
7.	Yamuna Bank-Anand Vihar ISBT	6.17	5
8	Kirtinagar-Mundka	18.46	16
9	Dwarka Sec 9 – 21	2.76	2
10	Central Secretariat – Badarpur	20.01	16
11	Airport Express Link	19.20	4
	TOTAL	**128.06**	**81**

Source: Study on Integrated Transportation Plan for NCR, CES primary survey 2007

Regional Plan-2021 for NCR proposed the extension of Delhi Metro Rail System to NCR towns. Accordingly, it has been extended to Noida and is proposed to be extended to Gurgaon, Ghaziabad, Faridabad, Bahadurgarh and Greater Noida by Delhi Metro Rail Corporation. The work on Gurgaon corridor is in progress.

These may have an impact on existing rail-borne commuter traffic considering their catchments area, travellers' preferences, and comparative tariff etc. They will also have an impact over RRTS.

4.9 Freight movement for and beyond Delhi and NCR (Railway Network)

Major goods terminals, along with traffic volume (in terms of train loads) both outward and inward handled in 2007-08, in Delhi and NCR are given in **Table 4.6.**

Table 4.6: Inward and Outward Freight Traffic at different Goods Terminal in NCR

SI. No.	Names	Commodities handled	Inward freight train rakes (2007-08)	Outward freight train rakes (2007-08)
1	Delhi Kishanganj	G.G.	249	159
2	Tughlakabad (ICD)+Freight Tr.	Container, Steel, Coal, Auto	4255	3175
3	Faridabad	Cement	336	32
4	Ghevra	LPG	253	-
5	Ghaziabad	Cement, Steel, G.G.	1324	-
6	Loni	Containers/Steel	458	488
7	Panipat	Clinker, Containers, Cement	102	105
8	Partapur (Meerut)	POL, Fertilizers	155	-
9	Shakur Basti	Cement, POL	958	-
10	Bahadurgarh	Steel	150	-

SI. No.	Names	Commodities handled	Inward freight train rakes (2007-08)	Outward freight train rakes (2007-08)
11	Ballabgarh	Steel, Containers	467	69
12	Guldhar	Steel	235	-
13	Meerut	Steel, Military	45	67
14	Rohtak	Cement, Fertilizer, G.G. Mfg.	125	60
15	Sonipat	Cement, Fertilizer	80	-
16	Delhi Cantt.	Cement, Military, Auto	158	-
17	Bijwasan	POL, Cement	177	-
18	Patli	Container	-	24
19	Subzi Mandi	G.G.	112	11
20	Adarash Nagar	G.G., Cement	342	62
21	NFL/PNP	Fertilizer, Coal, POL	405	189
22	Palwal	Cement, Automobile	93	-
23	Asaoti	POL	62	146
24	BHUL(Panipat)	Container	105	105
25	Dadri	Container	1136	1079
26	ICB (Panipat)	POL	143	1138
27	Garhi Harsaru	Container, Auto	196	212
28	Patel Nagar	GG	77	48
29	Jind	FG	49	45
30	Alwar	GG	132	40
31	Aligarh	Cement, Fertilizer, Coal	387	-
32	Asan	Coal	1936	-
33	Badli	GG	36	-
34	B P Power House	Coal	1099	-
35	EPH	Coal	201	-
36	Faridabad (New Town)	Coal, Steel	414	-
37	Nangloi	GG, Cement	20	-
38	Rewari	Cement, Fertilizer, Coal	118	-
39	Garhmukteshwar	Coal, GG	73	-
40	Hapur	Fertilizer, FG	63	-

Source: Study on Integrated Transportation Plan for NCR, CES primary survey 2007

Inward traffic for and beyond NCR destinations consist of Coal for power houses and industries, fertilizers, petroleum products, Cement, Iron & Steel, Containers loaded with imported traffic, automobiles and general goods etc. Onward traffic from the region mainly consists of food grains, POL, containers and general goods etc.

Many of freight trains received from Mughalsarai (Eastern India) and at Mathura (Central/Western India) pass through Delhi and NCR to their destinations in Haryana, Punjab and J&K. Many of these trains can be routed via Lucknow – Moradabad (B route) which is a shorter route and reduce congestion in Delhi / NCR Region. As doubling of the shorter route has been completed and electrification is also progressing between Mughalsarai and Moradabad, operational problems in running goods trains via the shorter route will be taken care in near future. Similarly, electrification of branch line from Khurja city to Meerut via Hapur and Saharanpur will ease the goods movement problem in Delhi and NCR. A new link of Meerut and Panipat will also offload some traffic destined to and from Panipat and beyond.

Some of the goods trains, however, can be run via Delhi/NCR during non-passenger hours (night and day) which are largely free from passenger operation. Freight trains which are interchanged at Palwal at present for further movement to Haryana, Punjab and J&K may get gradually diverted. (Via Alwar-Rewari or Ahmedabad-Rewari-Bhatinda Route) bypassing Delhi/NCR.

4.9.1 Movement of Freight Trains over alternate routes

With the coming up of route from Mathura to Alwar, an alternative route is already available for traffic from CR/WCR/WR for destinations on Rewari – Bhiwani – Hisar –Bhatinda and via routes and the return traffic from these areas for CR/WCR/WR. In fact, the investment made in the link should have given relief to the congested Delhi Area as well as the SPR (Southern Punjab – DLI-BTI Section) route. Though, the Mathura-Alwar-Bhatinda route is slightly longer than the Mathura-Tughlakabad – SPR route, the difference is not much. While the Mathura –Alwar – Bhatinda route is 497 km, the route via Tughlakabad-SPR is 453 kms – a difference of 44 Kms only. Moreover, stabling lines and diesel fuelling arrangements are already available at Mathura to facilitate traction change from electric to diesel. The Mathura – Alwar – Bhatinda line does require some upgradation of infrastructure enroute, particularly strengthening of track and signalling arrangements between Mathura-Alwar and Rewari-Bhatinda. This may involve marginal investment but will enable optimal utilization of the line.

The potential of this need to be explored fully. On a sample analysis of freight trains received from WCR/WR at Palwal shows that on an average at least 7 trains per day could be diverted over the Mathura-Alwar-Bathinda route including trains for destinations via Bhiwani-Hisar-Bhatinda. Similarly, in the return direction, Northern Railway can route all its freight trains from Punjab, including POL empties for BAD.

4.9.2 More Intensive Utilisation of GAL/DAL

Goods Avoiding Line (GAL) and Delhi Avoiding Line (DAL) were provided to give relief to the heavily congested Delhi Main route. The avowed intention was that all freight trains running across Delhi Area, viz., from SPR and DUK to via Ghaziabad and Tughlakabad and vice versa will run via GAL/DAL and Delhi Main route will cater more or less exclusively to passenger and other coaching trains and coaching yard movements with which it was already over-burdened. This was indeed the pattern of movement for a long time, and it yielded tremendous relief to the Delhi Main route.

Delhi Main and New Delhi have a very heavy schedule of coaching and yard shunting movements. It is, easy to , visualize that movement of freight trains through Delhi Main and New Delhi would be seriously affecting the fluidity of these shunting movements with repercussions on passenger train operation.

It is sometime argued that it will be advantageous to run at least a few trains via Delhi Main/NDLS strictly during non-peak periods on pre-determined economical paths, provided these do not involve detention at Naya Azadpur or Shakurbasti or Ghaziabad or Okhla. Even with a strict regime the advantage of this policy may prove illusory, as it does not take into account the possible repercussion on shunting movements at Delhi Main / New Delhi and on passenger train operation.

It is suggested that the discipline and routing freight trains via GAL/DAL only should be maintained, with the Delhi Main/ New Delhi route being used only in emergencies.

4.9.3 Catering Light Engine Movements in Delhi Area

It has been calculated that over 250 light engine movements take place everyday in Delhi Area, eating as much as 30% of the line capacity in some of the sections. A substantial number of these movements are inescapable. The coaching engine links require working a train up to Delhi and picking up another train from New Delhi/Nizamuddin or vice versa or a freight train gets dropped at a terminal (like Shakurbasti or BTPP) but does not get a return load or a loco has to go to shed for normal maintenance schedule and return after getting the necessary attention. However, with closer

scrutiny and better links light engine movement in Delhi Area needs to be brought down to lead to significant reduction in the over-congestion in Delhi Area.

4.9.4 Container Operations in NCR

The container traffic in India has grown at a CAGR of 15% since 1991, 2.5 times the average GDP in the same period. With the growth of external trade being faster than GDP, the similar trends are expected to continue in future as well. Similarly the possibilities of growth in container traffic in the Domestic sector are immense with continued strong trends in growth of GDP and the need of the industry for value added services. Logistics ports, large cargo hubs will be the requirement of the industry in very near future, as large retail chains generate the demand for professional managed cargo delivery systems

More emphasis will be required on providing total logistics and transport solutions to its customers in all the segments of the transport value chain in the Exim as well as Domestic segment. Possibilities are visible for strategic alliances, both for optimal utilization of infrastructure as well as expansion into other segments of the value chain.

The emergence of number of new ports viz. Mundra, Pipavav, Vizag, Tuticorin, Vallarpadam & some minor ports in Gujarat like Porbandar, Okha, Maroli etc. will have a large effect on the hinterland movement of containers in the country. Further, the hinterland penetration levels of the container traffic, which are very low at present, are also bound to see a many fold increase.

Business trends are now changing towards more and more door-to-door clearances. This need to provide single window clearance facilities to its customer's. Introduction of movement of Double Stack Container Trains between Kankakpura (Jaipur) & Pipavav and Kankakpura & Mundra is a milestone. Due to the presence of OHE wires and other fixed structures on P-way, double stack trains cannot be run elsewhere. These trains will provide cost-effective transportation between these ports and ICDs in Northern India.

For domestic business, given that consumption centres are vast distances away from production points, there will always be a big demand for transport. The setting up of high capacity consumer goods industries also indicates that the growth of non-bulk traffic is expected to be faster then that of bulk traffic, with the shares of both becoming decidedly better than the current 35-65 ratio. Significantly most of this non-bulk traffic is containerisable, and represents a huge market potential for container companies in the domestic sector.

The biggest ICD (Internal Container Depot) of CONCOR, catering to the export and import traffic of the country in containers, is located at Tughlakabad. CONCOR also has a facility to cater to the Domestic Container Traffic. In fact, container traffic has expanded at an explosive rate. In advanced countries, nearly 75% of the export/import cargo is containerized. In India, we are far below that level. Therefore, the projected growth in exports/imports coupled with the growing popularity of containers promise that the container traffic can continue to grow in geometric proportions. The ICD at Tughlakabad was initially designed for handling about 8000 TEUs per month, both inward and outward, with stacking capacity of 8,500 TEUs. To meet the growing needs of traffic, CONCOR has set up another ICD at Dadri in Greater Noida.

CONCOR's Rail served ICDs in NCR are, Ballabhgarh (without CFS), Dadri (Greater Noida), Rewari, Sonipat (without CFS), Tughlakabad (Delhi).

4.9.5 Entry of Private Container Companies

With larger participation of private sector in railways business, and infrastructure getting opened for their partnership, 15 container handling companies have been given licenses to operate international and domestic containers on Indian Railways. Most of them have applied for opening ICDs in NCR, putting infrastructure under newly created pressure. Preferred locations are Patli, Garhi Harsaru, Bijwasan (on Rewari-Delhi cantt. section), around Sonipat, Panipat (Panipat-Subzimandi section) and on Palwal - Tughlakabad section. Puncturing of vital routes will need to be tackled efficiently. This operation is likely to have its impact on regional commuter traffic and creation of infrastructure for it. With 20% to 25% annual growth in international container, and most of it being centralized around the national capital, along with emerging demands of logistic parks and railside warehouses, operational pressure in NCR is got to mount up.

4.10 Dedicated Freight Corridor

Economic liberalization policies of 1991 followed by information technology explosion have taken India to a new growth scenario. Indian Economy is poised to grow even further at an average of 8 to 10% in the next few years. Transport requirement in the country, being primarily a derived demand, is slated to increase with elasticity of 1.25 with GDP growth by 10 to 12% in the medium and long term range. Riding on the waves of economic success, Indian Railways has witnessed a dramatic turn around and unprecedented financial turnover in the last few years. The railway freight traffic has grown by 8 to 11%, which is projected to cross 1100 million tonnes by the end of XIth Five Year Plan.

4.10.1 Need for Dedicated Freight Corridor Project

The Indian Railways' quadrilateral linking the four metropolitan cities of Delhi, Mumbai, Chennai and Howrah, commonly known as the Golden Quadrilateral; and its two diagonals (Delhi-Chennai and Mumbai-Howrah), adding up to a total route length of 10,122 km carries more than 55% of revenue earning freight traffic of IR. The existing trunk routes of Howrah-Delhi on the Eastern Corridor and Mumbai-Delhi on the Western Corridor are highly saturated, line capacity utilization varying between 115% & 150%. The surging power needs requiring heavy coal movement, booming infrastructure construction and growing international trade has led to the conception of the Dedicated Freight Corridors along the Eastern and Western Routes**.** The DFC alignment is shown in **Figure 4.1.**

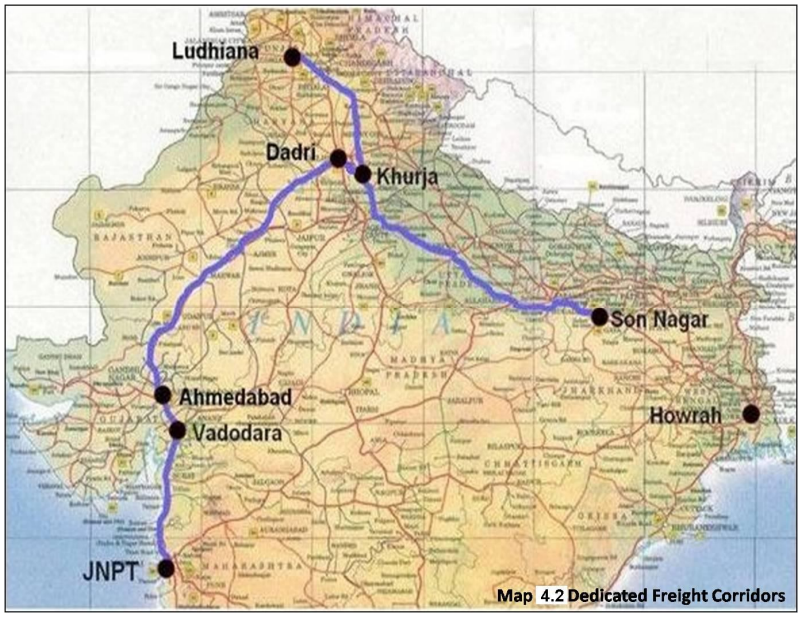


Figure 4.1: Dedicated Freight Corridor

4.10.2 The Eastern Corridor

The Eastern Corridor encompasses a double line electrified traction corridor from Sonnagar on the East Central Railway to Khurja on the North Central Railway (820 Km), Khurja to Dadri on NCR Double Line electrified corridor (46 Km) and Single electrified line from Khurja to Ludhiana (412 Km) on Northern Railway. The total length works out to 1279 Km. The alignment has to take a detour of Hathras, Aligarh, Hapur and Meerut in NCR. Since the origin and destinations of traffic do not necessarily fall on the DFC, a number of junction arrangements have been planned to transfer traffic from the existing Indian Railway corridor to the DFC and vice versa. The junctions on the Eastern Corridor in NCR are planned near Tundla, Daudkhan & Khurja etc.

The traffic on the Eastern Corridor mainly comprises of coal for the power plants in the northern region of U.P., Delhi, Haryana, Punjab and parts of Rajasthan from the Eastern coal fields, finished steel, food grains, cement, fertilizers, lime stone from Rajasthan to steel plants in the east and general goods. The total traffic in Up direction is projected to go up from 38 million tonnes in 2005-06 to 116 million tonnes in 2021-22. Similarly, in the Down direction, the traffic level has been projected to increase from 14 million tonnes in 2005-06 to 27 million tonnes in 2021-22. As a result, the incremental traffic works out to a whopping 82 million tonnes from the base year of 2005-06. The number of trains with 25 tonne axle load works out to a maximum of about 80 trains each way in Sonnagar-Mughalsarai section of the Eastern Corridor.

4.10.3 The Western Corridor

Western Corridor comprising of 1483 km of a double line diesel track from JNPT to Dadri via Vadodara-Ahmedabad-Palanpur-Phulera-Rewari. In addition a single line connection of 32km long from proposed Pirthala Junction Station (near Asaoti on Delhi-Mathura line) to Tughlakabad is also proposed to be provided. Alignment has been generally kept parallel to existing lines except provision of detour at Rewari. However, it is entirely on a new alignment from Rewari to Dadri. This new line portion of DFC is designed to cross-existing New Delhi - Mathura line near Asaoti railway station. For providing connection to Tughlakabad ICD, a single line parallel to the existing Delhi-Mathura line is proposed to be taken from Pirthala junction station (near Asaoti) to Tughlakabad. Moreover, the Western DFC is proposed to join Eastern corridor at DADRI. Junction Stations between the existing railway system and the Western DFC have been provided at Rewari and Pirthala Road.

The traffic on the Western Corridor mainly comprises of ISO containers from JNPT and Mumbai Port in Maharashtra and ports of Pipavav, Mundra and Kandla in Gujarat destined for ICDs located in northern India, especially at Tughlakabad, Dadri and Dandharikalan (Ludhiana). Besides Containers, other commodities moving on the Western DFC are POL, Fertilizers, Food grains, Salt, Coal, Iron & Steel and Cement. Further, owing to its faster growth as compared to other commodities, the share of container traffic is expected to progressively increase and reach a level of about 80% by 2021-22. The rail share of container traffic on this corridor is slated to increase from 0.69 million TEUs in 2005-06 to 6.2 million TEUs in 2021-22. The other commodities are projected to increase from 23 million tonnes in 2005-06 to 40 million tonnes in 2021-22. As a result, the maximum number of trains in the section is projected as 109 trains each way in Ajmer-Palanpur section.

It is also proposed to set up Logistics Parks at Mumbai area, particularly in the vicinity of Kalyan-Ulhasnagar or Vashi-Belapur in Navi Mumbai, Vapi in southern Gujarat, Ahmedabad area in Gujarat, Gandhidham in the Kutch region of Gujarat, Jaipur area in Rajasthan, NCR of Delhi. These locations have been selected on the basis that these have a good concentration of diverse industries and constitute major production/consumption centres. These are also well connected by rail and road systems for convenient movement in different directions. These parks are proposed to be developed on Public Private Partnership mode by creating a sub-SPV for the same. DFCCIL proposes to provide

rail connectivity to such parks and private players would be asked to develop and provide state of the art infrastructure as a common user facility.

DFC is likely to have serious impact on NCR's Railway network. Initial surveys having been completed, construction is likely to commence soon on these ambitious projects. DFC will not only impact rail freight operations, but will have its more than rippling effect on existing routes, as major share of freight traffic gets shifted to new alignments. Residual routes are expected to be available for better passenger operation. Full implications can be worked out after total business and operational plans are prepared by DFC and Indian Railways.

4.10.4 Shifting of Goods Sheds from NCTD

There is a fairly large numbers of freight booking points to service Delhi Area. Delhi Area covers a large tract of territory serving a big population. The area is not only thickly populated but also comprises a large number of big and small industries. It is, therefore, not inappropriate to have multiple freight booking points.

However, Delhi Kishanganj, Patel Nagar, Shakurbasti and Subzimandi goods sheds are located in the heart of the city. So are the most important coaching terminals like Delhi Main, New Delhi and Nizamuddin. But while the existence of passenger terminals near the city centre is a matter of great convenience to the population, the freight terminals should as far as possible be on the periphery of the city. It is from this angle that the possibility of closure of some the goods sheds needs consideration.

These stations deal primarily with block rakes, the inward traffic comprising paper, iron and salt while outward traffic consists of Wheat and pulses. If Delhi Kishanganj and Subzimandi goods sheds are closed, the inward block rakes can rationally get shifted to Nangloi and other stations. Some of the rake load traffic may also get shifted to Tughlakabad or Ghaziabad as per convenience of the trade.

4.11 Orbital Rail corridor network in NCR

The train movements in Delhi area are merged from 8 radials. Passenger and freight traffic on all the radials are on increasing trend. The growth of passenger and freight has already affected the day to day train operations and especially the average speed of all trains. The average speed has rapidly declined due to the frequent addition of new trains. The average speed of goods trains in Delhi area has reduced to 8 kmph and the average speed of passenger trains has also been reduced to less than 10 kmph.

The mixed running of goods trains, slow passenger trains, short distance commuter trains and long distance mail express trains and high speed Rajdhani and Shatabdi express trains also contribute to the deterioration in the speed of trains in Delhi area and its radial routes. As on date, over 500Mail/Express and passenger trains are being dealt with on the existing 4 coaching terminals in Delhi area. In addition, about 250 goods trains are being dealt in Delhi area daily.

The handling period of freight traffic in Delhi area is also squeezing day to day due to heavy imposition of civil restrictions on trucks movements. In some of the area the day time movement of heavy trucks has been restricted completely. Due to this reason the freight traffic at the terminals is suffering heavy detention in Delhi area.

A stage has reached where further augmentation of line capacity and throughput is not possible due to basic infrastructural constraints at the existing terminals. In the recent past, a lot of development took place to augment the through put and line capacity enhancement works in and around Delhi on

Northern Railway net work, in addition to introduction of DMRC network. But all these developments have not been able to meet the requisite passenger and freight demands. During the last five year plan period it was envisaged that capacity/infrastructure should be developed ahead of the expected demand. But despite heavy capital investment, there has not been significant increase in the speed of trains in Delhi area.

Regional Plan-2021 has proposed an Orbital Rail Corridor along the Western and Eastern Peripheral expressways. This was intended to divert through goods trains to avoid Delhi Area.