

TRANSPORT DEMAND FORECAST
& DEVELOPMENT
OF AN INTEGRATED
MULTI-MODAL PUBLIC TRANSPORT
NETWORK FOR NCT of DELHI

PROPOSED BRT SYSTEM NETWORK

presentation by
RITES Ltd

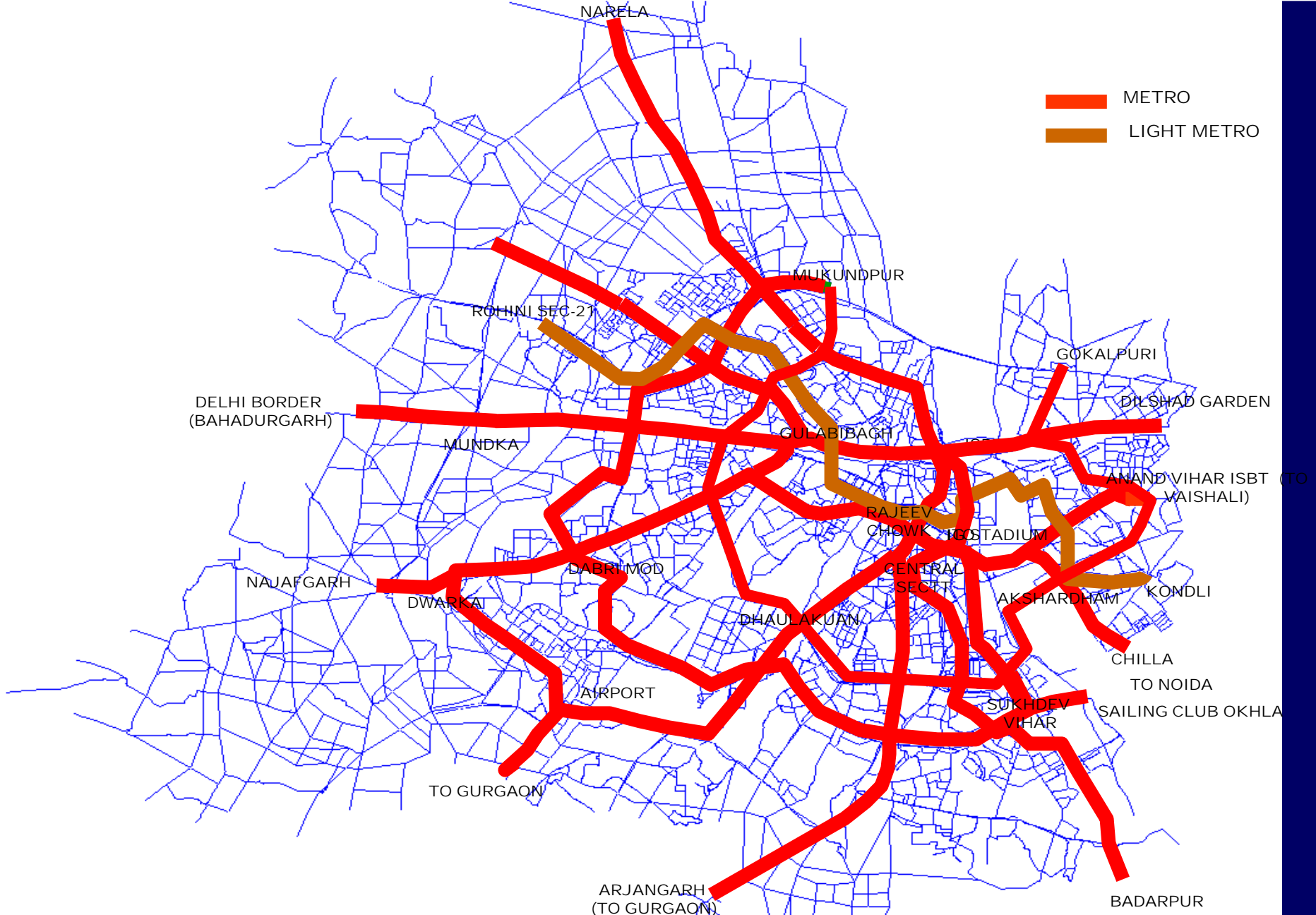
March 04, 2011

DELHI METRO AND BRT CORRIDORS IN PHASE I AND II (BUSINESS AS USUAL SCENARIO)

S.No	Corridor	Length in Phase I and II (km)
Metro		
1	Dilshad Garden to Rithala	25.1
2	Jehangirpuri to Arjangerh (to Gurgaon)	37.3
3	Anand Vihar ISBT(to Vaishali)/New Ashok Nagar (to NOIDA) to Dwarka Sector -21	48.8
4	Central Sectt to Badarpur	20.0
5	Kirti Nagar/Inderlok to Mundka	19.3
6	New Delhi RS to IGI Airport - Dwarka Sector 21	22.7
	Total	173.2
BRT		
	Delhi Gate to Ambedkar Nagar	14.5
	Grand Total	187.7

PROPOSED INTEGRATED PUBLIC TRANSPORT NETWORK- METRO/LIGHT METRO SYSTEM

S.No	System Type	Corridor	Max PHPDT (2021)	Length (Km)
1	Metro			
<i>a</i>	<i>Extension of Metro Corridors</i>			
	I.	Rithala to Barwala	5990	6.4
	II.	Jhangirpuri to Narela	28447	15.3
	III.	Dwarka Mor to Najafgarh	5780	2.7
	IV.	Dwarka Sector 21 to Delhi Border (to be extended to Gurgaon)	9574	3.8
	V.	Central Secretariat to ISBT Kashmere Gate	11988	7.5
	VI.	Mundka to Delhi Border (to be extended to Bahadurgarh)	13066	6.3
			Total (a)	42
<i>b</i>	<i>New Metro Corridors</i>			
	I.	Mukundpur to Gokalpuri (via Ring Road, NH24 bypass, Swami Dayanand Marg,)	21055	54.24
	II.	Sailing Club Okhla to Mukundpur (along Outer Ring Road,)	17771	52.1
	III.	ITO to Sukhdev vihar	5541	8.6
			Total (b)	114.9
			Total Metro Length (a+b)	156.9
<i>c</i>	<i>Light Metro</i>			
	I.	Kondli to Delhi Gate to Rohini Sec - 21	21098	40.3
			Total	40.3
			Total (a+b+c)	197.2



█ METRO
█ LIGHT METRO

PROPOSED METRO AND LIGHT METRO SYSTEM

ORIGINALLY PROPOSED INTEGRATED PUBLIC TRANSPORT NETWORK- BRT SYSTEM

S.No	System Type	Corridor	Length (Km)
1	BRT		
	a	Extension of BRT Corridor	
		Delhi Gate to ISBT Kashmere Gate	4.0
			Total (a)
			4.0
	b	New BRT Corridors	
		Karawal Nagar to Chilla	18.8
		Kondli to Gokalpuri to Mukandpur	25.4
		Gulabi Bagh to Bakhtawarpur	18.8
		ISBT Kashmere Gate to Kapeshera Border	26.8
		Central Secretariat to Vasant Kunj	12.5
		Badarpur to Airport	24.9
		Dhaura Kuan to Dabri More to Chawala	20.3
		I.G Stadium to Mehrauli	15
		Rajokri to Bijwasan to Chawala to Gopal Nagar	23.2
		Najafgarh to Narela	34.4
		Mundka to Putkhurd	18.9
		Khaira to Najafgarh to Ibrahimpur	42.3
		Khanjawala to Bawana	21.1
		Rajokri to Badarpur	26.5
		Rohini Sector 21 to Kanjhawala	7.0
		Tilak Nagar to Kirbi Palace	4.3
			Total (b)
			340.2
			Total BRT Length (a+b)
			344.2
			Total Length (Km) (Metro +Light Metro + BRT)
			541.4



ORIGINALLY PROPOSED INTEGRATED
PUBLIC TRANSPORT NETWORK
- BRT SYSTEM

SCENARIO WITH HIGH PUBLIC BUS SPEED AND PARKING CHARGES

A SCENARIO WITH HIGH PARKING CHARGES AND INCREASED PUBLIC BUS SPEED AS SUGGESTED BY UTTIPEC DEVELOPED FOR THE YEAR 2021:

- PUBLIC BUS SPEED OF 25KMPH
- HIGH to VERY HIGH PARKING CHARGES OF IN CONNAUGHT PLACE, CHANDNI CHOWK AREAS AND OTHER WORK/COMMERCIAL CENTRES
- TRANSPORT DEMAND MODEL RUN FOR THIS SCENARIO

MODAL SPLIT FOR VARIOUS SCENARIOS, 2021

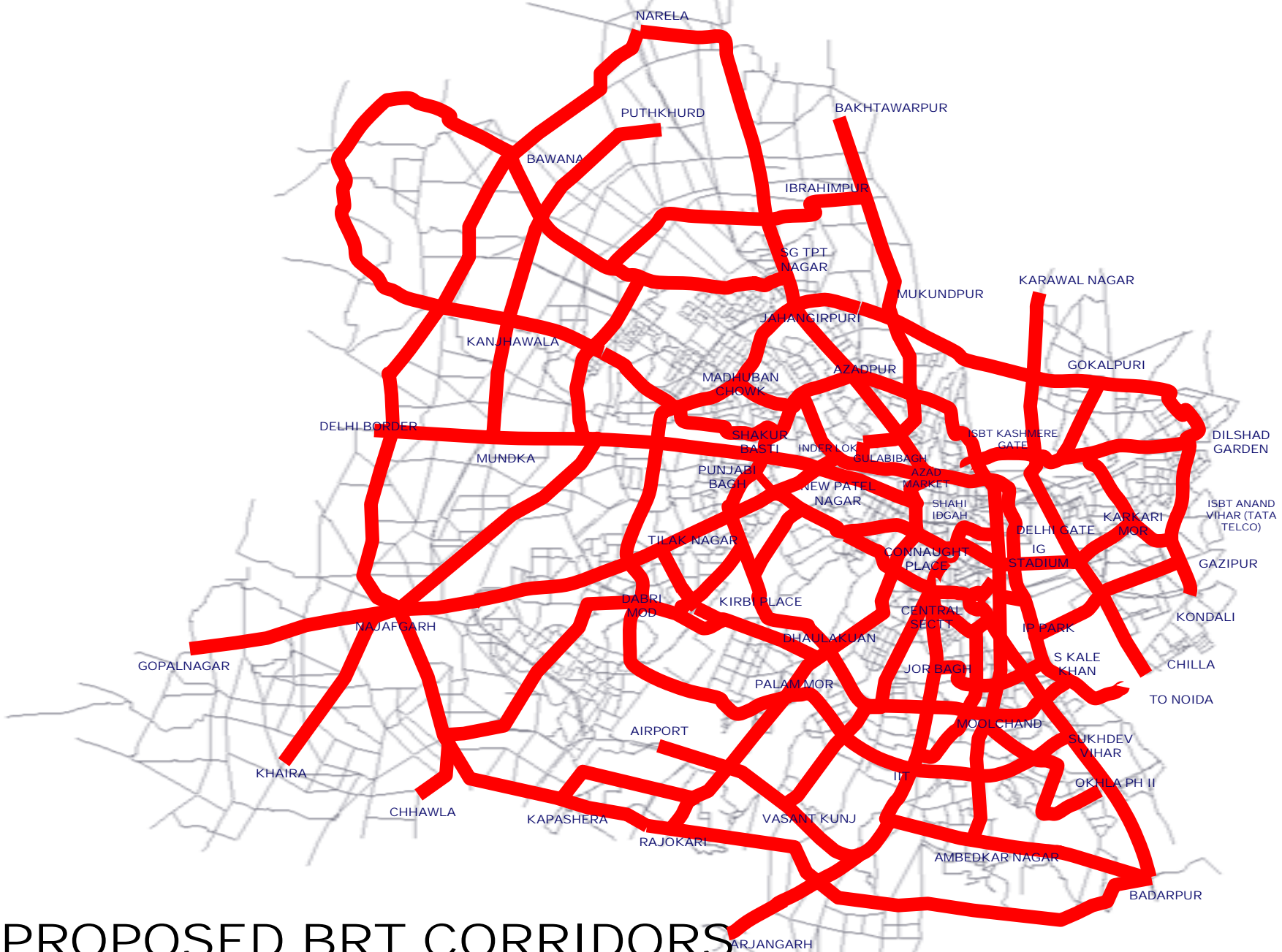
MODE	Base 2007		Originally Proposed, 2021		Originally Proposed 2021 + Bus Speed 25Kmph + Higher Parking Charges	
	Daily Trips (Lakh)	MS (%)	Daily Trips (Lakh)	MS(%)	Daily Trips (Lakh)	MS(%)
CAR	18.06	15.5	29.83	17.1	25.49	14.6
2W	29.76	27.1	34.90	20.0	15.09	8.7
AUTO	5.18	4.4	5.49	3.2	7.19	4.1
Public Transport	63.69	53.0	104.09	59.7	126.55	72.6
TOTAL TRIPS	116.71	100.0	174.32	100.0	174.32	100.0

TRAFFIC ON VARIOUS CORRIDORS – BRT SYSTEM, 2021

S no.	Corridor	MAX. PHPDT 2021	
		ORIGINALLY PROPOSED	With Higher Bus SPEED +PARKING CHARGES
1	ISBT Kashmere Gate to Delhi Gate (Delhi Gate to Ambedkar Nagar in Phase II)	10168	13683
2	Karawal Nagar to Chilla	8942	9107
3	Dilshad Garden to ISBT Kashmere Gate	6619	13636
4	Narela to Azadpur	6684	12758
5	ISBT Anand Vihar (Tata Telco) to Connaught Place	5268	14918
6	ISBT Kasmere Gate to Shahi Idgah to Mundka to Delhi Border	9819	15239
7	Karkari Mor to Gokalpuri	9149	14412
8	Mukundpur to Palam Mor	6413	14153
9	Sarai Kale Khan to Jor Bagh	4423	10254
10	Badarpur to IGI Airport	10205	10543
11	Mundka to Puthkhurd	6820	8608
12	Dhaura Kuan to Chhawala	6149	10942
13	Mukandpur to Kondli	14842	15408
14	Kirbi Place to Tilak Nagar	2708	3637
15	National Stadium to Gazipur	1620	6086
16	Azad Market to Madhuban Chowk	8333	14977
17	Delhi Gate to Central Secretariat	11271	15179
18	Central Secretariat to IIT Gate	4046	9970
19	Inderlok to Najafgarh	9451	14153
20	Central Secretariat to Badarpur	6971	12953

TRAFFIC ON VARIOUS CORRIDORS – BRT SYSTEM, 2021

S no.	Corridor	MAX. PHPDT 2021	
		ORIGINALLY PRPOSED	With Higher Bus SPEED +PARKING CHARGES
21	Moolchand to Nehru Place to Okhla IA Ph II	6981	10122
22	Azadur to Moolchand (West Ring Road)	8448	13563
23	Moolchand to Azadpur (East Ring Road)	10121	14112
24	Palam Mor to Sukhdev Vihar/Noida	3570	7556
25	SG Transport Nagar to Bawana	6158	7001
26	New Patel Nagar to Sagarpur	5549	8902
27	Punjabi Bagh to Central Secretariat/ Connaught Place	6682	14153
28	Azad Market to Azadpur	6066	9567
29	Shakur Basti to Khanjawala	9820	13563
30	IG Stadium to Arjangarh	5269	10470
31	Central Secretariat To Vasant Kunj	4046	8256
32	Shahi Idgah to Kapashera Border/ Rajokri Border	7358	15612
33	Rajokri to Gopal Nagar	9336	13719
34	Khaira to Ibrahimpur	10076	13805
35	Khanjawala to Bawana	6820	8608
36	Bakhtawarpur to Gulabi Bagh	7513	8158
37	Najafgarh to Narela	9336	13719
38	Rajokri to Badarpur	6971	8864



PROPOSED BRT CORRIDORS
 (WITH SCENARIO OF HIGH BUS SPEED AND
 PARKING CHARGES)

PROPOSED BRT CORRIDORS AND THEIR PHASING

S no.	Corridor	Corridor Description	Ph III Length (km)	Ph IV Length (km)
1	ISBT Kashmere Gate to Delhi Gate (14.5 km - Delhi Gate to Ambedkar Nagar in Phase II)	ISBT Kashmere Gate - Netaji Subash Marg - Delhi Gate - Bhadurshah Jafar Marg - Mathura Road - Lala Lajpat Rai Marg - Josip Broz Tito Marg - Lal Bahadur Shastri Marg - Dr B.R Ambedkar Marg - Ambedkar Nagar	4.0	
2	Karawal Nagar to Chilla	Karawal Nagar - Pushta Rd - Yamuna Marginal Bund - Geeta Colony Rd - Noida Link Rd – Chilla	18.8	
3	Dilshad Garden to ISBT Kashmere Gate	Along NH 24 (GT Road), then takes Lala Hardev Sahai road and ends at Kashmere Gate.	8	
4	Narela to Azadpur	Narela – NH 1 – Sanjay Gandhi Transport Nagar- Azadpur	15	
5	ISBT Anand Vihar (Tata Telco) to Connaught Place	Tata Telco crossing along karkari Mor Road via Vikas Marg, Indraprastha Marg, DDU Marg, Vivekanand Marg below the Minto Bridge and ends at Connaught Place.	11	
6	ISBT Kashmere Gate to Shahi Idgah to Mundka to Delhi Border	ISBT Kashmere Gate to Pulbangash along Lala Hardev Sahai Road - Rani Jhansi Road upto Shahi Idgah. From Shahi Idgah it follows New Rohtak Road, Guru Gobind Singh Marg and ends at Delhi Border near Mundka.	26.5	
7	Karkari Mor to Gokalpuri	Karkari Mor crossing - Swami Dayanand Marg (Road no. 57), then it takes left at GT Road NH 24. From GT road NH24, it takes right to Main road Jaffrabad from Seelampur Metro Station and goes upto Gokalpuri.	8	
8	Mukundpur to Palam Mor	Mukundpur – Outer Ring Road – Janakpuri District Center Road – Shaheed Balwant Singh Solanki Marg – Palam Road – Palam Mor	29	
9	Sarai Kale Khan to Jor Bagh	Elevated road on Barapulla Nalah, Jawahar Lal Nehru Stadium, Fourth Avenue Road, Jor Bagh Road and ends at Jor Bagh.	6	

PROPOSED BRT CORRIDORS AND THEIR PHASING

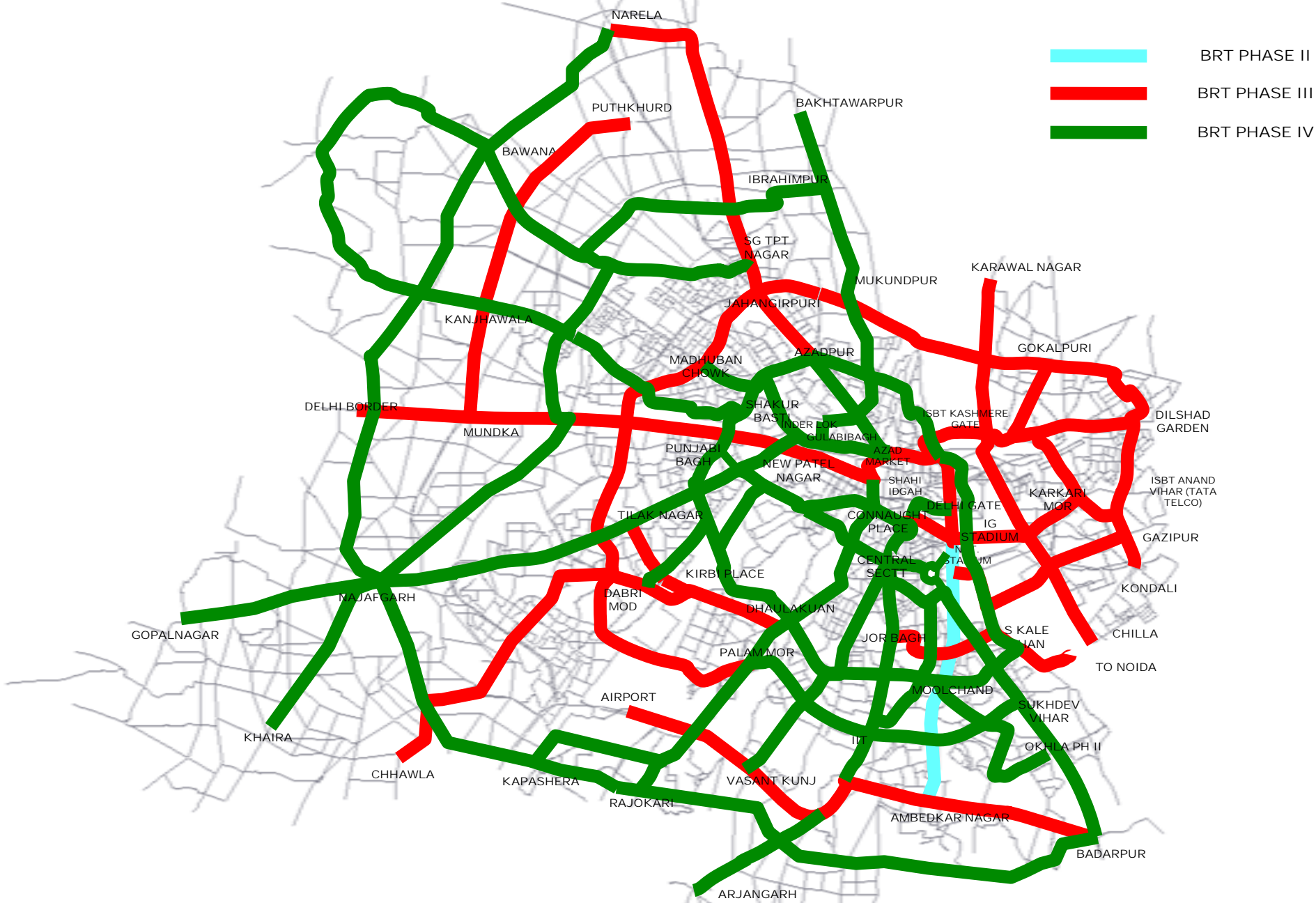
S no.	Corridor	Corridor Description	Ph III Length (km)	Ph IV Length (km)
10	Badarpur to IGI Airport	Badarpur - Mehrauli Badarpur Rd - Meharuli - Anuvarat Marg - M.G Rd - Vasant Kunj Marg - Abdul Gafar Khan Marg - Mahipalpur Mehrauli Road - Crossing NH - 8 - IGI Airport	24.9	
11	Mundka to Puthkhurd	Mundaka - Rani Khera Kalan Marg - Madanpur Dabas Karala Marg - Putkhurd	18.9	
12	Dhaura Kuan to Chhawala	Dhaura Kuan - Cariappa Marg - Pankha Rd - Bhagwan Mahavir Marg -Dabri More - Along Palam Drain - Road no. 224 - Chawala	20.3	
13	Mukandpur to Kondli	Kondli - Gazipur Rd along Gazipur Drain - Rd no. 56 - Aradhak Marg - Seema Puri Rd - Rd no. 68 - Rd no. 69 - Mangal Pandey Marg - Rd no. 59 - Wazirabad Rd - Wazirabad Barrage - NH - 1 Bypass (Outer Ring Rd) - Dr K.B Hedegwar Marg - Mukundpur	25.4	
14	Kirbi Place to Tilak Nagar	Tilak Nagar along Jail Road via Hari Nagar – Tihar Jail – Lajwanti Garden – Nagal Raya – Nangal – Kirbi Place	4.3	
15	National Stadium to Gazipur	Bhairon Marg and moves on along Ring Road then it follows Mir Bhoj Gujar samrat Marg NH24 Bypass and ends at Gazipur chowk at Road no.56.	13.2	
		Total Length (A)	233.3	
16	Azad Market to Madhuban Chowk	Azad Market -Kalidas Marg and Road no. 40 to Pratap Nagar, Shastri Nagar, and then follows Vir Banda Bairagi Marg - Maharaja Nahar Singh Marg passing from Kanhaya Nagar, Keshav Puram, Netaji Subhash Place then goes to Kohat Enclave, Pitampura along Sheed Jagat Narayan upto Madhuban Chowk		9.5
17	Delhi Gate to Central Secretariat	Delhi Gate takes Jawaharlal Nehru Marg/ Asaf Ali road, and then it takes to to , Sansad Marg and ends at Central Secretariat.		6
18	Central Secretariat to IIT Gate	Central Secretariat then moves along Krishna Menon Marg, , Aurbindo Marg via AIIMS and ends at IIT on Outer Ring Road.		8
19	Inderlok to Najafgarh	Starts at Inderlok moves along Road no.40, Shivaji Marg, and ends at Najafgarh.		18.5

PROPOSED BRT CORRIDORS AND THEIR PHASING

S no.	Corridor	Corridor Description	Ph III Length (km)	Ph IV Length (km)
20	Central Secretariat to Badarpur	Starts from Central Secretariat and follows Rafi Marg, Dr Rajender Prasad Marg, India Gate, Dr Zakhir Hussain Marg, and ends at Badarpur.		18
21	Moolchand to Nehru Place to Okhla IA Ph II	Starts from Moolchand follows Josip Broz Tito Marg, Lala Lajpat Rai Path, , Guru Ravi Das Marg, Okhla Estate Marg and ends at Okhla Industrial Area Phase II.		9
22	Azadpur to Moolchand (West Ring Road)	Starts at Azadpur follows Western Ring Road and ends at Moolchand.		25
23	Moolchand to Azadpur (East Ring Road)	Starts at Moolchand follows Eastern Ring Road (Mahatma Gandhi Marg) and ends at Azadpur.		22
24	Palam Mor to Sukhdev Vihar/Noida	Starts from Palam Mor at NH8 follows Rao Tula Ram Marg, Olof Palme Marg, Gamal Abdel Naseer Marg, Outer Ring Road, Ho Chi Minh Marg, Bhakti Vedanta Marg and ends at Sukhdev Vihar on Mathura Road.		16
25	SG Transport Nagar to Bawana	Starts from Sanjay Gandhi Transport Nagar from NH1 follows Auchandi-Bawana Road upto Bawana.		13
26	New Patel Nagar to Sagarpur	Starts from New Patel Nagar and follows Ch. Girdhari Lal Marg, Ring Road at Naraina, Satguru Ram Singh Marg and ends at Sagarpur on Pankha Road.		8
27	Punjabi Bagh to Central Secretariat/ Connaught Place	Starts from Punjabi Bagh moves along Patel Road and then follows Shankar Road, Park Street and Talkatora Road and Red Cross Road upto Central Secretariat and Sadhu Vasvani Marg, Link Road and Panchkunia Road upto Connaught Place		15
28	Azad Market to Azadpur	Starts from Azad Market and follows GT Road NH 1 upto Azadpur.		6
29	Shakur Basti to Khanjawala	moves along Guru Harikishan Marg, Captain Satish Marg, crosses Outer Ring Road near Jaipur Golden Hospital, and follows Budh Vihar Road, Qutabgarh Road, Khanjawala Road and ends at Khanjawala.		16
30	IG Stadium to Arjangarh	I.G Stadium - Indraprastha Marg - Bhadurshah Zafar Marg - Tilak Marg - India Gate - Dr Zakhir Husain Marg - Subramaniam Bharti Marg - Maharishi Raman Marg - Bhasham Pitahma Marg - Khel Gaon Marg - August Kranti Marg - Ch Dilip Singh Marg - Aurbindo Marg - Mehrauli Gurgaon Road		25.5

PROPOSED BRT CORRIDORS AND THEIR PHASING

S no.	Corridor	Corridor Description	Ph III Length (km)	Ph IV Length (km)
31	Central Secretariat To Vasant Kunj	Rafi Ahmed Kidwai Marg - Kamraj Marg - Duplex Rd - Rajaji Marg - Race Course Rd - Pancheel Marg - Vinay Marg - Africa Avenue - Ring Road - Vivekanand Marg - Nelson Mandela Marg - Vasant Kunj		12.5
32	Shahi Idgah to Kapashera Border/ Rajokari Border	The corridor starts from Rani Jhansi Road it follows Panchkunia Road - Mandir Marg - Park Street - Talkatora Stadium along Willingdon Crecent - Sardar Patel Marg - Dhaula Kuan - NH - 8 upto Shiv Murti - Uppal Orchid - Samalkha Road and ends at Kapeshera Border.		26
33	Rajokari to Gopal Nagar	Along Mehrauli Nazafgarh Road		23.2
34	Khaira to Ibrahimpur	Nazafgarh Road - Kirari Road - Gali no. 4 - Mangal Bazar Road - Sukh Bazar Road - Begampur Main Road - Begampur Barwala Road - Bawana Auchindi Road - Railway Road - Ibrahimpur		42.3
35	Kanjhawala to Bawana	Kanjhawala - Jonti - Punjab Khor - Qutab Garh - Mungesh Pur Village - Auchandi - Daryapur - Bawana		21.1
36	Bakhtawarpur to Gulabi Bagh	Gulabi Bagh - Nagia Park -Inderchandra Shastri Marg - Stayawati Marg - Guru Teg Bahadur Rd - Vijay Nagar Rd - Kingsway Camp Rd - Lok Marg - Bhai Parmanad Marg - Shanti Swaroop Tyagi Marg - Sant Nagar Marg - Bakhtawarpur		18.8
37	Najafgarh to Narela	Najafgarh - Proposed Master Plan Rd 2021 to NH 10 (Ghera Village) - MDR 138 - Kanjhawala - MDR 138 - Bawana Road - Narela		34.7
38	Rajokari to Badarpur	Rajokri - New Master Road - 2021 - Kant Enclave - Badarpur		26.5
	Total Length (B)			420.6
	Grand Total (A+B)		653.9	
	Total BRT Network in all Phases		668.4	



PHASING OF BRT CORRIDORS IN DELHI

ISSUES/THOUGHTS

- Equity- Buses to carry about 50% of total motorised transport demand, while cars about 15%.
- 'YOU ARE NOT IN TRAFFIC JAM, YOU ARE THE TRAFFIC JAM'
- So priority for buses desirable.
- Many measures needs to be adopted to boost modal split in favour of PT- supply, demand management and quality measures

ISSUES/THOUGHTS

- The proposed BRT system is not merely bus system but also includes segregated facilities for pedestrians, NMT and other motor vehicles. The proposed corridors may be known as *INTEGRATED TRANSPORT CORRIDORS*.
- Many variants of BRT to be adopted
 - 1 Lane for BRT for each side
 - 2 Lanes for BRT each side
 - BRT Lanes on one side of road only
 - Elevated BRT along roads having limited ROW
 - Close-cum-open BRT systems

ISSUES/THOUGHTS

- Special treatment at junctions to achieve BRT speed of 25 kmph
 - bus priority at minor junctions
 - grade separation at major junctions (with higher gradients)
- Traffic management plan for the influence area of the BRT corridors to be prepared
 - Closing of junctions
 - Ban on turning movements
 - Junction improvements

ISSUES/THOUGHTS

- Higher parking charges in Delhi, city wide parking plan. Later other car restraint measures
- Supply of high quality urban buses to be increased substantially. Otherwise BRT loses its attractiveness
- City-wide network can also be used for crisis management services (fire tenders, ambulances, special events etc)
- Segregated lanes for different vehicles & pedestrians to inculcate better traffic discipline in road users
- The proposed corridors to provide city wide high quality road network

THANKS