Project Report on

Study of PPP Project of Reliance Delhi Metro Airport Line

Submitted by

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14 June 2013

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Study of PPP Project of Reliance Delhi Metro Airport Line

A PPP case study project for IRITM

Submit by: Mohar Singh
Dy. CMM Northern Railway
14/06/2013
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Declaration

“I declare that the Project Report on Study of PPP Project of Reliance Delhi Metro Airport Line is submitted by me on completion of course on 14th June 2013 to the Indian Railways Institute of Transport Management, Lucknow. My report may be used by Indian Railways/IRITM for official purposes.”

Date : 14th June 2013
Place : Delhi

(Signature)
Name: Mohar Singh
Designation : Dy. CMM Northern Railway
Objective of Study

The objective of this case study is to find out the sustainability & viability of the Public-Private Partnership through the case study of **PPP Project of Reliance Delhi Metro Airport Line** and also the need for this project so as to have a social benefit.
Importance of Metro Rail

As cities grow in size, the number of vehicular trips on road system goes up. This necessitates a pragmatic policy shift to discourage private modes and encourage public transport. Once the level of traffic along any travel corridor in one direction exceeds 20,000 persons per hour, introduction of a rail based (MRTS) Mass Rapid Transit System is called for. Mass Rapid Transit Systems are capital intensive and have long gestation period. It has been observed that in developed countries, planning for mass transit system starts when city population size exceeds 1 million; the system is in position by the time the city population is 2 to 3 million and once the population exceeds 4 million or so, planned extensions to the Mass Rapid Transit Systems is vigorously taken up. In developing countries including India, because of paucity of funds planning and implementation of rail based Mass Rapid Transit Systems has been lagging far behind the requirements.

The city of Delhi with a population of around 18 million should have had an MRTS network of at least 250 Km by this time, whereas actually it is still less than 50%. Delhi has all the ideal dress-up for an excellent Mass Rapid Transit System to be brought in. It has wide roads (roads cover 23% of the city area) where road possession for construction is not difficult (except in the old city area). Implementation will also not involve demolition of large scale private properties. Most of the land required is under Government control and hence can be easily acquired.

The citizens are enlightened and would eagerly welcome introduction of people friendly MRTS though they may initially face some difficulties during the implementation phase. Added to this Delhi has an unassailable advantage in its excellent railway network comprising two rings and six spurs totaling about 120 KM within the urban area.
Unfortunately, these Rail assets are not presently fully being utilized as its share of commuter traffic is only a mere 2%.

Delhi has experienced phenomenal growth in population in the last few decades. As per government statistics, the city currently has over 65 lakh vehicles which was just 5.62 lakh in 1981. The total number of vehicles in Delhi is more than combined total of vehicles in Mumbai, Chennai and Kolkata. On an average over 1,000 vehicles are added to the city roads everyday. The result is extreme congestion on Delhi roads, ever slowing speeds, increase in road accidents, fuel wastage and environmental pollution with motorized vehicles alone contributing to about two thirds of the atmospheric pollution.

Today the traffic on roads of Delhi is a heterogeneous mix of cycles, scooters, buses, cars and rickshaws jostling with each other. This has resulted in a chaotic situation so much so that due to road accidents, the average number of persons killed per day has increased to 5 and of those injured to 13. The position is expected to deteriorate further in the years to come.

To rectify this situation the Government of India and the Government of National Capital Territory of Delhi, in equal partnership have set up a company named Delhi Metro Rail Corporation Ltd. under the Companies Act, 1956 which has (already commissioned a 65.10 kms route in Phase-I and is proceeding ahead with another 121 kms in Phase –III).
About Delhi Metro Rail Corporation (DMRC)

For implementation and subsequent operation of Delhi MRTS (Mass Rapid Transit System), a company under the name DELHI METRO RAIL CORPORATION was registered on 03-05-1995 under the Companies Act, 1956. DMRC has equal equity participation from GOI (Govt. Of India) and GNCTD (Government of National Capital Territory of Delhi).

Delhi Metro is a world-class metro. To ensure reliability and safety in train operations, it is equipped with the most modern communication and train control system. It has state-of-art air-conditioned coaches. Ticketing and passenger control are through Automatic Fare Collection System, which is introduced in the country for the first time. Entries and exits to metro stations are controlled by flap-doors operated by 'smart-cards' and contactless tokens. For convenience of commuters, escalators are installed at metro stations.

**Organisation Structure:**

- 1 Chairman.
- 1 Managing Director.
- Total No. of Directors - 16
- Nominee of Govt. of India - 5
- Nominee of Govt. of NCTD - 5 (Including MD)
• No. of full-time functional Directors at present including MD - 7

The corporate office of the company is located at Metro Bhawan, Fire Brigade Lane, Barakhamba Road New Delhi - 110001, India

**DMRC Project:**

Delhi Metro was planned to be built in phases spread over around 20 years as with each phase having a target of five years and end of one phase marking the beginning of another. Phase I (65 km) and Phase II (125 km) were completed in 2006 and 2011, respectively, and Phase III and Phase IV are scheduled for completion in 2016 and 2021, respectively. Work on Phase III has already started while planning for Phase IV has begun. Ex-chief of DMRC hinted that by the time Phase IV is completed, the city will need Phase V to cope with rising population and transport needs.
Present Routes:

Phase I of Delhi Metro Rail project consists of the following three lines:

- Line No.1- Shahdara-Tri Nagar-Rithala
- Line No.2- Vishwa Vidyalaya-Central Secretariat
- Line No.3- Indraprastha-Barakamba Road-Dwarka Sub City

Phase II of Delhi Metro Rail project consists of the following lines:

- Shahdara – Dilshad Garden
- Indraprastha – Noida Sector 32 City Centre
- Yamuna Bank – Anand Vihar ISBT
- Vishwavidyalaya – Jahangir Puri
- Inderlok – Kirti Nagar -Mundka
- Central Secretariat – HUDA City Centre
- Dwarka Sector 9 to Dwarka Sector 21
- Anand Vihar – KB Vaishali
- Central Secretariat – Badarpur
- Airport Express Line
Present Status:

Red Line:

Line - 1 (Dilshad Garden - Rithala) was made operational for commercial services in four stages:

(1) Shahdara - Tis Hazari: with effect from 25<sup>th</sup> December, 2002 (Phase - I).

(2) Tis Hazari - Inderlok: with effect from 4<sup>th</sup> October, 2003 (Phase - I).

(3) Inderlok - Rithala: with effect from 1<sup>st</sup> April, 2004 (Phase - I).

(4) Dilshad Garden - Shahdara: with effect from 3<sup>rd</sup> June 2008 (Phase - II).

Yellow Line:

Line - 2 (HUDA City Centre - Jahangirpuri) was made operational for commercial services in five stages:

(1) Vishwavidyalaya - Kashmere Gate: with effect from 20<sup>th</sup> December, 2004 (Phase - I).

(2) Kashmere Gate - Central Secretariat: with effect from 3<sup>rd</sup> July, 2005 (Phase - I).

(3) Vishwavidyalaya - Jahangirpuri: with effect from 3<sup>rd</sup> February 2009 (Phase - II).

(4) HUDA City Centre - Qutab Minar: with effect from 21<sup>st</sup> June 2010 (Phase - II).

(5) Central Secretariat - Qutab Minar: with effect from 3<sup>rd</sup> September 2010 (Phase - II).

Blue Line:

Line - 3 (Dwarka Sector 21 - Noida City Centre) was made operational for commercial services in six stages:

(1) Barakhamba - Dwarka: with effect from 31-Dec-2005 (Phase - I)

(2) Dwarka - Dwarka Sector 9: with effect from 1-Apr-2006 (Phase - I).

(3) Barakhamba - Indraprastha: with effect from 11-Nov-2006 (Phase - I).
(4) **Indraprastha - Yamuna Bank**: with effect from 10-May-2009 (Phase - II).

(5) **Yamuna Bank - Noida City Centre**: with effect from 13-Nov-2009 (Phase - II).

(6) **Dwarka sector 9 - Dwarka Sector 21**: with effect from 30th October 2010 (Phase - II).

**Yamuna Bank - Anand Vihar ISBT**: with effect from 6th January 2010 (Phase - II).

**Green Line:**

**Inderlok - Mundka**: with effect from 2\textsuperscript{nd} April 2010 (Phase - II).

**Violet Line:**

**Central Secretariat - Sarita Vihar**: with effect from 3\textsuperscript{rd} October 2010 (Phase - II).

**Sarita Vihar to Badarpur**: With effect from 14\textsuperscript{th} January 2011 (phase-II).

**Airport Metro Express Line, Orange Line:**

**New Delhi - IGI Airport(T-3)- Dwarka Sector-21** With Effect from 23\textsuperscript{rd} February (Phase - II).
Phase III:

Out of 2 new lines and 10 route extensions proposed for Phase III, cabinet approvals have been obtained for 2 new lines and 5 line extensions totaling 140 km, with an estimated cost of 350 billion (US$6.4 billion). Construction has already begun on many of these. These approved lines are:

- Yellow Line extension: from Jahangirpuri to Badli
- Violet Line: from Central Secretariat-Kashmere Gate-Badarpur-YMCA chowk to Faridabad
- Blue Line branch: from Dwarka to Najafgarh
- Green Line: from Mundka to Bahadurgarh
- Inner Ring Road Line (Line 7): from Mukundpur to Shiv Vihar
- Outer Ring Road Line (Line 8): from Janakpuri West to Botanical Garden
Phase IV:

Phase IV has a 2021 deadline, and tentatively includes further extensions to Sonia Vihar, Reola Khanpur, Palam, Najafgarh, Narela, Ghazipur, Noida Sector 62, extensions of Violet line, Green line, Line 8, having a total length of over 100 km. There might be some changes in plan before actual construction starts on these lines.

Apart from these lines in Phases I to IV, plans have been mooted to construct a new line from Noida Sector 62 to Greater Noida which will intersect Indraprastha – Noida Sector 32 line. The Ghaziabad Development Authority is planning to extend Delhi Metro lines deeper into Ghaziabad through extension of the Blue Line from Vaishali to Mehrauli via Indirapuram. The independently operated Gurgaon Metro, work on which is going on and has a deadline of 2013, will also interchange with the Delhi Metro at Sikandarpur station on Yellow line. For the year 2012-13, Authority has allocated Rupees 7021 crore for Noida, out of which Rs 3,000 crore has been kept for development and infrastructure, while Rs 500 crore for Metro extension.
Finances

The capital cost of Phases I and II has been estimated to be 14,430 crore at 2004 prices. However, more recent estimates have placed the cost of construction at 200 crore per kilometre. Thirty percent of the total investment for Phases I and II has been raised through equity capital with the Government of India (GoI) and Government of Delhi contributing equal shares, and approximately another 60 percent has been raised as either long-term or subordinate debt, through soft loans from the Japan Bank for International Cooperation. The rest of the investment is proposed to be recovered from internal revenues through operations and property development. The Metro also received 1,914.3 crore (as grant-in-aid from various agencies for the financial year ending March 2009. As of August 7, 2010, Delhi Metro has paid back an amount of 567.63 crore, which includes loan amount for Phase I and interest amounts for Phases I and II, to the Japan International Cooperation Agency (JICA).

Delhi Metro's implementation of Phase-I, which connected 65 km in the national capital, has been rated as "excellent" by the project's funding agency, the Japan International Cooperation Agency (JICA).
Revenue and profits:

In 2007, the Delhi Metro claimed to be one of only five metro systems in the world that operated at a profit without government subsidies. This was enabled by keeping maintenance costs to a minimum and harnessing additional revenue from advertisements and property development, apart from ticket sales. The Metro also generates revenue by leasing out its trains and stations for film shoots. Due to its increasing association with Delhi as an image of the city's everyday life, it has been a popular filming location for production houses, and several films and advertisements have been shot on board. Producers have to pay as much as 1 lakh for every hour of filming, besides a security deposit and insurance.

For the financial year ended March 2008, the Metro reported operating revenues of 305.27 crore and a profit before tax of 19.98 crore, which rose to 723.77 crore and 90.43 crore respectively for the financial year ended March 2009.

For the financial year ended March 2011, DMRC reported operating revenues of 1,608 crore, a loss before tax of 13 crore, and EBITDA (operating income before interest and depreciation) of 768 crore. Property development (advertising and retail) contributed almost Rs. 98 crore to the revenue. Ticket sales fetched Rs. 938 crore, with the remainder coming from consultancy for other Metro projects in the country and miscellaneous sources. DMRC made an operating profit of Rs. 0.48 per traveller. In the same period, "core" revenues were 939 crore and EBITDA 489 crore, with the remainder coming from external projects (e.g. Jaipur Metro), real estate and consultancy.
The Delhi Airport Metro Express (DAME)

The Airport Express Line having 23 km (16 km underground and 7 km elevated) length is a high-speed Metro connection from New Delhi Railway Station to Dwarka Sector 21 through IGI Airport. This line is being built on Public Private Partnership (PPP) model wherein the civil structures have been built by the Government being represented by Delhi Metro Rail Corporation and the system installations as well as Rolling stock supplied, installed and operated by a private partner (i.e. Concessionaire) which in this case is a joint venture of Reliance Infra and CAF (a Spanish company). The concessionaire shall be operating the line for 30 years and share the revenue apart from license fee.

It was built at a cost of 57 billion, of which Reliance Infra paid 28.85 billion (U$580m), Reliance Infra will also pay fees on a Revenue-share model.

The total length of the line is 22.7 km, of which 15.7 km is underground and 7 km, from Buddha Jayanti Park and Mahipalpur, is elevated. The trains travel at up to 135 km/h, instead of up to 80 km/h as on the rest of the metro. Travel time is 18 mins from New Delhi to the Airport T3.

Service on DAME was suspended from 7 July 2012 to 22 January 2013 due to technical problems. After reopening, the speed was cut to only 50 km/hr, extending journey time from the airport to New Delhi Station to over 40 minutes.

This line is also known as the Orange line.
**Departure Schedule of First and Last train on Delhi Airport Metro Express:**

<table>
<thead>
<tr>
<th></th>
<th>New-Delhi Station</th>
<th>Dwarka Sec.21</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Train</td>
<td>05:30Am</td>
<td>05:15 AM</td>
</tr>
<tr>
<td>Last Train</td>
<td>11:30 PM</td>
<td>11:15 PM</td>
</tr>
</tbody>
</table>

**Stations:**

DAME is having six stations:

1. New Delhi station
2. Shivaji Stadium
3. Dhaula Kuan
4. Delhi Aerocity
5. Airport
6. Dwarka Sector 21

All the six metro stations on the line are known as City Airport Terminals (CATs). They are fitted with state-of-the-art gadgets like explosive detectors, large x-ray baggage scanners, under vehicle scanners, quick reaction teams and dog squads to ensure full security of commuters and baggage alike. The stations have full height platform screen doors to prevent untoward incidents and better air conditioning. All the stations are secured with a network of CCTV cameras which relays live images to the station control room, security control room and operations control centre. The security of the airport line is handled by Central Industrial Security Force who also handles the safety of all the stations of DMRC. All the stations are disabled friendly so that people on wheelchairs can access them with facilities such as stations with ramps having a mild slope leading to elevators, the elevators are specially designed for
the convenience of physically challenged people and capable of carrying stretchers, help call points are located at various points of stations and trains so that in case of any emergency, a disabled person can seek help by just pressing the call buttons. The elevators can be used by visually impaired persons, as elevator buttons having Braille letters.

**Ticketing**

The tickets (Single Journey Token or Smart Card) can be purchased/reloaded at the following two facilities at the stations.

1. **Ticket counters:**

   Executives manning the ticket counters at the stations will always be available to issue tokens or smart card to the passengers. Customer also has an option to reload the pass at the ticket counters.

2. **Ticket Issuing Machine (TIM):**

   In order to avoid long queue at the ticket counter following options are available to commuters for purchase/reloading of tokens/passes:

   Token Issuing Machines (TIM) which is automatic ticket vending machines.

   Other means of reloading the smart card such as through Internet, SMS or through franchisee network are being explored.

**Ticket Options:**

Customers have the following ticket options:

- Single Journey Tokens and Smart Card.
Single Journey Token provides the facility for travel from point to point once. Single journey tokens are waved at the entry gate to enter the paid area and inserted at the exit gate to exit the paid area.

Return Journey Token: Return Journey Token provides the facility for travel from point to point twice. It is for to and fro travel between two stations. Return journey tokens are tapped at the entry gate to enter the paid area and inserted at the exit gate to exit the paid area. Then, the same token can be collected from AFC gate at the same time to be used while returning the same journey. The token can again be waved at the entry gate to enter the paid area and inserted at the exit gate to exit the paid area.

<table>
<thead>
<tr>
<th>Station प्रवासी के बीच की यात्रा का एकल यात्री फीसरूपयों में</th>
<th>New Delhi नई दिल्ली</th>
<th>Shivali Stadium शिवाजी रेसिडेंसिया</th>
<th>Dhaula Kuan धौला कुआ</th>
<th>Delhi Aerocity दिल्ली एयरोसिटी</th>
<th>Airport हवाई अड्डा</th>
<th>Dwarka Sector-21 द्वारका सेक्टर-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Delhi नई दिल्ली</td>
<td>30</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>150</td>
<td>180</td>
</tr>
<tr>
<td>Shivali Stadium शिवाजी रेसिडेंसिया</td>
<td>40</td>
<td>30</td>
<td>40</td>
<td>80</td>
<td>120</td>
<td>150</td>
</tr>
<tr>
<td>Dhaula Kuan धौला कुआ</td>
<td>80</td>
<td>40</td>
<td>30</td>
<td>40</td>
<td>80</td>
<td>120</td>
</tr>
<tr>
<td>Delhi Aerocity दिल्ली एयरोसिटी</td>
<td>120</td>
<td>80</td>
<td>40</td>
<td>30</td>
<td>40</td>
<td>80</td>
</tr>
<tr>
<td>Airport हवाई अड्डा</td>
<td>150</td>
<td>120</td>
<td>80</td>
<td>40</td>
<td>30</td>
<td>35</td>
</tr>
<tr>
<td>Dwarka Sector-21 द्वारका सेक्टर-21</td>
<td>180</td>
<td>150</td>
<td>120</td>
<td>80</td>
<td>35</td>
<td>30</td>
</tr>
<tr>
<td>Station स्टेशन</td>
<td>New Delhi नई दिल्ली</td>
<td>Shivaji Stadium शिवाजी स्टेडियम</td>
<td>Dhaula Kuan पौला कुआं</td>
<td>Delhi Aerocity दिल्ली एयरोसिटी</td>
<td>Airport अहाई अंडर</td>
<td>Dwarka Sector-21 द्वारका सेक्टर-21</td>
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</tr>
<tr>
<td>New Delhi नई दिल्ली</td>
<td>30</td>
<td>60</td>
<td>140</td>
<td>220</td>
<td>250</td>
<td>300</td>
</tr>
<tr>
<td>Shivaji Stadium शिवाजी स्टेडियम</td>
<td>60</td>
<td>30</td>
<td>60</td>
<td>140</td>
<td>200</td>
<td>250</td>
</tr>
<tr>
<td>Dhaula Kuan पौला कुआं</td>
<td>140</td>
<td>60</td>
<td>30</td>
<td>60</td>
<td>140</td>
<td>220</td>
</tr>
<tr>
<td>Delhi Aerocity दिल्ली एयरोसिटी</td>
<td>220</td>
<td>140</td>
<td>60</td>
<td>30</td>
<td>60</td>
<td>140</td>
</tr>
<tr>
<td>Airport अहाई अंडर</td>
<td>250</td>
<td>200</td>
<td>140</td>
<td>60</td>
<td>30</td>
<td>50</td>
</tr>
<tr>
<td>Dwarka Sector-21 द्वारका सेक्टर-21</td>
<td>300</td>
<td>250</td>
<td>220</td>
<td>140</td>
<td>50</td>
<td>30</td>
</tr>
</tbody>
</table>
Discounted Return Journey provides discount on all Sundays and Public Holidays on Return Journey Tokens. This discount is available for journeys between Dwarka Sector 21 station to New Delhi & Shivaji Stadium stations and vice-versa.

<table>
<thead>
<tr>
<th>Station</th>
<th>Dwarka Sector-21</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Delhi</td>
<td>180</td>
</tr>
<tr>
<td>Shivaji Stadium</td>
<td>150</td>
</tr>
</tbody>
</table>

Smart Card: is the best option for frequent travelers. These cards need to be waved at the gates for the entry/exit to the stations. Loading a pass on the smart card is the most economical and convenient way to travel. Customers may load their smart cards with the following passes.
Stored Value Card:

Store value cards are stored with prepaid values loaded by the customer. The fare is deducted automatically from the smart card at the exit. 20% flat discount is offered on these cards.

<table>
<thead>
<tr>
<th>Station रेस्टेशन</th>
<th>New Delhi नई दिल्ली</th>
<th>Shivaji Stadium शिवाजी स्टेडियम</th>
<th>Dhaula Kuan धौला कूआं</th>
<th>Delhi Aerocity दिल्ली एरोसिटी</th>
<th>Airport हवाई अड्डा</th>
<th>Dwarka Sector-21 द्वारका सेक्टर 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Delhi नई दिल्ली</td>
<td>24</td>
<td>32</td>
<td>64</td>
<td>96</td>
<td>120</td>
<td>144</td>
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<tr>
<td>Shivaji Stadium शिवाजी स्टेडियम</td>
<td>32</td>
<td>24</td>
<td>32</td>
<td>64</td>
<td>96</td>
<td>120</td>
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<tr>
<td>Dhaula Kuan धौला कूआं</td>
<td>64</td>
<td>32</td>
<td>24</td>
<td>32</td>
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<td>96</td>
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<td>Delhi Aerocity दिल्ली एरोसिटी</td>
<td>96</td>
<td>64</td>
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<td>64</td>
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<tr>
<td>Airport हवाई अड्डा</td>
<td>120</td>
<td>96</td>
<td>64</td>
<td>32</td>
<td>24</td>
<td>28</td>
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<tr>
<td>Dwarka Sector-21 द्वारका सेक्टर 21</td>
<td>144</td>
<td>120</td>
<td>96</td>
<td>64</td>
<td>28</td>
<td>24</td>
</tr>
</tbody>
</table>
Monthly Pass:

60 Trips Monthly Pass (Revised w.e.f 01/03/2013): These passes are suitable for daily commuters. These discounted passes are preloaded with 60 trips and have a validity of one calendar month.

<table>
<thead>
<tr>
<th>Station स्टेशन</th>
<th>New Delhi नई दिल्ली</th>
<th>Shivaji Stadium शिवाजी स्टेडियम</th>
<th>Dhaula Kuan धौला कुआं</th>
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<th>Dwarka Sector-21 द्वारका सेक्टर 21</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Delhi नई दिल्ली</td>
<td></td>
<td>600</td>
<td>1200</td>
<td>1800</td>
<td>2300</td>
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45 Trips Monthly Pass (New):

These passes are suitable for daily commuters. These discounted passes are preloaded with 45 trips and have a validity of one calendar month.

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<tr>
<th>Station स्टेशन</th>
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<td>1500</td>
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</table>
10 Trips monthly pass (Chhota Card):

These passes are suitable for frequent travelers and provide up to 25% discount on single journey tokens. These discounted passes are preloaded with 10 trips and have a validity of one calendar month.

Chhota Card has been introduced for leisure trips and weekend travel by families, students, travelers etc.

<table>
<thead>
<tr>
<th>Monthly Pass Fare In Rupees (10 Journeys)</th>
<th>मासिक पास किराया रूपयों में (10 यात्रा )</th>
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Discount for Defence personnel:

All defence personnel i.e. Army, Air force & Navy (excluding ex-service man) and their dependents having dependent cards can avail upto 25% discount on Store Value Card upon showing their ID card.

Family Fare:

This special family fare is available for a family of 2, 3, 4 and above during the summer vacation w.e.f. 15th May'13.

<table>
<thead>
<tr>
<th>Station स्टेशन</th>
<th>New Delhi नई दिल्ली</th>
<th>Shivaji Stadium शिवाजी स्टेडियम</th>
<th>Dhaula Kuan घौला कुआं</th>
<th>Delhi Aerocity दिल्ली एअरोसिटी</th>
<th>Airport हवाई अड्डा</th>
<th>Dwarka Sector-21 द्वारका सेक्टर-21</th>
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### Fare per passenger for group of 3

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<th>Delhi Aerocity दिल्ली एयरोसिटी</th>
<th>Airport हवाई अड्डा</th>
<th>Dwarka Sector-21 द्वारका सेक्टर-21</th>
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### Fare per passenger for group of 4 and above

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<td>100</td>
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</table>
Expansion Plans

The line is planned to be extended beyond Dwarka Sector 21 to IFFCO Chowk in Gurgaon.]The 12km extension will have a 1.5km long underground section, while the rest will be elevated.

Commuters will be able to travel between Gurgaon and Shivaji Stadium in 30 minutes. Gurgaon to the Airport would be 14 minutes.

The cost of the 12km extension is Rs 1830 crore. HUDA will pay for 80% of the cost and New Delhi will pay the remaining 20%.

Infrastructure

Siemens Mobility is providing Signalling, Power Transmission, Baggage Handling System enabling passenger to check-in with baggage at the New Delhi Railway Station and Shivaji Stadium, with check-in 1200 passenger per hour capacity. The €34 million was expected to be completed by 2010 in time for the Commonwealth games but could not manage to meet the deadline. Alcatel is supplying the communications systems. Indra Sistemas is providing the ticket machines. Faiveley is providing the platform screen doors. BLUESTAR / Honeywell is the Control & Automation Provider for Station Management System (SMS). Bluestar is the main BEMS system provider.

The line will be the first line in the country to be mapped on Geographic Information System to enhance safety, maintenance and traffic regulation and will help in mobilising emergency services in case of an accident.

Rolling stock
Eight 6-car trains supplied by CAF Beasain were imported from Spain. CAF holds 5% equity in the DAME project, Reliance Infrastructure holds the remaining 95%. The trains on this line are of a premium standard and have in-built noise reduction features for a noise-free ride with padded fabric seats. The coaches are equipped with LCD screens for entertainment of the passengers and also provide flight information for convenience of air travellers. The trains are fitted with an event recorder which can withstand high levels of temperature and impact and the wheels have flange lubrication system for less noise and better riding comfort. Based on the consultancy by MTR, the interior design of the rolling stocks are highly similar to that of Airport Express line in MTR Hong Kong which also uses CAF trains.

**Tracks**

To ensure safety the tracks are fitted with RHEDA-2000 signalling technology, which theoretically allows trains to travel at up to 350 km/h (nearly three times the actual maximum speed of current trains). The entire 22.7 km route is ballast-less track, which costs 40–50% more than normal train tracks, but does not take longer to lay than traditional tracks. The rails rest on rubber pads on the concrete sleepers for less noise.

The 7 km elevated section from Buddha Jayanti Park to Mahipalpur has been built with 25m long girders for the first time in India. The 504 girders weigh 120 tons each and are being cast in Mahipalpur and transported on 35m long trailers with 64 tyres.
Special services provided:

Check-in Facility

The line has the first check in facility outside an airport in South Asia.
Passengers flying with Air India, Jet Airways and Kingfisher Airlines which use T3 terminal as base of operations can now check in at the New Delhi Metro Station. Check can be done anytime before 6 hours to 2 and half hours before departure time. Passengers flying for international flights can also check in as this facility has been started from February 22, 2012.

WiFi Service

The Airport Express line has introduced WiFi services at all stations along the route on 13 January 2012. This makes it the first line of the Delhi Metro to provide WiFi services. All 6 stations along the Express Route are WIFI enabled. Connectivity inside metro trains travelling on the route is expected in the future. The WiFi service is provided by YOU Broadband & Cable India Limited. The service makes Delhi Metro the second metro in India to provide WiFi services to passengers after the Namma Metro in Bangalore.
Post Office

The post office will have all basic postal services like speed post, e-post, express parcel, registered post, postal stamps and revenue stamps on all working days from 10 AM to 4 PM. Both commuters and non-commuters can avail the benefit of this postal service as the counter is located at the non paid area.
Understanding PPP

A public–private partnership (PPP) is a government-funded and operated service or private business venture which is funded and operated through a partnership of government and one or more private sector companies. These schemes are sometimes referred to as PPP, P3 or P^3.

PPP involves a contract between a public sector authority and a private party, in which the private party provides a public service or project and assumes substantial financial, technical and operational risk in the project. In some types of PPP, the cost of using the service is borne exclusively by the users of the service and not by the taxpayer. In other types (notably the private finance initiative), capital investment is made by the private sector on the basis of a contract with government to provide agreed services and the cost of providing the service is borne wholly or in part by the government. Government contributions to a PPP may also be in kind (notably the transfer of existing assets). In projects that are aimed at creating public goods like in the infrastructure sector, the government may provide a capital subsidy in the form of a one-time grant, so as to make it more attractive to the private investors. In some other cases, the government may support the project by providing revenue subsidies, including tax breaks or by removing guaranteed annual revenues for a fixed time period.

Typically, a public sector consortium forms a special company called a "special purpose vehicle" (SPV) to develop, build, maintain and operate the asset for the contracted period. In cases where the government has invested in the project, it is typically (but not always) allotted an equity share in the SPV. The consortium is usually made up of a building contractor, a maintenance company and bank lender(s). It is the SPV that signs the contract with the government and with subcontractors to build the facility and then maintain it. In the
infrastructure sector, complex arrangements and contracts that guarantee and secure the cash flows make PPP projects prime candidates for project financing. A typical PPP example would be a hospital building financed and constructed by a private developer and then leased to the hospital authority. The private developer then acts as landlord, providing housekeeping and other non-medical services while the hospital itself provides medical services.

A good example of PPP in Indian Railways is IRCTC-Ginger Rail Yatri Niwas, New Delhi at the Ajmeri Gate side of the New Delhi Railway station. This hotel was originally built in 1988 as part of Indian Railways efforts to offer hotel rooms to the railway passengers at reasonable prices.

The property was taken over by IRCTC in April, 2005 with a mandate to upgrade it on PPP basis. Keeping its ultimate objective of world class service at affordable prices in view, IRCTC allotted the task of renovating and operating the hotel on PPP basis, for 15 years, on open tender basis. This task was taken up by M/s Roots Corporation Limited, a 100% subsidiary of The Indian Hotels Company Limited.

The bid was awarded to the IHCL on 19th July 2007 on Fixed User Charge & Annual License fee basis for 15 years. After that redeveloped property will get transferred to IRCTC at the end of 15 years. RYN is still technically a public premise within the meaning of Public Premises Act.
PPP aspect of DAME

As mentioned above, DAME line is being built on Public Private Partnership (PPP) model wherein the civil structures have been built by the Government being represented by Delhi Metro Rail Corporation and the system installations as well as Rolling stock supplied, installed and operated by a private partner (i.e. Concessionaire) which in this case is a joint venture of Reliance Infra and CAF (a Spanish company). The concessionaire shall be operating the line for 30 years and share the revenue apart from license fee.

The first tenders for line construction were awarded in September 2007. On Jan 23, 2008, the DMRC awarded a 30 year build-operate-transfer PPP contract to the Reliance Energy-CAF consortium. However, DMRC paid for half of the construction cost and executed tunneling and civil work elevated section of the Airport Express Line which was built over eight busy roads (which carry a heavy volume of traffic), including the Ring Road, National Highway 8, Ridge Road and Sardar Patel Marg.

Originally scheduled to open by August 31, 2010, well in time for the 2010 Commonwealth Games, the line finally opened on February 23, 2011 at 2 PM after missing four previously set deadlines. The DMRC fined Reliance Infra 37.5 lakh every day from 30 September, and 75 lakh every day from 31 October for repeatedly missing the deadlines. The Aerocity and Dhaula Kuan stations opened on 15 August 2011.

Time-line of the project:

**Aug 2006:** Delhi Metro Rail Corp. Ltd (DMRC) finalizes a detailed project report for the airport line

**Sep 2007:** DMRC awards the first tenders for building the railway line
23 Jan 2008: DMRC awards a 30-year build-operate-transfer contract to the Reliance Energy-led consortium with the Spanish railway equipment maker Construcciones y Auxiliar de Ferrocarriles

Mar 2009: Delhi Airport Metro Express Pvt. Ltd, a special-purpose vehicle floated by Reliance Infrastructure Ltd (R-Infra) to build the airport line, says it has managed to raise the debt required for the project.

Nov 2009: DMRC completes 95% of the tunnelling and civil construction on the line and prepares to hand over the stations to concessionaire R-Infra for laying tracks

31 Aug 2010: The airport line misses the first deadline to begin operations, but R-Infra is given a one-month extension on account of delays in handing over the stations by DMRC

30 Sep 2010: The line fails to get the mandatory safety clearance from the Commissioner of Metro Rail Safety (India), or CMRS. DMRC slaps a fine of Rs.37.5 lakh per day from 30 September on R-Infra for missing the deadline

10 Jan 2011: CMRS grants safety clearance to the airport line, except for the Dhaula Kuan and Delhi Aerocity stations

23 Feb 2011: The airport line starts its first train services from New Delhi railway station to terminal T3 of the Indira Gandhi International Airport

15 Aug 2011: CMRS grants safety clearance to Dhaula Kuan and Delhi Aerocity stations

Dec 2011: DMRC managing director E. Sreedharan meets R-Infra executives to discuss the areas that need improvement, particularly the train coaches

May 2012: DMRC chief Mangu Singh expresses dissatisfaction with the operation of the line by R-Infra and concern over its business model
Jun 2012: DMRC asks consultants Shirish Patel and Associates to conduct an inspection of the line due to safety concerns, after the operator reduces the speed of the trains from 105 kmph

7 Jul 2012: The operator of the airport line suspends services indefinitely for safety repairs. The ministry of urban development constitutes a committee to investigate the defects in the civil construction of the railway line.

January 2013: Operation resumed.
SUSTAINABILITY & VIABILITY OF DAME

Sustainability is the capacity to endure, and viability is the ability of a thing (a living organism, an artificial system, an idea, etc.) to maintain itself or recover its potentialities.

Long-term economic growth can only be achieved if it is in harmony with a responsible approach to society and the environment.

High tech- lavish Airport Metro Express is facing problem due to which its services was suspended in July-2012 and resumed the operation in Jan-2013.

The Delhi Airport Metro Express Line was meant to be a world-class transportation system, placing India’s capital on a level with London and Hong Kong in terms of shuttling passengers at high speed from the city center to the international airport.

Instead, the partnership between Reliance Infrastructure and the Delhi Metro Rail Corp., the first of its kind in India, has become a black eye for those involved and an example of state-of-the-art infrastructure that hasn’t lived up to its billing.

The Airport Express was completed in just 27 months, less than half the time of similar projects elsewhere in the world.

During its operation it carried 6.8 million passengers in 70,000 journeys.

The track is meant to have a lifespan of 100 years and Reliance has a 30-year concession for its operation. To date, the train has never exceeded 105 kilometers an hour and that velocity was only reached on limited stretches.
Suspension of services

During the annual inspection in May 2012 by the operator, Delhi Airport Metro Express they found civil structure and technical problems.

As per the Public Private Partnership (PPP) model, on which the line was to be constructed and operated, the Delhi Metro Rail Corporation (DMRC) was to carry out the civil work and Reliance Infrastructure was to operate the line for 30 years and share the revenues.

On 17-07-2012, the joint inspection of the damages portions of the 22.7 km high-speed corridor by Indian Railways, Delhi Metro & Reliance Infrastructure, revealed that at least 91% of bearings in civil construction (493 of 540 examined in the past week) were found defective.

Results of investigation (April-2013):

An expert committee, constituted by Ministry of Urban Development to pinpoint the defects that led to the suspension of the Airport Express Line last year, has held Delhi Metro Rail Corporation (DMRC) responsible for the lapses.

The report, which reportedly runs into more than a hundred pages, holds the top brass of DMRC, including its current chief Mangu Singh, accountable for the suspension of the train services on the 22.7-km Airport Express Line, run by private concessionaire Reliance Infrastructure.

The report compiled by A K Gupta, Additional Member (Works) in the Railway Board, and D Diptivilasa, Additional Secretary, reportedly said: "The top management of DMRC is also responsible for neglecting issues of overall control and monitoring of the defect in the line. The top management should have been more pro-active and more responsible for overall
strategic issues such as overall coordination, timely resolution of issues and definitely of role of concessionaire."

The report pointed out that there were major defects in civil works due to inappropriate mixing of construction material.

"The general consultant, besides ensuring adequate and timely coordination between the different agencies to ensure smooth execution of the project, should share some responsibility for the failure of the line as much as it should have focussed on advising the management on strategic issues, such as defining the role of concessionaire. The Ministry may like to take appropriate action as deemed fit," the report said.

The committee investigated nine different aspects — including the design and quality of civil structure and whether there was delay in detection of faults. The report was submitted at least six months behind schedule.
CONCLUSION

1. Delhi Metro is successful in terms of infrastructure development & providing alternate source of transportation. This project is successful in terms of finance.

2. Airport Express has uplifted the position of Delhi in World in terms of infrastructure. Commuters can book train tickets by debit/credit cards Reliance already provides Wi-Fi connectivity at all the stations on Delhi Metro Express line. DAME gets free wi-fi connectivity at stations

3. Apart from high tech & best infrastructural facility the service was suspended. The closing down of the corridor also prompted a turf war between the Delhi Metro and Reliance Infra which wanted to quit the corridor, which proves the failure of PPP.

4. This PPP project becomes the one more example of corruption in India.

5. The loss which occurred due to the closer of services for a period of time, has caused a steep rise in fare.
Suggestion

There should be a team of honest persons to manage and operate the supervisory functions.

There should be regular checking of infrastructure & other processes and report should be share between both the parties.

Instead of blaming each other, there should be mutual co-operation and realisation of responsibilities.

In a PPP project both parties should take care of each other and help their partner to perform well and in recovering from losses. Like in this DAME case, due to the negligence of DMRC, the private partner (Reliance Infra and CAF) are facing financial losses. To recover those losses they have increased the fare; which is not in favor of public. If DMRC increase the term of contract so as the Reliance Infra and CAF can recover their losses without increasing the fare.
References

For developing this project I have used the study material provided by IRTIM and following websites as reference:

- http://www.delhimetrorail.com/about_us.aspx#Introduction
- http://en.wikipedia.org/wiki/Public%20%E2%80%93private_partnership
- http://www.delhiairportexpress.com/
- http://en.wikipedia.org/wiki/Public%E2%80%93private_partnership