



**DMRC**

# Presentation on Delhi Metro

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# Delhi Metro Rail Corporation (DMRC)

- Set up in May'95 under the Indian Co. Act.
- A joint venture between the GOI and the GNCTDelhi, with equal equity.
- DMRC has the responsibility for construction and operation of Delhi Metro.
- A Master Plan had been drawn up for Delhi Metro expansion, consisting of 12 lines, covering 420 kms. to be completed by 2021 in four Phases.

## **DMRC – Progress/ Achievements so far**

- **Phase-I – 65 kms. Cost Rs.10,571 crores. Works started on Phase I on 1<sup>st</sup> October, 1998 and completed in December, 2005 in 7 years and 3 months (2 years & 9 months ahead of schedule)**
- **Phase-II including Civil works of Airport Line & ext. to NCR – 125 kms. Cost Rs.23,810 crores. Started in 2006, double the length, completed in about half the period taken for Phase-I, and three months ahead of schedule.**
- **Phase-III – 103 km (41 km U/G). Cost Rs. 35,000 crores + 14 kms to NCR (Faridabad) cost Rs.2,494 crores. Sanctioned in Sept 11, to be completed by 2016. Work Started.**

# Operation Highlights

- **DMRC operates 167 km with 137 stations excluding Airport Line.**
- **About 2800 train trips a day – with 200 train sets (1000 Coaches) on 6 lines.**
- **Each train used to consist of 4 coaches. With the increase in commuters, the trains are progressively being lengthened to 6 coaches and finally to 8 coaches. We have already near about 100 six car sets.**
- **Average Ridership – about 2 million passengers per day.**
- **Frequency during peak hours – 2 m 40 sec on 2 out of 6 lines (on other lines 3 to 5 mts).**

# Operation Highlights

- The system is fully *Barrier Free* for Physically challenged.
- The trains now operate from 6.00 AM to 11 PM.
- DMRC has introduced feeder bus short loop services to help the commuters.
- Punctuality measured with a least count of 60 Sec. and the punctuality percentage has been above 99%.
- Fare : From Rs.8/- to Rs. 30/-.

## **OPERATIONAL RESULTS:**

The income & expenditure profile from all sources during the year 2011-12:  
(Rs. in crores)

Item No.	Income	2011-12 (Budgeted)	2011-12 (Actual)	2010-11 (Actual)
1	Operations	1,131.5	1,281.5	938.7
2	Real Estate	350.0	57.3	98.4
3	Consultancy	38.6	25.5	21.4
4	External Project Work	942.0	585.2	384.4
5	Others	225.6	298.2	165.1
	<b>Total Income</b>	<b>2,687.7</b>	<b>2,247.7</b>	<b>1,608.0</b>

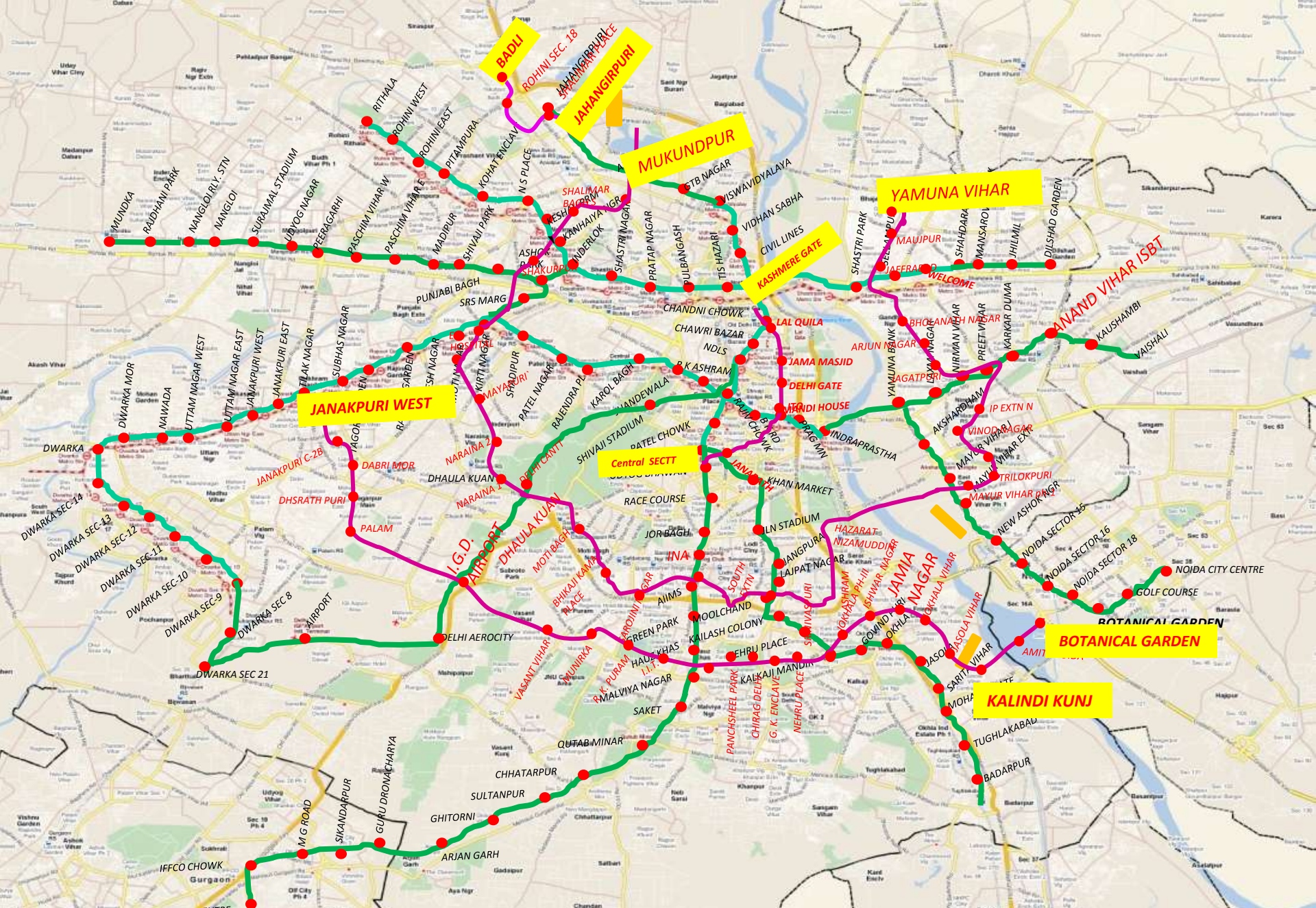
S. No.	Expenditure	2011-12 (Budgeted)	2011-12 (Actual)	2010-11 (Actual)
1	Total including Interest & Depreciation	2789.3 (101.6)	2315.9 (68.1)	1620.7 (12.7)
2	O&M excluding Interest & Depreciation	681.5	627.9	488.9

**Operating Ratio excluding Interest & Depreciation about 50% (Bracket<sup>6</sup> Loss)**

## **Benefits of Metro (CRRI Study)**

<b>Descriptors</b>	<b>Phase –I 2007</b>	<b>Phase –II 2011</b>
No. of vehicles <b>off the road</b> daily	16,895	1,17,249
Annual <b>reduction</b> in fuel consumption (t)	24,691	1,06,493
Annual <b>reduction</b> in pollutants (t)	31,520	1,79,613
<b>Savings</b> in time per trip (minutes)	31	28
Annual <b>reduction</b> in fatal accidents (No.)	21	111
Annual <b>reduction</b> in all accidents (No.)	93	591





**PHASE –I + PHASE –II + Phase-III : 65.1Km +124.9 + 103.05 = 293.05 Km**



## **1. PRESENT STATUS OF PHASE – III & Extension to NCR**

<b>1.1</b>	<b>Project</b>	<b>Sanction Date</b>	<b>Cost in crs</b>
	<b>i) Delhi MRTS Phase -III (103.05 km)</b>	<b>26th Sept. 2011</b>	<b>Rs.35,242</b>
	<b>ii) Faridabad Extension (13.875 km)</b>	<b>13th Sept. 2011</b>	<b>Rs. 2,494</b>

### **1.2 Target Completion Dates:**

<b>(i) Delhi MRTS Phase -III (103.05 Km)</b>	<b>March 2016</b>
<b>(ii) Faridabad Extension (13.875 km)</b>	<b>Dec 2014</b>

**1.3 Overall Physical Progress so far** **7.2%**

## 1.4 Financial Progress

Rs. crores

(i)	<b>Cumulative expenditure since inception &amp; upto 31<sup>st</sup> March 2012</b>	<b>144.6</b>
(ii)	<b>Outlay Current Year 2012-13</b>	<b>4,118.2</b>
(iii)	<b>Cumulative expenditure in the current year upto 31 May 2012</b>	<b>135.3</b>
(iv)	<b>Cumulative Expenditure since inception up to 31 May 2012</b>	<b>279.9</b>

- *Expenditure Figure is on cash basis.*
- *Expenditure figures include funds for land acquisition with L&B Department on utilization basis.*

# **10 years O&M – Lessons & Way forward for Phase-III**

- **Reliability Benchmarks to be higher for Rolling Stock, Signaling, Traction and Track.**
  - **Rolling Stock** –Higher mean time between failures
  - **Signaling** –CBTC
  - **Traction** –25 kV ac with improved fittings and rigid OCS
  - **Track** –main line desirable minimum radius 300 m (absolute minimum 200 m)
  - **Yards** –desirable minimum 200 m (absolute minimum 190 m).
- **Axle load 17 tonnes.**
- **Width of coach 3.2 m on Standard Gauge with 6 coach formation.**
- **67% powered axles for higher acceleration and regenerative benefits.**  
**Acceleration –  $1\text{m/s}^2$  upto 35 kmph, deceleration –  $1\text{m/s}^2$  service brake**
  - **Braking characteristics (regeneration) specified to maximize regeneration.**
- **Front Evacuation**
- **Automatic couplers between units.**

# **10 years O&M – Lessons & Way forward for Phase-III**

- **Items requiring frequent replacement will be specified by DMRC rather than by the tenderers.**
- **Procurement to follow JICA/ CVC guidelines.**
- **Selection of vendors to be done with utmost care keeping in view requirement of very high reliability.**
- **Level of indigenization – Development to keep in view safety, reliability, maintainability, availability and commercial issues, prototype to be thoroughly tried.**
- **Software development to be initiated for traction and traction simulation, ATS, SCADA, PA, PIDS & AFC.**
- **Allocation of 10 spot frequencies (voice communication TETRA) in 400 MHz band by Wireless Planning Commission (WPC) for every 100 kms of metro in a city – Policy to be evolved with WPC for expansion of metro network in a city.**



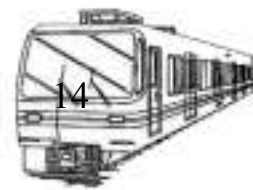
In addition a few amendments in O &M Act are being proposed for ensuring a convenience to passengers and smooth operation of train services.

A large, semi-transparent circular image serves as the background for the central text. It depicts a construction site for a metro station, showing a large concrete pillar, a crane, and a network of steel reinforcement bars (rebar) for a floor slab.

# Thank You

***DMRC Ltd.***

*Metro Bhawan,  
Fire Brigade Lane,  
Barakhamba Road,  
New Delhi - 110 003.*



## 2. ACQUISITION OF LAND & RESETTLEMENT

Requirement of 16.18 Hac Private Land & 193.74 Hac Govt. Land

S.No.	Corridor	Department	Permanent Land		
			Area requisition made (in Ha)	Area taken Over (in Ha)	Balance (In Ha)
1	Jahagir Puri- Badli	Total	17.94	0.25	17.69
		Govt	5.77	0.25	5.52
		Private	12.17	0.00	12.17
2	Central Secretariate- Kashmiri Gate	Total	2.67	1.28	1.39
		Govt	2.63	1.28	1.35
		Private	0.04	0.00	0.04
3	Janakpuri west – KalindiKunj	Total	57.06	0.30	56.76
		Govt.	53.47	0.30	53.17
		Private	3.59	0.00	3.59
4	Mukundpur – Yamuna Vihar	Total	138.63	4.55	134.08
		Govt.	138.25	4.55	133.70
		Private	0.38	0.00	0.38
5	Faridabad Extension	Total	0.00	0.00	0.00
		Govt.	0.00	0.00	0.00
		Private	0.00	0.00	0.00
Grand Total		Total	216.30	6.38	209.92
		Govt.	200.12	6.38	193.74
		Private	16.18	0.00	16.18

### 3.POSITION OF FUNDS (Rs./CRORE)

a) Equity			
Equity	Provision due in 2012-13 as per DMRC	Funds Released (2012-13)	Remarks
Phase - III			
GOI	1,098.155	-	
GNCTD	749.700	-	
Total	1,847.855	-	
b) Subordinate Debt for Land			
Subordinate Debt for Land	Provision due in 2012-13 as per DMRC	Funds Released (2012-13)	Remarks
Phase - III			
GOI	216.00	-	
GNCTD	216.00	-	
Total	432.00	-	
c) Subordinate Debt for Central Taxes			
Subordinate Debt for Central Taxes	Provision due in 2012-13 as per DMRC	Funds Released (2012-13)	Remarks
Metro Extension to Faridabad			
GOI	139.200	-	
HUDA	34.800	-	
Total	174.000	-	
Phase – III			
GOI	555.330	-	
GNCTD	294.00	-	
Total	849.330	-	
d ) JICA Loan (PTA)			
JICA Loan (PTA)	Provision due in 2012-13 as per DMRC	Funds Released ( 2012-13)	Remarks
Phase-III			
GOI	3,218.000	-	



## Detailed Progress of Contracts

I	Jhangirpuri - Badli		
S. no	Description of Contract	Physical Progress (%)	Remarks
1.	<b>CC-02:</b> Design and Construction of viaduct and two elevated stations Rohini Sec. 18 & Badli.	0.00%	The LOA was awarded on 16.09.2011(Land not available)
2.	Design & Construction of RCC Box & Division of existing storm water line for crossing Ring Road near Shalimar Place Station.	100%	Work completed.
3.	<b>CC-09:</b> Design & Construction of U/G station at Azadpur & ramps at Mukundpur and Shalimar Bagh.	0.0%	The LOA was awarded on 24.02.2012(Land not available)
II	<b>Central Sectt.- Kashmiri Gate</b>		
1	<b>CC- 01:</b> Design and Construction of Tunnel and Janpath & Mandi House stations between Central sectt. And Mandi House for under ground works.	20.1%	Work in Progress
2	<b>CC- 05:</b> Design and construction of Tunnel and ITO, Delhi Gate & Jama Masjid stations between Mandi House and Kashmere gate for underground works.	5.0%	Work in Progress
3	<b>CC- 07:</b> Design and Construction of Tunnel between Lal Qila & Kashmiri Gate.	2.0%	Work awarded on 12.03.2012
III	<b>Munkundpur - Gokulpuri</b>		
1.	<b>CC- 03:</b> Design and construction of Civil Engineering works for construction of Bridge across Yamuna on Mukundpur – Yamuna Vihar corridor.	20.0%	Work in Progress
2.	<b>CC- 04:</b> Design & Construction of Under Ground station at Azadpur & Ramps at Mukundpur and Shalimar Bagh for UG works.	0.00%	The LOA was issued on 29.12.2011 with notice to Proceed on 09.01.2012
3.	<b>CC-12:</b> Design and construction of Civil Engineering works for construction of elevated viaduct and 6 elevated stations viz Krishna Nagar, East Azad Nagar, Welcome, Zafrabad, Maujpur, and Gokulpuri stations including finishing works.	0.0%	The LOA was issued on 16.04.2012

4.	<b>CC-13:</b> Construction of boundary wall and mass earth filling of Vinod Nagar Depot.	0.0%	The LOA was issued on 12.03.2012.
5.	<b>CC-17:</b> Part Design & construction of elevated viaduct above ground ramp on both side and 3 elevated stations viz. moti bagh, Dhaula Kuan and Delhi Cantt. including finishing works.	0.00%	The LOA was issued on 20.04.2012 with notice to Proceed on 30.04.2012
IV	<b>Janakpuri - Kalindi Kunj</b>		
1.	<b>CPM/7/02:</b> Construction of Boundary wall of Metro Depot at Kalindi Kunj	0.0%	LOA was issued on 06.02.2012. (Land not available)
2.	<b>CC-08:</b> Design and construction of Civil Engineering works for construction of Bridge across Yamuna at Kalindi Kunj	4.0%	Work in Progress.
3.	Construction of Bridge across river Yamuna at Kalindi Kunj	1.5%	Work in Progress.
4.	<b>CC-15:</b> Part design and construction of elevated viaduct from ch. 26.739 to km 34.344 and 6 elevated staions at Okhala Vihar Phase-III, Ishwar Nagar, Jamia Nagar, Jasola Vihar and Kalindi Kunj.	0.0%	Date of commencement is from 21.05.12. Mobilization is in progress
V	<b>Faridabad Extension</b>		
1.	<b>CPM/7/01:</b> Construction of Boundary wall of Metro Depot at Ajronda.	10.0%	Work in Progress.
2.	<b>CC- 06:</b> Construction of Viaduct from Badarpur to Faridabad.	6.0%	Work in Progress.
3.	<b>CC-10:</b> Construction of 4 elevated stations including finishing, water supply, sanitary installations & external development works etc. at NHPC chowk, Mewala Maharajur, Sector 27-A & Badkhal Mor on Badarpur-Faridabad corridor.	2.0%	Work in Progress.
4.	<b>CC-11:</b> Construction of 4 elevated station including finishing, water supply, sanitary installations & external development works etc. at Old Faridabad, Ajronda, Faridabad New Town & YMCA chowk on Badarpur-Faridabad corridor.	1.0%	Date of commencement is from 23.04.12. Mobilization is in progress.
5.	<b>CC-16:</b> Construction of Sarai Station.	0.0%	Date of commencement is from 21.05.12. Mobilization is in

**Cumulative Expenditure (since inception of the project) up to May, 2012.**

**(1) Phase - I**

Project Administration	(In Rs. crores)	487.51
Consultancy		331.22
Rail Corridor (incl. Line-III)		4,061.33
Metro Corridor		3,681.64
Land		488.80
<b>Rolling Stock</b>		1,516.45
Advances		3.13
Total		10,570.08

(i) Expenditure figures are on accrual basis.

(ii) It includes funds for land acquisition with L&B department on utilization basis.

**(2)Phase – II**

(i) A sum of **Rs.19,605.66** crores has already been spent for Phase-II works till end of **May, 2012**.

**(3)Dwarka Subcity**

(i) A sum of **Rs. 389.90** crores has already been spent for Dwarka – Sub city Ext. till end of **May, 2012**.