

*Case Study*

**EXPRESS METRO RAIL LINK FROM  
NEW DELHI RAILWAY STATION TO AIRPORT**

*Transit Systems*

## CASE OVERVIEW

**Country:** India

**ULB:** New Delhi

**Sector:** Urban Transport      **Sub-Sector:** Transit Systems

**Award Date:** January 2008

**Type and Period of concession:** Build-Operate-Own-Transfer (BOOT) Concession for 30 years

### Stakeholders:

<b>Contracting Authority</b>	Delhi Metro Rail Corporation Limited (DMRC), a Joint Venture between Government of India (GoI) and Government of National Capital Territory of Delhi (GNTCD)
<b>Concessionaire</b>	Special Purpose vehicle (SPV) – Delhi Airport Metro Express Private Limited (DAMEPL) – formed between Reliance Infrastructure and CAF, Spain
<b>Oversight Arrangement</b>	Through the Concessions Authority and through Independent Assessors appointed for ascertaining safety of the installed systems.

**Present Status of Project:** The project is expected to be operationalised by September 2010.

### PROJECT TIMELINE:

<b>2007</b>	<i>Competitive bidding process for selection of Concessionaire</i>
<b>2008</b>	<i>Award of the contract to DAMEPL – SPV between Reliance Infrastructure and CAF, Spain</i>
<b>2010</b>	<i>Expected completion of the Delhi Airport Metro express project</i>

## 1. PPP CONTEXT

1. The Airports Authority of India (AAI) forecast a steep growth in air traffic to be handled at the IGI airport in Delhi due to the Commonwealth Games to be held in the city in 2010. Annual traffic is estimated to grow from 12 million passengers in 2004-05 to 40 million by 2011-12 (233% growth).
2. At present the movement of passengers between the Airport and the City is largely through taxis and private cars, with a limited number of passengers using buses for the purpose. Due to heavy congestion the average travel speed is as low as 20-25 kmph and the average travel time ranges between 40 minutes to an hour (during peak hours). The condition is expected to worsen despite improvements in roads.
3. In order to address this issue, the AAI proposed a metro rail link between the city and the airport, and requested the DMRC to undertake the project as a part of the ongoing Delhi Metro project. DMRC, a

Joint Venture between GoI and GNCTD, has already completed 65.1 km of Metro Rail for Delhi in Phase I and has taken up the airport link project as part of the 121 km stretch being developed as part of Phase II. The project is targeted to be completed before the start of the Commonwealth Games in October 2010.

## **2. PROJECT DEVELOPMENT**

### **2.1 PROJECT CONCEPTUALIZATION**

Metro rails involve very high construction and maintenance costs, and high investment risks due to low returns. Such projects are thus unattractive for the private sector and are usually undertaken through EPC contracts. To address this, the Delhi Airport Metro Express (DAME) project was structured innovatively – employing the EPC mode for all civil constructions and a PPP mode for installing and operating the actual rail service. This structure was aimed at sharing the investment risk between the public and private sectors, thereby making the project attractive and utilising private expertise for developing a high quality facility in a time bound manner.

A preliminary Origin-Destination (O-D) Survey revealed that the maximum airport traffic originated in the Connaught Place (CP) area and its vicinity and hence the rail link has been proposed between New Delhi Railway Station (close proximity to CP) and the airport – attracting commuters from the northern, north western, central and trans-Yamuna areas of Delhi. Connection to a railway station is also expected to facilitate direct transit for passengers using Delhi as a connecting point en-route to their destinations.

### **2.2 PROJECT DEVELOPMENT**

1. Various primary surveys were undertaken by the Transaction Advisor<sup>1</sup> to supplement available secondary data regarding existing traffic volume, O-D of passengers coming to the airport, willingness to shift to the proposed rail link etc. Environmental Impact Assessment was also conducted for the proposed alignment. The willingness surveys indicated that 82% of the respondents were likely to shift to the new facility.
2. Feasibility studies were also undertaken including demand forecasts and detailed cost estimates for civil, electrical and telecommunications works, rolling stock, environmental impact mitigation, rehabilitation etc. at 2006 prices, both for capital and operation and maintenance (O&M) expenditure.

### **2.3 PROCUREMENT PROCEDURE**

Procurement of Concessionaire was based on a two stage competitive bid. Criteria for eligibility included, in addition to financial profile of bidding consortia, technical criteria as follows:

1. The Applicants must have prior experience of developing or operating and maintaining rail based urban transport system or should have been a major equipment supplier for a rail based urban transport system
2. The Applicant should have installed systems including testing and commissioning for major Rail system/operated and or maintained Major Metro Rail/Rail/supplied electro-mechanical or signaling equipments including Rolling Stock in the last ten years.

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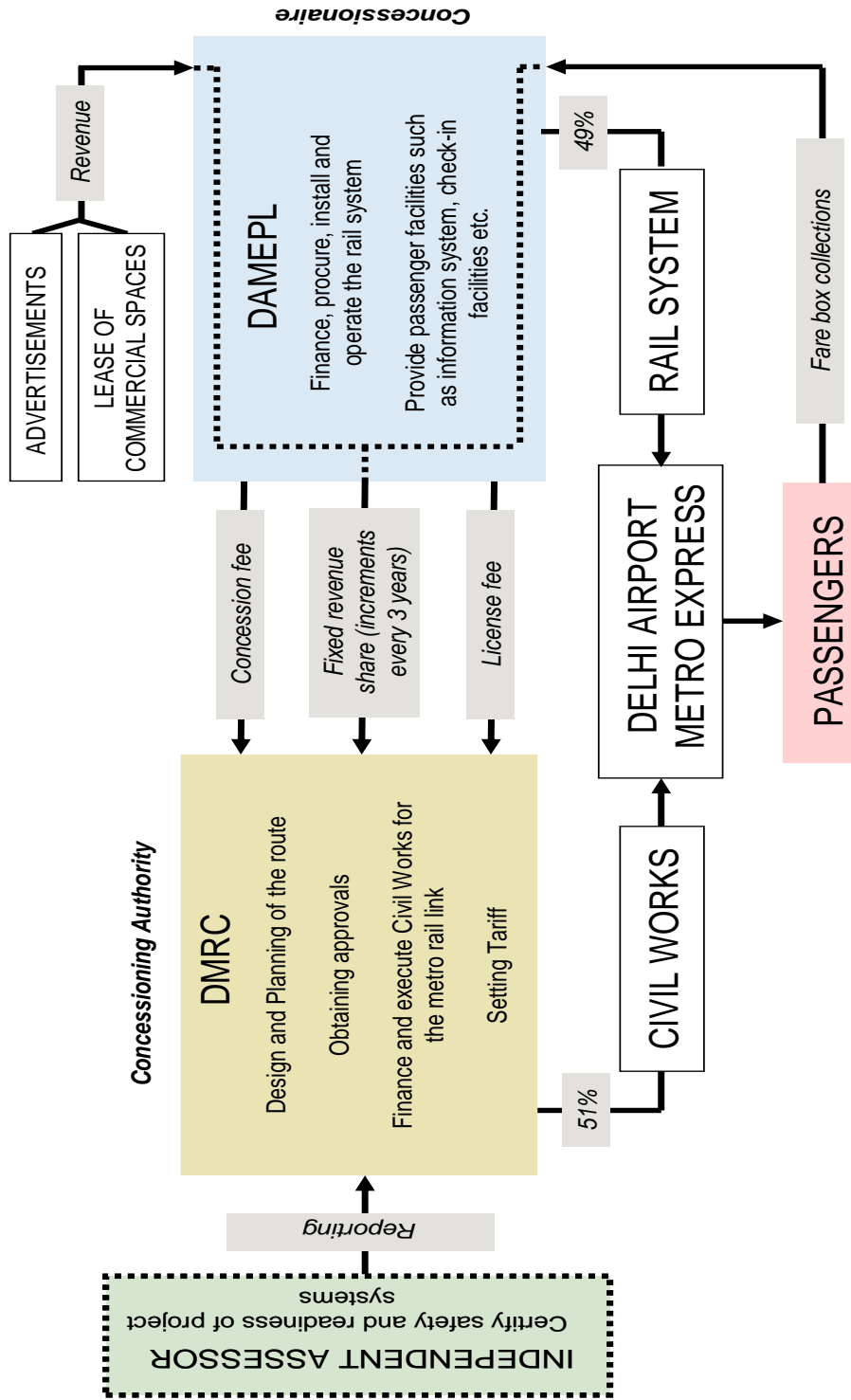
<sup>1</sup> M/s Feedback Ventures

3. Works less than Rs.300 Crore were not considered for the selection

Delhi Airport Metro Express Private Limited (DAMEPL) – an SPV formed between Reliance Infrastructure and CAF, Spain was awarded the 30 year contract in January 2008, on the basis of their highest quote for annual concession fees to be paid to DMRC (bid parameter).

### 3. CONTRACTUAL ARRANGEMENTS

#### 3.1 PROPOSED CONTRACTUAL STRUCTURE



### **3.2 OPERATOR OUTPUT OBLIGATIONS**

The Metro Rail link has a total of 7 km of elevated stretch and 15.7 km of underground stretch. The Concessionaire was responsible for:

1. Designing, procuring, developing, financing, installing, operating and maintaining all systems including (but not limited to) rolling stock, overhead electrification, tracks, signalling, telecommunication, ventilation and air conditioning, automatic fare collection, baggage check-in and handling, depot and other facilities required for the successful operation of the link. Making available 8 trains (as per specifications) with 6 coaches each for the rail link service.
2. Providing state-of-the-art passenger facilities such as cushioned seats with armrests, overhead baggage compartments, access to real time updated flight information through display boards, CCTV cameras for surveillance and security and airline and baggage check-in facilities at all stations along the rail link.
3. Equipping each station along the rail link with fully automated access for passengers from the ground to the trains through lifts and escalators and provision of adequate parking facilities at such stations
4. O&M of the entire system (including periodic testing) for 30 years (including construction time) as per the detailed O&M manual developed in consultation with DMRC.

### **3.3 OBLIGATIONS OF THE CONCESSIONING AUTHORITY**

Obligations of the Concessioning Authority included provision of land, obtaining clearances, setting of the tariff, construction of all civil work for the project and timely handover of the same to the Concessionaire.

### **3.4 REGULATORY AND MONITORING ARRANGEMENTS**

The Concessionaire was to submit to the DMRC, monthly progress reports during the construction period, and maintenance reports (in accordance with the O&M manual) thereafter. The Concessionaire will appoint Independent Assessors as the Commission of Rail Safety may require, for certifying that all project systems are ready and capable for safe operation.

### **3.5 PROJECT FINANCIALS**

1. All capital expenditure for the civil works required for the rail link was to be borne by DMRC. Investments for the rail system and all allied infrastructure was to be borne by the Concessionaire. O&M costs for the entire system including civil works were borne by the Concessionaire. Of a total project cost of Rs. 5800 Crore, Rs.2915 Crore was to be borne by DMRC and the remaining Rs.2885 Core by the Concessionaire.
2. Recovery of investments for the Concessionaire was envisaged through fare box collections (Rs.15/person/trip), advertisement revenue, lease of commercial spaces (built along side the rail infrastructure), and from other sources such as vending machines, retail outlets etc.
3. The Concessionaire would pay the DMRC Rs.10,000 per annum as licence fee in consideration of grant of site and right of way (ROW) under the project. The Concessionaire would also pay a Concession fee (bid parameter) of Rs.51 Crore to DMRC per year (to be cumulatively increased by

5% every year). In addition to this the Concessionaire will share a percentage of its revenue with DMRC as follows:

Period	Percentage of shared revenue
1 <sup>st</sup> to 5 <sup>th</sup> year	1%
6 <sup>th</sup> to 10 <sup>th</sup> year	2%
11 <sup>th</sup> to 15 <sup>th</sup> year	3%
16 <sup>th</sup> to 30 <sup>th</sup> year (end of concession)	5%

### 3.6 PROJECT RISKS AND ALLOCATION

**Construction Risk** Including time and cost overruns due to contractor default, was borne by the operator. Overruns due to delays completion and handover of civil works was borne by DMRC.

**Operating Risk** Including design of the system, procurement, and O&M of equipment and systems, was borne by the Operator. Design risks for overall route plan and the civil works undertaken were borne by the DMRC.

**Performance Risk** Borne by the Concessionaire (excepting for Civil Works) through a Performance Guarantee, initially valid for a period of 5 years and renewable from time to time.

**Investment Risk** Shared between the two parties, since DMRC was responsible for civil works and the Concessionaire for costs of procuring, installing and operating the rail link system

**Revenue Risk** Including demand risk was borne by the Concessionaire since revenues were based on fare box collections and revenue from advertisements, lease of commercial spaces etc. DMRC did not assure fixed returns. Besides the Concessionaire had to pay DMRC a fixed annual concession and license fee irrespective of the revenue generated.

**Force Majeure** The Concessionaire was protected through provisions for commensurate extensions in the concession period as deemed adequate to compensate for the time lost on account of a Force Majeure event.

### 3.7 DISPUTES RESOLUTION MECHANISM

All disputes were to be resolved amicably through direct discussion between the parties involved (with the help of the independent oversight body where needed). In the event of non-resolution the dispute was to be settled through arbitration processes as prescribed under the Arbitration and Conciliation Act, 1996.

## 4. PARTNERSHIP IN PRACTICE

### 4.1 PROJECT OUTCOMES

The project is not yet operational. However, expected outcomes from the project include the following:

1. Approximately 42,000 passengers will be able to avail the facility on a daily basis by September 2010

2. Travel time will be reduced substantially – from the present average of one hour to around 18 minutes. Air bound passengers will be able to reduce time spent at the airport through check-in facilities at the stations
3. Both international and domestic passengers will find it convenient to use the service, since the metro station at the airport is proposed to be built close to terminals 3 and 4 which will handle both international and domestic traffic after 2010
4. Passengers will be able to avail of the improved services at a nominal rate of Rs.15 per trip leading to substantial per trip cost savings in comparison to using taxis or private vehicles.

## **4.2 PROJECT SHORTCOMINGS**

Project implementation is underway and so far there have been no major shortcomings.

## **4.3 LEGAL/CONTRACTUAL ISSUES**

1. Despite a robust environmental impact analysis conducted at the outset, objections against the project have been raised on several occasions. The Delhi Urban Arts Commission (DUAC) had objected to the proposed route, which passed through heritage and environmentally sensitive areas, particularly the underground section leading up to Dhaula Kuan. Similarly the Home Ministry objected to the underground high speed tunnel between CP and the Airport, citing possible security concerns for the administrative zones. DMRC modified the plan and the revised proposal has been cleared by a group of ministers.
2. The Bureau of Civil Aviation had objected to the direct baggage check-in facility to be provided at the metro stations along the route, citing security concerns. This has now been overcome with the Delhi Airport developer – Delhi International Airport Limited (DIAL) constructing a separate secure tunnel to ensure contamination free transfer of checked-in luggage to the respective aircrafts.

## **5. LESSONS LEARNT**

1. The project demonstrates that even financially unattractive projects with low returns on investments can be undertaken through private participation through a good risk sharing arrangement. The decision of DMRC to take on the investment risk for civil works, thereby reducing the overall risk for the operator made the project viable for the private partner.
2. The project has been able to bring in almost half of the investment required for the project from the private sector, and obtain technical expertise for building a world class facility. The Concessions Authority will also be able to recover a large proportion of its own initial investments through the various concession fees and shares of revenue accruing from the Concessionaire.
3. The importance of robust project development and obtaining all necessary clearances and conducting stakeholder consultations so as to arrive at a consensus on the project layout cannot be understated. Objections raised during the course of project implementation can lead to substantial time and cost overruns and revenue losses to both parties involved in the arrangement.