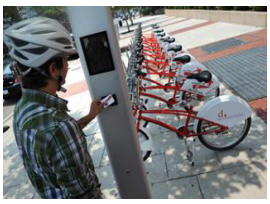
June

2012

Public Bike Sharing Scheme for Bhopal City





Final Detailed Project Report

Urban Mass Transit Company Limited

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List of Abbreviations

BCLL	**Bhopal City Links Limited**
BMC	**Bhopal Municipal Corporation**
BRTS	**Bus Rapid Transit System**
IRR	**Internal Rate of Return**
ITS	**Intelligent Transport System**
MoUD	**Ministry of Urban Development**
MTB	**Mountain bikes**
NMT	**Non Motorized Transport**
NPV	**Net Present Value**
OD	**Origin Destination**
PBS	**Public Bicycle Sharing**
PIN	**Personal Identification Number**
PPP	**Public Private Partnership**
RFID	**Radio Frequency Identification**
UMTC	**Urban Mass Transit Company**

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Report Structure

The report has been structured keeping the format of a Project DPR, Operations and Service Plan and Business Model for Operations under consideration. The contents of this report cover all the aspects in the following layput

Chapter 1 – This covers the introduction to study area and project scope of work and methodology

Chapter 2 – Briefly covers the primary survey findings that have been discussed in the previously submitted deliverables

Chapter 3 – Finalized network for PBS scheme is discussed in this chapter based of discussions held with the stakeholders

Chapter 4- This chapter covers the demand assessment carried out for the PBS scheme based on population projections covered by other studies done for Bhopal

Chapter 5- This Chapter covers the broad specifications for bicycles to be used under this scheme

Chapter 6 – Other associated elements like biocycle docking station designs and need for towing vans etc are covered in this chapter

Chapter 7 – The system of operations for the PBS scheme based on automated or manual systems are covered briefly in this Chapter

Chaptr 8 - An assessment of fares for rental of bicycles and their annual increment are covered in this chaptr

Chapter 9 – A project financial viability is carried out in this chapter based on various types of costs and revenues assessment

Chapter 10 – The operations and managerement of this scheme are discussed in this chapter

Chapter 11 – This chapter broadly covers the importance of branding and marketing techniques that can be used for the success of the Scheme in the city.

Chapter 12 – The complete project summary along with a compilation of all costs and expenditures involved over the complete life cycle of the project have been given in this chapter.

1. Introduction

1.1 About the City

Bhopal is the capital of the Indian state of Madhya Pradesh and the administrative headquarters of Bhopal District and Bhopal Division. Population of Bhopal according to Census 2011 is 18,43,000. Also known as the city of lakes, it is one of the greenest cities in India.

The city is said to have been founded by king Bhoj of the Paramara dynasty (1000–1055 A.D.). Much later, in the 18th and the 19th Century, Bhopal was ruled by four women – Begums, which was unique in the royalty of those days. Bhopal was then the second largest Muslim state in pre-independence India, after Hyderabad

The city since then has gained importance by becoming a major educational, economic and political centre of India and houses various institutions and installations of state as well as some of national importance. As an urban agglomeration Bhopal is the second largest city of Madhya Pradesh, after Indore.

Figure 1 View of Bhopal city

1.2 Project Background

"Cities would be encouraged to explore the possibility of a public bicycle program, where people can rent a bicycle for use in specially designated areas"

National Urban Transport Policy, 2006

As envisioned by the NUTP, the concept of a public bicycle sharing program is being earnestly endorsed by the Ministry of Urban Development, Government of India. In this regard, the MoUD constituted a Bicycle Promotion Committee which held its 1st meeting on 26.07.2011 in New Delhi. The primary motive of this committee was to emphasize the importance of introducing bicycles within a Self sustainable Public Bicycle Sharing (PBS) scheme framework in urban areas.

Taking a cue from these efforts of the MoUD, Government of Madhya Pradesh (GoMP) initiated a Public Bike Sharing Scheme to be implemented in Bhopal city in September 2011. The scheme was foreseen to act as a feeder service to the Bhopal BRTS in the areas with high BRT ridership potential. Public Bike Sharing scheme was considered to act as a mode for last mile connectivity to the residents who commute daily for work, education and recreational activities in Bhopal city.

A detailed project report was to be prepared for the PBS scheme and Bhopal Municipal Corporation appointed Urban Mass Transit Company Ltd (a Joint Venture between MoUD and ILFS) as a consultant for the same. UMTC was awarded the mandate after a competitive bidding process held in Bhopal in August 2011.

As part of the deliverables the consultant submitted an Inception Report, followed by a data analysis report in the form of an Interim Report. The draft final report covered the analysis inferences and business, operations and service plan of the bike rental scheme and was submitted to the client (BMC) earlier this year.

The subsequent sections of this Final Report contain complete operations, service and business plan of the bike rental scheme after detailed stakeholder's consultation and discussion sessions.

1.3 Urban Transport Indicators in Bhopal City

Study of trips made and mode of transport used in making those trips indicate that Bhopal city has traditionally been used to public transport and preferred to walk for short distances. Increasing motorization has had its impact in converting a lot of public transport trips into personal transport ones. However, the concept of city buses is found to be better established in Bhopal than in many other cities of its type and class.

It may thus seem reasonable if this can be utilized as a base for introducing NMT with a revived outlook and the existing walk trips (almost 50%) can be converted into a faster, safer and an environmentally sustainable alternative. In this regard, an initiative of introducing a public bike sharing scheme for the city has been taken by the city authority and the subsequent sections of this report highlight the analysis done for finalizing the tentative locations for the implementation of this scheme.

1.4 *Scope of Work and Methodology*

The scope of work includes the following:

I. Secondary Data Collection

(a) Review earlier relevant studies including study BRTS and CBS

(b) Review of other secondary data

(c) Identification and analysis of project specific relevant data to include amongst others the BRTS and CBS studies

II. Primary Data Collection and Analysis

(a) Reconnaissance survey

(b) Review of existing commuter bus traffic on existing corridors

(c) Traffic surveys to be carried out to understand the travel pattern of the commuters and candidate traffic.

III. Preparation of Interim Project Report

(a) Literature Study in close association with the proceedings and progress of the MoUD and relevant sub groups

(b) Identification of residential / commercial pockets / corridors

(c) Identification of high occupancy bus stations/ shelters for main docking stations

(d) Strategies to create active citizenship around cycling

(e) Branding and Marketing Strategies

(f) Stakeholder Meet

IV. Preparation of Detailed Project Report

(a) Demand assessment for public bike sharing scheme in the area and user perception of the proposed service

(b) Assessment of locations for setting up of docking stations and their finalization based on land availability, etc.

(c) Setting of bicycle specifications, setting of specifications for smart-card system

(d) Layout and design of docking stations

(e) Maintenance plan for cycles including on site and off site maintenance

(f) Fare structure

(g) Intelligent Transport System Architecture

(h) Preparing an operational plan which would include deciding the fare system, renting procedures,

(i) Specifying staffing requirements, operation and maintenance requirements, etc.

(j) Quantity and cost estimation for the project.

(k) Project phasing.

(l) Implementation structure.

(m) Revenue sharing structure.

1.5 Study Approach

1.5.1 Identification of focus areas for implementing the project:

Using a sieving technique the locations were finalised by making use of several parameters like terrain and topography, landuse, activity spots, existing and proposed public transport routes, footfall at boarding and alighting points for public transport etc. (Refer ***Figure 2***)

1.5.2 Planning and designing of public bike sharing scheme

A study for the project having all the necessary specifications for the rolling stock (bicycles), docking stations and sub-stations (with their drawings), operational plan, fare and ticketing system, etc. was undertaken. The following steps were undertaken for finalising the entire operation methodology for the scheme:

- Assessment of locations for setting up of docking stations and their finalization based on land availability, etc.
- Demand assessment for rent-a-cycle scheme in the area and user perception of the proposed service
- Setting of bicycle specifications, setting of specifications for smart-card system
- Layout and design of docking stations
- Preparation of an operational plan including the fare system, renting procedures, staffing requirements, operation and maintenance requirements, etc.

The detailed methodology chart is given in ***Figure 2.***

Chapter 2 summarises the primary survey findings of the user surveys conducted previously as part of this study.

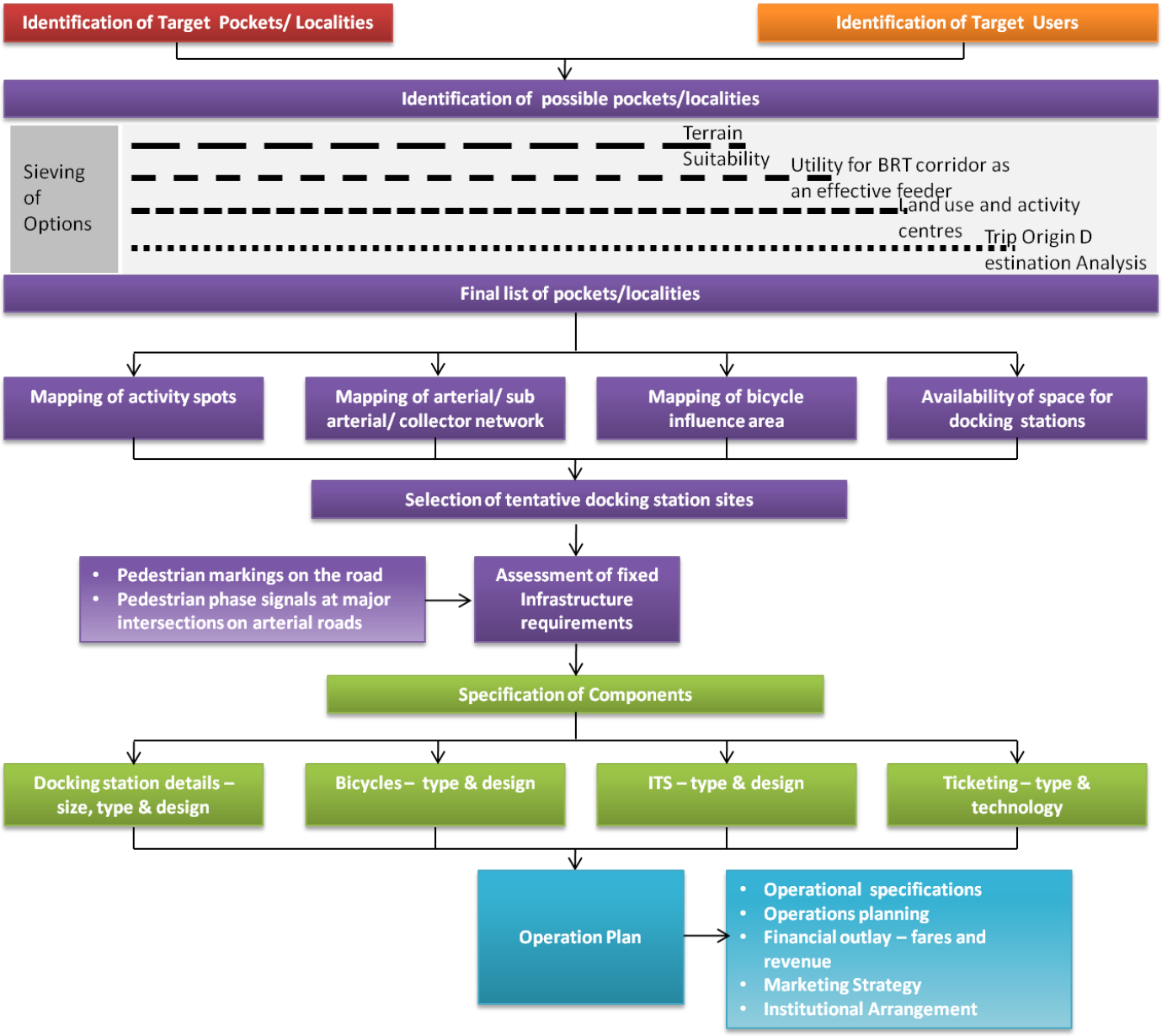


Figure 2 Detailed methodology

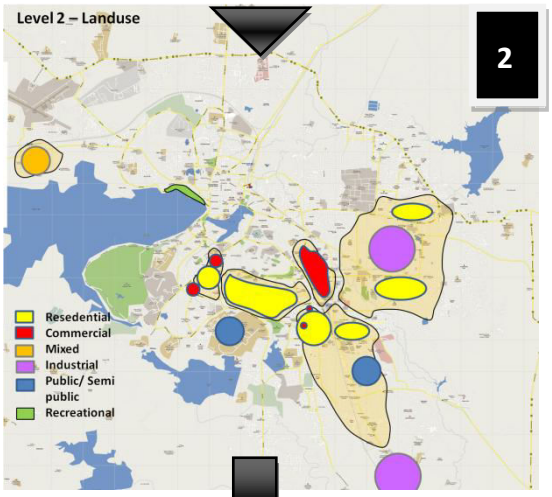
2. Primary Survey Findings

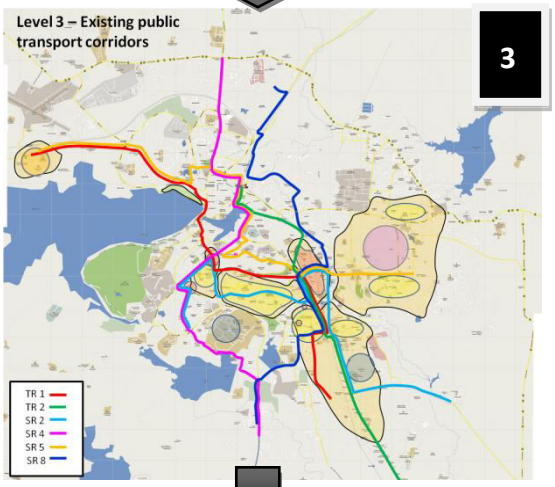
2.1 Conduct of Primary Survey

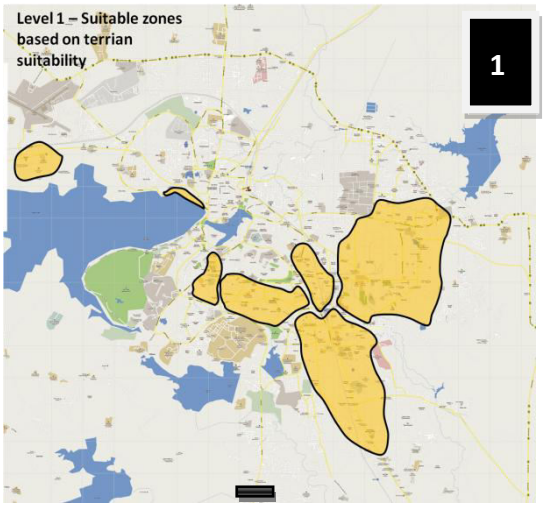
The simple technique used in selecting sites for the bicycle sharing project in Bhopal city was based on the following parameters:

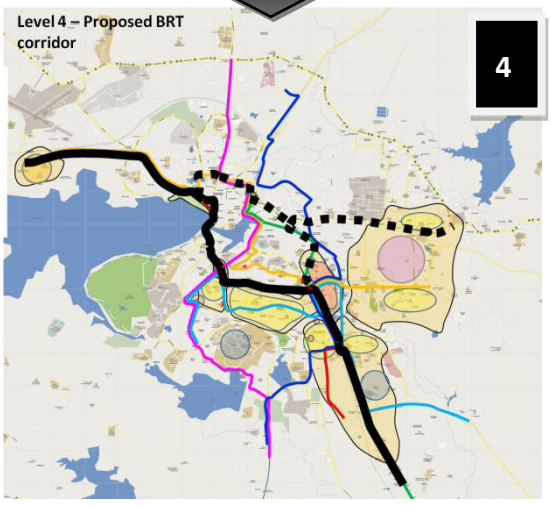
1. Area suitability and terrain
2. Landuse
3. Existing public transport corridors
4. Proposed BRT corridor
5. Existing spots of high public transport usage (Ticket sales)
6. Areas of public interest like parks etc
7. Student population spots

Delineation of zones based on the 7 levels of sieving has been indicated in the schematic (**Figure 3**) below.









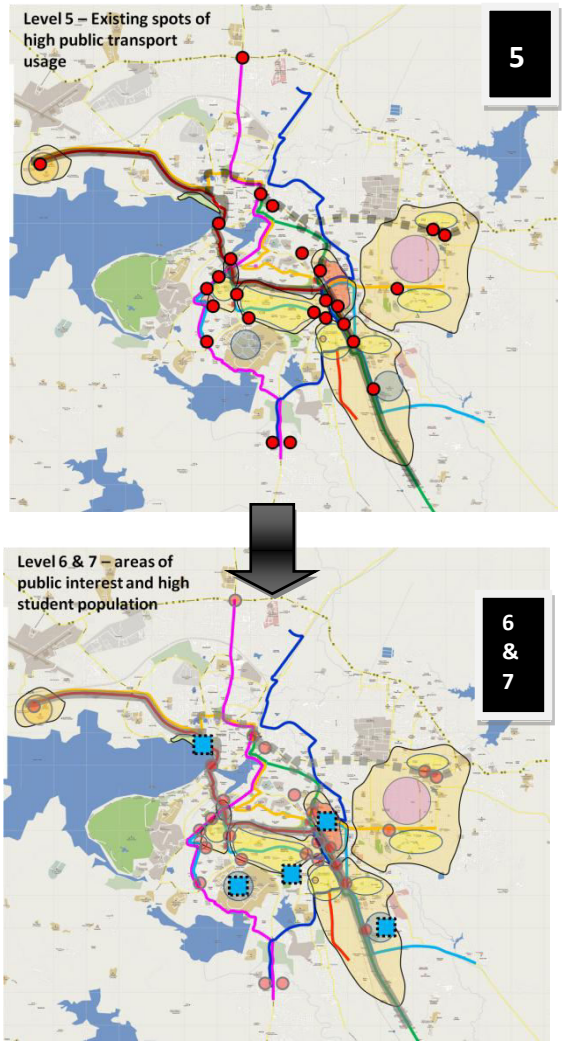


Figure 3 Sieving analysis performed for selection of zones for conduct of survey

Based on detailed assessment of all the above discussed parameters, detailed reconnaissance survey and discussion with stakeholders, a total of 16 zones (A-P) were identified. Within these 16 zones, a total of 33 locations were identified for conduct of Origin-Destination study and User opinion surveys.

Assuming that most of the survey spots were BCLL bus stops, the selection of number of samples to be covered at each of the spots was based on the bus boarding alighting numbers obtained from ticketing data. Using a sample size of at least 5% of the total number of footfall, at the points of highest footfalls, a rough estimate of 185 was achieved, this was rounded off to 200 and hence it was projected that approximately 7000 samples would be covered in total based on 200 samples at 33 spots.

The final selected list of zones along with spots identified for carrying out the survey is given in the adjoining table (**Table 1**). The locations (within zones) selected for conduct of survey have been given in **Fig 4**.

Table 1 Final Zones and locations for conduct of primary survey

S No.	Zones/Spots
A	**Bairagarh**
1	Bairagarh Bus Stop
2	Railway Station
B	**New Market**
3	New Market Parking
4	TT Nagar Thana
C	**Mata Mandir**
5	Platinnum Plaza
6	Harshwardhan Nagar Bus stop
D	**Nehru Nagar**
7	Nehru Nagar Bus Stop
E	**MP Nagar Zone I**
8	DB Mall
9	Parking lot beind Jyoti Cineplex
F	**MP Nagar Zone II**
10	Sargam Talkies/Bus Stop

S No.	Zones/Spots
11	Central Parking
G	**6 No. Stop**
12	Shivaji Nagar/Nutan College
13	6 No. Market
H	**Arera Colony**
14	Bus stop on Hoshangabad Road
15	Habibganj Rly Station
16	Bittan Market
17	10. No Market
I	**Barkhatullah University**
18	Bus stop on Hoshangabad Road
19	Administration Block
20	Central Library
21	Hostels
J	**BHEL**
22	Piplani
23	Officer's Club
24	Carmel Convent School Intersection
K	**Shahpura**
25	Shahpura lake
L	**Upper Lake**
26	Koh-E_fiza junction
27	Kamla Park
M	**MANIT**
28	Administration block
29	Library/Auditorium
30	Hostel
N	**Old Railway Station**
31	Bus Stop
O	**Kolar**
32	Main Road in front of Mahabali Nagar
33	Main Road infront of Sagar Enclave
P	**Indrapuri/Sonagiri**
34	Bus stop on Raisena Road

In order to finalize the most plausible sites for implementation of the public bicycle sharing scheme, primary survey was conducted at the 35 sites covering over 7000 respondents. The following information was collected:

- Origin Destination information from public transport/other users
- Travel information (mode/time taken/distance covered etc)
- Willingness to use a shared bicycle
- Willingness to pay for the service

The analyzed data is discussed in the subsequent sections.

The Survey Format is attached at Annexure 1

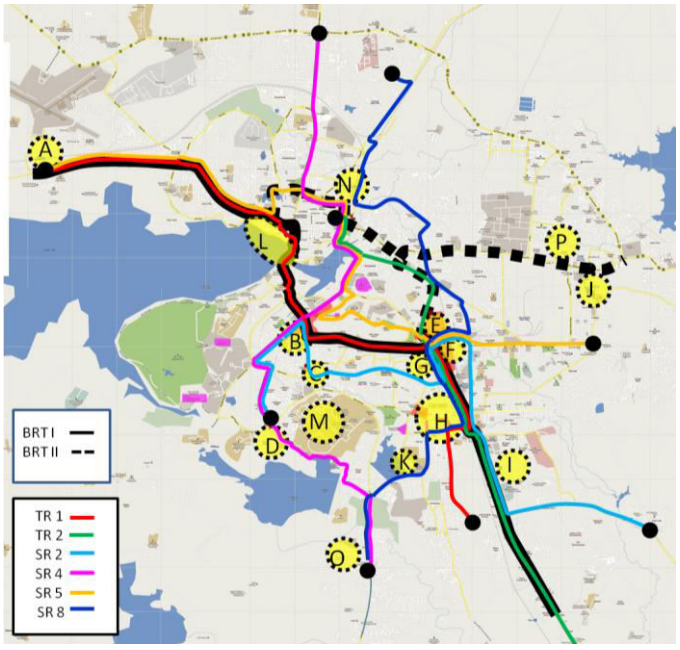


Figure 4 Final sites selected for conduct of survey

2.2 Analysis Summary

Detailed study of the data collected indicates that the willingness is largely present to use such a scheme. This is especially dominant within University Campuses and terminals like Railway Stations. In addition to these, spots that witness high usage of city buses also depicted willingness in the proposed service.

Areas like New Market, MP Nagar, 6 No Stop, 10 No market may be areas that are distanced apart by more than 2.5 kms. However, there is an interesting pattern emerging from the OD analysis, as most of these areas become important origin or destination points for the commuters. Hence there may be a need to include additional areas for docking bicycles so that they can act as links to the main OD pairs.

The survey analysis is attached as ***Annexure 2***

2.3 Priority Area Identification

Based on the sample coverage of approximately 200 samples at each spot, the OD pairs were identified based on classification under three categories

1. Pairs having highest percentage of trips
2. Pairs having high to medium percentage of trips
3. Pairs having medium to low percentage of trips

(**Figure 5** below indicates the mapped Zones)

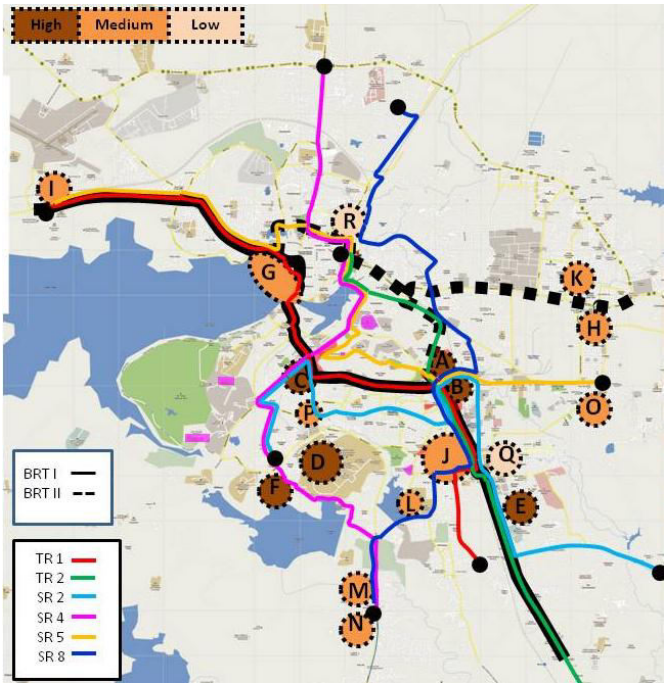


Figure 5 Mapping of priority spots with high-medium-low trips

The following Chapter (No.3), covers the procedure for bicycle network planning and summarizes the final list of locations identified for setting up the bicycle docking stations

3. Bicycle Network Planning

3.1 Background

Based on the site selection done at the preliminary stage of selection of areas for conduct of survey, the screening of areas was done which indicated high demand for bicycle usage. (discussed previously in Chapter2). This was followed by a detailed stakeholder consultation which resulted in identification of certain additional locations which would act as important "links" in order to ensure completeness of the network

3.2 Finalized locations

In order to build a complete network of bicycle docking stations, additional link points were added to the network

The type of sites included popular market areas, bus interchange points, universities and institutions, parks and open spaces, and important activity centers along the BRT corridor. The selection of spots has been done on the basis of importance of a spot for the surrounding residential localities and the distance between any two docking units within a locality is less than 1 km. The final list of spots for implementation of scheme is given in ***Table 2.***

Table 2 Finalized list of spots, based on stakeholder discussion for installing docking stations

S No.	Zones/Spots
1	Bairagarh Overhead Tank
2	Bairagarh Civil Hosp Bus Stop
3	Halalpur Bus Terminal
4	Lalghati Square, Police Chowki
5	VIP Road - Koh-e-Fiza Square
6	VIP Road - Gauhar Mahal Square
7	Kamla Park Bus Stop
8	Vardhaman Park Bus Stop
9	Boat Club, BMC Parking
10	Polytechnic Square Bus Stop
11	New Market (Roshanpura square)
12	New Market - GTB Complex police chowki
13	New Market- Tin Shade
14	Jawahar Chowk (Bus Terminal)
15	PNT Square (Auto Stand/Bus Stop)
16	Mata Mandir Square Bus Stop
17	MANIT Square (outside MANIT gate)
18	Geetanjali Square Bus Stop
19	Sair Sapata, MPT Parking
20	Nehru Nagar Bus Stop
21	Bhoj Uiversity Gate Bus stop
22	Shahpura Pedestrian bridge
23	Shahpura Rainbow retreat
24	Barkhatullh University Gate Bus stop
25	Habibganj Naka
26	10 No. Market BMC Parking
27	Bittan Market Bus stop
28	Ekant Parking entrnce gate
29	Ekant Park rear side parking
30	Patrakar Colony bus stop
31	Char Imli- Nandan Kanan Park entrance
32	Old Campion bus stop
33	Link Road 2-7 No. Bus Stop
34	Link Road 2-6 No. Bus Stop (Nutan

S No.	Zones/Spots
	College)
35	Link Road 2-Arjun nagar square
36	Link Road 1-Anand Vihar School Road
37	Link Road 1-Red Cross Hospital Bus Stop
38	Mantralaya - Satpura Bhavan
39	Mantralaya - Vindhayachal Bhavan
40	Mantralaya - Vallabh Bhavan
41	MP Nagar 1 - DB Mall bus stop
42	MP Nagar 1 - Board Office Square
43	MP Nagar 1 - Press Complex
44	MP Nagar 1 - Jyoti Talkies Square
45	MP Nagar 2 - Sargam Talkies bus stop
46	Mansarovar Complex
47	ISBT
48	Indrapuri, JK Road Bus Stop
49	Hazrat Nizamuddin Colony Gate
50	Minal Mall
51	Suyash Hospital
52	Habibganj Railway Station (rear)
53	Main railway Station
54	Nehar Chowraha
55	Minal Residency gate near Ayodhya bypass
56	Barkhatullah Univ. Admin Block
57	MANIT Admin Block
58	Depot Chowraha
59	Jawahar Chowraha
60	Lake View Ashoka

Refer ***Figure 6*** for area covered under the PBS scheme in Bhopal city. Mapping of the selected sites on a scaled up map has been shown in ***Figure 7.***

Most of the docking station spots are either bus stops or BMC managed parking areas. Individual spots with their site pictures are given in ***Annexure 3.***

Complete Demand Assessment at each of the finalized docking station location is discussed in the subsequent Chapter (No. 4)

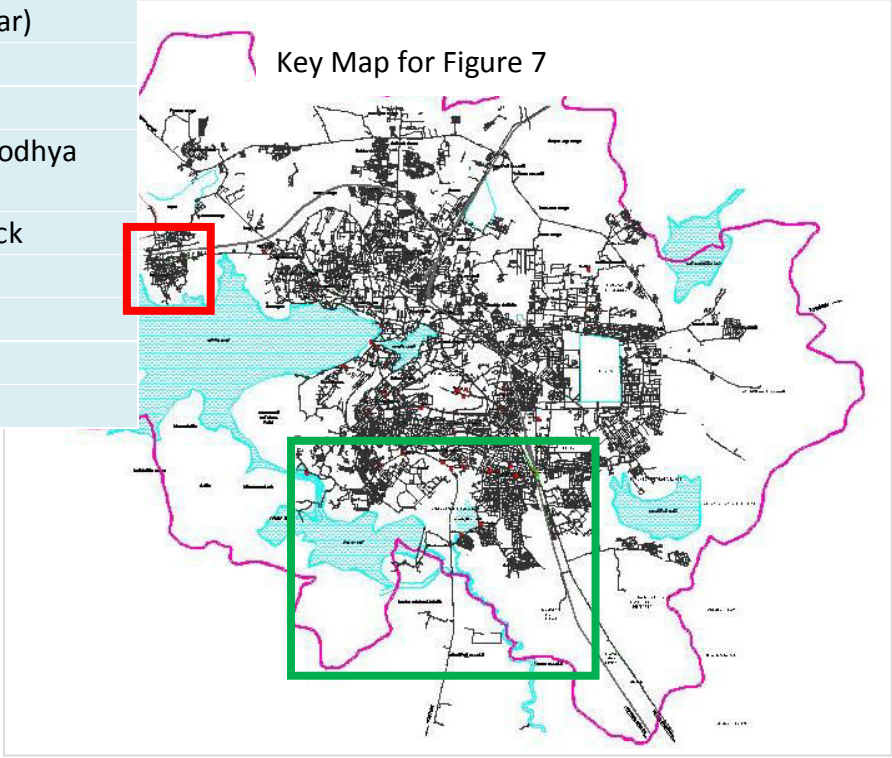
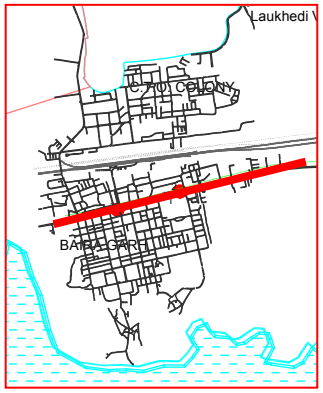
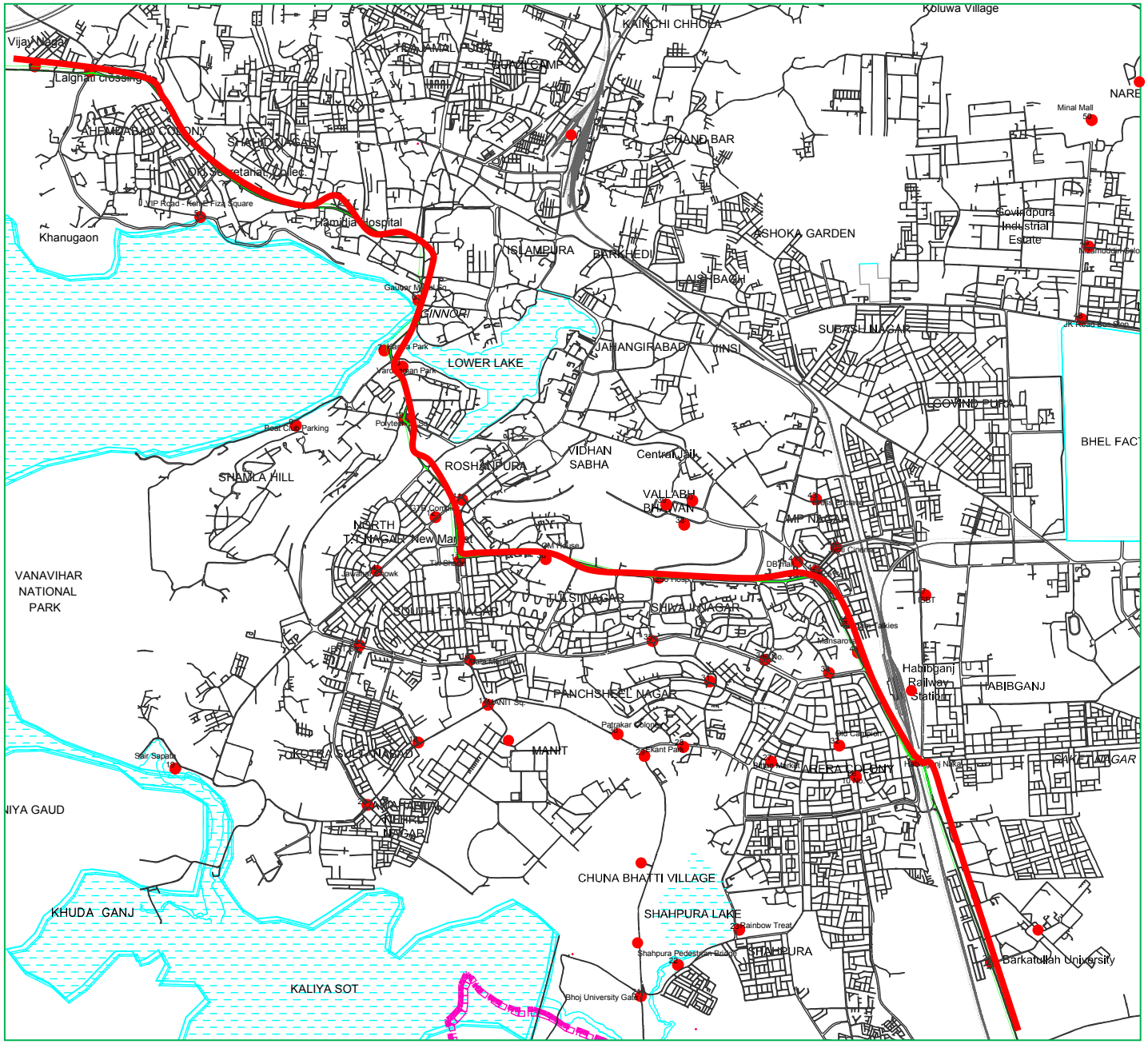


Figure 6 PBS schemecoverage area within Bhopal city





BRT Corridor

Figure 7 Docking station locations

4. Demand Assessment

4.1 Introduction

In the previous chapter, a bicycle network comprising of 50 docking sites has been identified. Hereafter, it is necessary that a demand assessment is carried out in order to arrive at the number of bicycles needed at each docking station and the associated infrastructure requirements for smooth operations of the service.

This chapter will cover the demand estimation for total number of bicycles required at the 60 docking sites derived in the previous chapter.

4.2 Demand Assessment

Demand Assessment calculations have been made by applying various screening parameters as explained subsequently. A conservative approach has been used at each level so as to avoid presenting a needlessly optimistic picture.

Screening Level 1

As step 1, population estimation was made for each docking station as an "influence area population".

The influence area for each docking station was taken as an average of 700m radial area covered around the docking station.

The population within this influence area was estimated using the average density of the ward population residing within the influence area. The influence area of each docking unit site is mapped in ***Figure 9***. The mapping was done keeping the sprawl and population density of a particular area in consideration

Screening Level 2

Screening level 2 is based on the argument that out of the total influence area population (estimated in the previous step) only the public transport users and those who make walk trips will be willing to use a rental bicycle for their short/end trips.

Previous studies done in the city for modal composition indicate that Public transport trips add up to about 28%, while walk trips add up to nearly 52%.

It was thus assumed that out of the total influence area population for each docking station, about 70% of the population either walks to takes the public transport for making their daily trips. The potential

bicycle users were thus calculated as 70% of the population within the influence area of each docking station.

Screening Level 3

The third level of screening was done assuming that the target age group for this scheme should include the "working population" only out of the total public transport using influence area population. Age profile of Bhopal captured in the City Development Plan, prepared in 2006 indicates that 54% of the population falls under the age group of 15-45 years.

54% of the target users identified upto screening level 2 were hence taken as the target users for the scheme in the third level

Screening Level 4

The primary survey conducted as part of this study indicated that about 80% respondents expressed their willingness to use the service across 35 survey spots. In order to keep the assumptions on a conservative side, the willingness factor used is 50%.

Thus within the fixed age band of population (54%), only 50% of the users are further screened as target users at this level.

Screening Level 5

The primary survey further included an enquiry about the frequency of trips made by the respondents to a particular spot. The options included daily trips, trips made on alternate days, weekly trips and monthly trips. Using this as the 5th screening level, only persons making daily trips have been considered as target users at an average of 66%.

Screening Level 6

The sixth level of screening takes up only peak hour usage. A peak hour factor of 12.5% is applied to find out the total users who would be using the service during the peak hour. Urban transportation planning is typically designed to meet the maximum hourly demand, which in other words can be termed as the peak hour demand.

Bicycle users for peak hour are thus calculated in this step. This gives a demand for bicycles for the peak hour at individual docking stations.

Screening Level 7

Level 7 is taken as the final screening level to find out the actual demand keeping a conservative approach that only 20% users will actually use the service even in the peak hour.

The overall filtration process for a total of 10 years is captured in ***Figure 8.***

It may be noted that the demand for subsequent years is however scaled up by using increments in some of the parameters. The scaling up factors used are as follows

1. Annual population projection factor – 1.8% - 2.5%
2. Annual public transport user increment – 0.2%
3. Annual increment in willingness to use – 0.5%

The bicycle demand so obtained in the base year (2013) is given in ***Table 3.*** Yearly demand up-till 2023 is given in ***Annexure 4.***

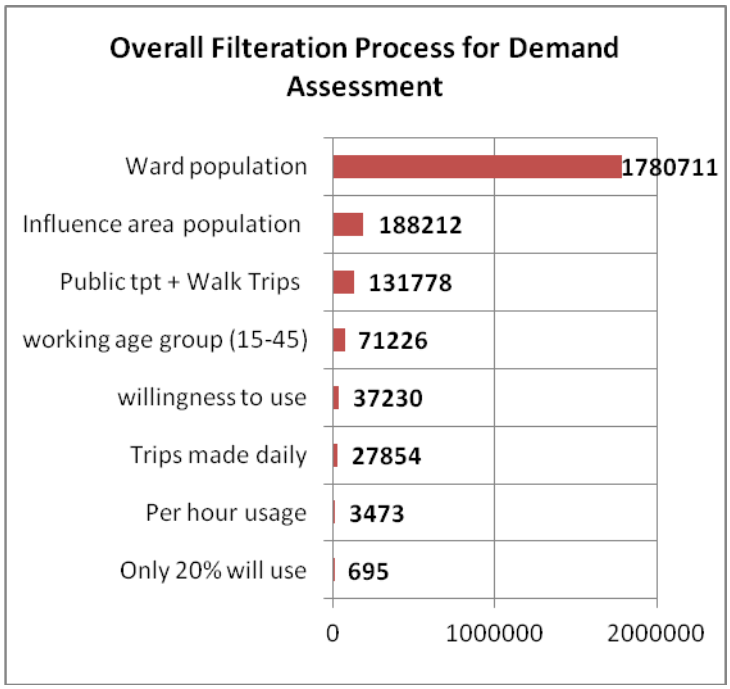
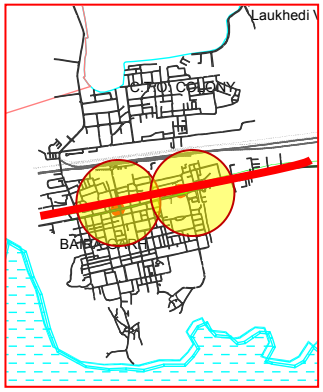
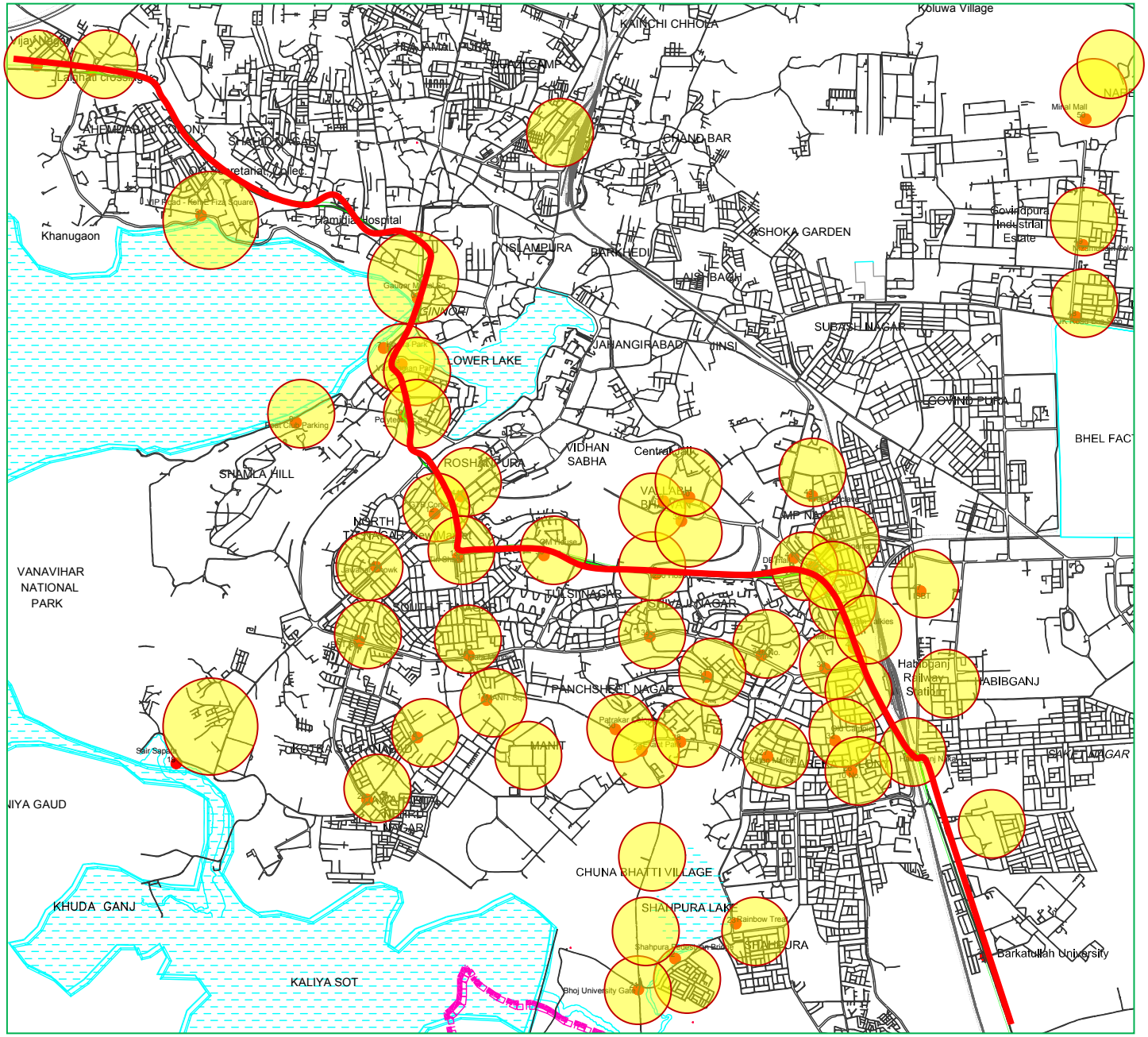


Figure 8 Overall filtration process for demand assessment





BRT Corridor

Figure 9 Bicycle docking station influence area

Urban Mass Transit Company Limited

Public Bike Sharing Scheme for Bhopal City

Table 3 Bicycle demand assessment for base year (2013)

s No	Zones/Spots	Ward No	Ward popln.	Locality influence area population*	Public tpt + Walk Trips (70%)	working age group (15-45)- 54% **	Willing-ness to use (50%)	Daily trips (Frm survey analysis) - 66 % average	Per hour usage	Pessimistic approach (20% will use)	Actual no. of bikes - roundin g off
1	Bairagarh Overhead Tank	3	18574	3715	2600	1404	702	365	46	9	10
2	Bairagarh Civil Hosp Bus Stop	3	18574	3715	2600	1404	702	365	46	9	10
3	Halalpur Bus Terminal	1	36496	2555	1788	966	483	319	40	8	10
4	Lalghati Square, Police Chowki	11	41002	4920	3444	1860	930	614	77	15	15
5	VIP Road - Koh-e-Fiza Square	6	18131	3989	2792	1508	754	580	73	15	15
6	VIP Road - Gauhar Mahal Square	7	15240	3048	2134	1152	576	444	55	11	10
7	Kamla Park Bus Stop	26	16228	3246	2272	1227	613	472	59	12	10
8	Vardhaman Park Bus Stop	26	16228	3570	2499	1350	675	520	65	13	15
9	Boat Club, BMC Parking	27	22561	4512	3158	1706	853	563	70	14	15
10	Polytechnic Square Bus Stop	26	26305	7891	5524	2983	1491	984	123	25	25
11	New Market (Roshanpura square)	34	13888	4861	3403	1837	919	496	62	12	10
12	New Market - GTB Complex police	34	13888	5139	3597	1942	971	524	66	13	15

s No	Zones/Spots	Ward No	Ward popln.	Locality influence area population*	Public tpt + Walk Trips (70%)	working age group (15-45)- 54% **	Willing-ness to use (50%)	Daily trips (Frm survey analysis) - 66 % average	Per hour usage	Pessimistic approach (20% will use)	Actual no. of bikes - roundin g off
	chowki										
13	New Market- Tin Shade	33	12616	3532	2473	1335	668	361	45	9	10
14	Jawahar Chowk (Bus Terminal)	34	13888	4028	2819	1522	761	411	51	10	10
15	PNT Square (Auto Stand/Bus Stop)	28	26305	5524	3867	2088	1044	689	86	17	15
16	Mata Mandir Square Bus Stop	30	17163	3947	2763	1492	746	492	62	12	10
17	MANIT Square (outside MANIT gate)	30	17163	2918	2042	1103	551	364	45	9	10
18	Geetanjali Square Bus Stop	48	22329	3796	2657	1435	717	474	59	12	10
19	Sair Sapata, MPT Parking	31	40002	2000	1400	756	378	249	31	6	10
20	Nehru Nagar Bus Stop	51	26559	5577	3904	2108	1054	875	109	22	20
21	Bhoj Uiversity Gate Bus stop	49	32261	4517	3162	1707	854	563	70	14	15
22	Shahpura Pedestrian bridge	49	32261	5484	3839	2073	1037	808	101	20	20
23	Shahpura Rainbow retreat	51	26559	4249	2975	1606	803	626	78	16	15
24	Barkhatullh University Gate Bus	14	21282	3618	2533	1368	684	568	71	14	15

s No	Zones/Spots	Ward No	Ward popln.	Locality influence area population*	Public tpt + Walk Trips (70%)	working age group (15-45)- 54% **	Willing-ness to use (50%)	Daily trips (Frm survey analysis) - 66 % average	Per hour usage	Pessimistic approach (20% will use)	Actual no. of bikes - roundin g off
	stop										
25	Habibganj Naka	55	16125	3709	2596	1402	701	582	73	15	15
26	10 No. Market BMC Parking	50	27026	5946	4162	2247	1124	742	93	19	20
27	Bittan Market Bus stop	50	27026	4865	3405	1839	919	607	76	15	15
28	Ekant Parking entrnce gate	48	22329	2679	1876	1013	506	334	42	8	10
29	Ekant Park rear side parking	48	22329	2679	1876	1013	506	334	42	8	10
30	Patrakar Colony bus stop	49	32261	5484	3839	2073	1037	684	86	17	15
31	Char Imli- Nandan Kanan Park entrance	35	28693	3730	2611	1410	705	465	58	12	10
32	Old Campion bus stop	50	27026	5675	3973	2145	1073	708	88	18	20
33	Link Road 2-7 No. Bus Stop	48	22329	3573	2501	1350	675	446	56	11	10
34	Link Road 2-6 No. Bus Stop (Nutan College)	48	22329	4689	3282	1772	886	594	74	15	15
35	Link Road 2-Arjun nagar square	32	19685	2953	2067	1116	558	374	47	9	10
36	Link Road 1-Anand Vihar School Road (Opp CM's Bunglow)	32	19685	1772	1240	670	335	224	28	6	10

s No	Zones/Spots	Ward No	Ward popln.	Locality influence area population*	Public tpt + Walk Trips (70%)	working age group (15-45)- 54% **	Willing-ness to use (50%)	Daily trips (Frm survey analysis) - 66 % average	Per hour usage	Pessimistic approach (20% will use)	Actual no. of bikes - roundin g off
37	Link Road 1-Red Cross Hospital Bus Stop	32	19685	1772	1240	670	335	224	28	6	10
38	Mantralaya - Satpura Bhavan	35	28693	2009	1406	759	380	251	31	6	10
39	Mantralaya - Vindhayachal Bhavan	35	28693	2009	1406	759	380	251	31	6	10
40	Mantralaya - Vallabh Bhavan	35	28693	2009	1406	759	380	251	31	6	10
41	MP Nagar 1 - DB Mall bus stop	47/45	25494	6047	4233	2286	1143	857	107	21	20
42	MP Nagar 1 - Board Office Square	47	17276	4837	3386	1829	914	686	86	17	15
43	MP Nagar 1 - Press Complex	47	17276	3801	2661	1437	718	374	47	9	10
44	MP Nagar 1 - Jyoti Talkies Square	47	17276	3974	2781	1502	751	391	49	10	10
45	MP Nagar 2 - Sargam Talkies	47/56	28489	4319	3023	1633	816	465	58	12	10
46	Mansarovar Complex	47	17276	3455	2419	1306	653	372	47	9	10
47	ISBT	56	21083	4006	2804	1514	757	500	62	12	10
48	Indrapuri, JK Road Bus Stop	63	50861	4578	3204	1730	865	571	71	14	15
49	Hazrat Nizamuddin	63	50861	4069	2848	1538	769	508	63	13	15

s No	Zones/Spots	Ward No	Ward popln.	Locality influence area population*	Public tpt + Walk Trips (70%)	working age group (15-45)- 54% **	Willing-ness to use (50%)	Daily trips (Frm survey analysis) - 66 % average	Per hour usage	Pessimistic approach (20% will use)	Actual no. of bikes - roundin g off
	Colony Gate										
50	Minal Mall	65	40390	2020	1414	763	382	252	31	6	10
51	Minal Residency gate near Ayodhya bypass	65	35922	1796	1257	679	339	224	28	6	10
52	Suyash Hospital	49	28692	3443	2410	1301	651	429	54	11	10
53	Nehar Chowraha	49	28692	3443	2410	1301	651	429	54	11	10
54	Habibganj Railway Station (rear)	55	14341	2868	2008	1084	542	358	45	9	10
55	Main railway Station	18	12500	4375	3063	1654	827	546	68	14	15
56	Barkhatullah Univ. Admin Block	53	33737	1687	1181	638	319	210	26	5	10
57	MANIT Admin Block	31	35577	1779	1245	672	336	222	28	6	10
58	Depot Chowraha	28	25519	1786	1250	675	338	223	28	6	10
59	Ayush College Kaliasot	31	27004	1890	1323	715	357	236	29	6	10
60	Lake View Ashoka	26	25902	1813	1269	685	343	226	28	6	10
TOTAL										695	750
** Average of 700 m radius from docking station site*											
*** From Age profile given in CDP Bhopal*											

Bicycle demand calculation in the subsequent years is made as per ward wise population projections for the influence wards up till 2023. The adjoining figure (Refer ***Figure 10)*** on Annual Bicycle Demand is a compilation of the total demand for bicycles based on increments made in population, public transport share and willingness to use.

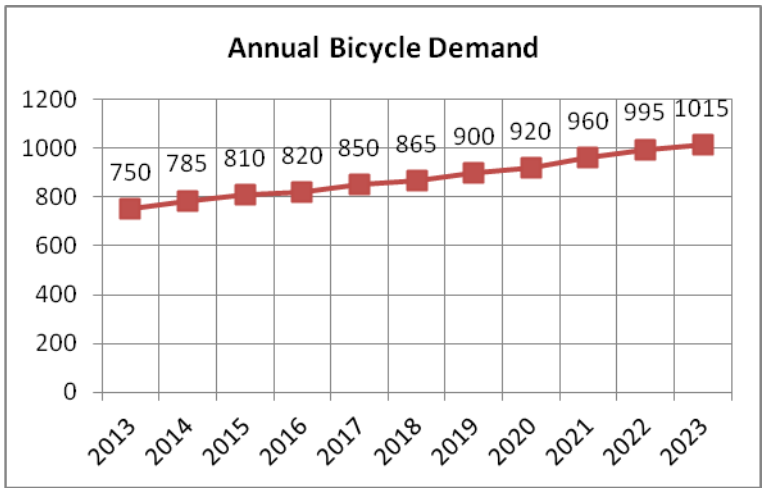


Figure 10 Annual bicycle demand from 2013-2023

The population projection tables and yearly change in Demand have been given as ***Annexure 4.***

Chapter 5 highlights the basic bicycle specifications and some of the available options in bicycles in India.

5. Bicycle Specifications

5.1 Introduction

This Chapter covers the various types of bicycles available for use in PBS scheme for Bhopal. Some of the existing models and types with their basic features have been summarized in the subsequent sections.

5.2 Bicycle Specifications

Fleet bicycles need to be of unisex category and the design should be distinctive, modern, safe and ideal for easy city use. The bicycles need to be clearly branded to increase their visibility. Some of the compulsory design features are listed below:

- Unisex design - fit for men and women
- Simple 3-7 gear system – ideal for use in hilly terrain
- Aluminum frame – for lightweight bicycles that are strong and durable
- Radio Frequency Identification (RFID) tag enabled – which gives a unique id for each bicycle
- One-piece handlebar – which covers and protects all components
- All cables and derailleur covered for better protection
- Chain protector integrated into bike structure
- Active lighting -front and rear
- Front and rear internal brakes for greater safety
- Adjustable seat positioning
- Low center of gravity for greater stability
- Tires –high quality, puncture resistant

Refer ***Figure 11*** for a conceptual design of bicycle ideal for PBS scheme. ***Figure 12*** and ***Figure 13*** display some of the popular internationally used designs

Standard conceptual design of bicycles for PBS purpose with necessary specifications

Figure 11 Customized Bicycle Design

Figure 12 Specially designed bicycles used in Dublin city for "Dublin Bikes"

Figure 13 Specially designed bicycles used in Washington DC under the PBS program "Capital Bikeshare"

5.3 Available Options

The various available options in bicycles along with some of the basic features and approximate price have been given in ***Table 4***. It may be noted that these features can generally be altered incase of bulk production to suit the needs of the client with scope for additional accessories and attachments.

Table 4 Bicycle Specifications

Design Style	Features	Approx Price in Rs
Standard 	• Frame - Ergonomically Designed geometry for comfortable riding. Mildly Raised Handle • Handle - Synthetic Resin Handle Grips • Brakes - Centre Pull Brake System • Mudguards - U-Shaped, Steel Mudguards • Chain cover - Quarter Chain cover • Saddle - Scooter type / Release type or as per requirement • Pedal – Sturdy Pedals With Anti-Skid Pedal Rubber Blocks	1500 – 2500
Mid Range Urban bicycles  	• Frame - Ergonomically Designed geometry for comfortable riding. • Handle - Ergonomically Designed Comfortable Extra Raise Handle. Soft synthetic resin handles grips. • Brakes - Side pull caliper brake system with friction-free cables • Wheel - 26 X 1-3/8 steel Rims. • Mudguards - U-Shaped, Steel Mudguards, • Chain and chain cover - 44T Steel BPC with plastic guard • Saddle - Specially Engineered PU Saddle for Comfortable Ride. • Pedal – Improved resin moulded anti-skid body pedals. • Gears – as per requirement	3000 – 8000
Mountain Bicycles	• Frame - mountain bike frame belt, Oval tubing design frame with maintenance-free full suspension system. • Handle - Double bend type MTB handle. • Brakes - High strength low profile cantilever brake.	5000 – 20000

Design Style	Features	Approx Price in Rs
	Steel reinforced, plastic coated brake levers. Friction-free casing for braking with ease. • Chain Wheel and Crank- 24/34/42 T Steel cottered chain wheel. Built-in resin moulded attractive trouser guard. • Gears - Index type shift system with available speed combinations • Saddle - Comfortable MTB style PU moulded saddle as per latest vacuum based technology. • Pedal – Reflectorised wider body resin moulded MTB pedal. • Wheels - 26" x 2.125", latest trends for better road grip and extra stability on bumpy roads.	
Electric Bicycles 	• Frame - Exclusive Currie Aluminum Comfort design, Fender Mounts, Integrated Rear Rack, Bolt-on Front Basket • Handle - High-Rise Bar and Height Adjustable Stem, Dual Density Grips • Brakes - Disc with Alloy Motor Inhibit Levers • Chain Wheel and Crank- 24/34/42 T Steel cottered chain wheel. Built-in resin moulded attractive trouser guard. • Gears - Index type shift system with available speed combinations • Saddle - Velo Suspension Comfort and Micro-Adjust Suspension Post • Crank and Pedal – Alloy 44T Crank set, Double Chain guard, Hi-impact Non-slip Pedals • Wheels - 26" x 2.00", Slime Self-Sealing Flat Tire Prevention System • Motor - Exclusive Alloy Shell 500 Watt DC brushless Geared Hub Motor • Battery - EV Rated Li-ion type, Down Tube Mounted, 36V / 10Ah Pack, Rechargeable • Charge System - Charger with LED Status Display • Controller - 36 Volt Fully Potted with Power Gauge Function • Top Speed - Up to 20 mph/ 32 km/h (Rider Weight, rider Input and Terrain contingent)	15000 - 25000

From amongst the available options and their features and the price range, the use of mid range urban bicycles for a bicycle sharing scheme looks feasible in terms of design requirements and price of the commodity. These bicycles however need to be of unisex variety and should be geared for ease in riding over undulating terrain.

Subsequent Chapter (No. 6) covers the physical infrastructure elements of a PBS scheme.

6. Physical Infrastructure

6.1 Introduction

Based on the finalized locations for installing the docking stations for bicycles discussed in Chapter 3, Bicycle Network Planning, the individual sites were surveyed for selection of clear land pocket which is owned by the BMC and appears to be a viable and accessible site for the said purpose. The detailed site images (google maps) are attached in ***Annexure 3***. This Chapter covers two elements of physical infrastructure required for operations of the PBS scheme:

- Docking stations and their design
- Associated elements like towing vans

6.2 Design Considerations for Docking Stations

Basic design consideration for bicycle docking station was based on the following:

1. Temporary structure with minimum civil works for scope for relocation if any
2. Use of low cost, durable materials for side walls
3. Covered structure for protection of bicycles from direct heat and rain
4. Space for an additional transaction terminal and guard/ward room
5. Simple replicable design unit for increase in size of the structure to meet the increase in demand/supply of bicycles
6. Ample space for advertisement in the back and front or side panels
7. Backlit advertisement panels for providing lighting to the structure in the dark
8. Fixed space for bicycle docking based on standard shape and size of a locking device for individual bicycles.
9. Overall good aesthetics for a pleasing appearance

6.3 Base Designs

Based on the inputs listed above, four base designs were created The 3D views of the four base design options are given in ***Figure 14*** to ***Figure 17.***

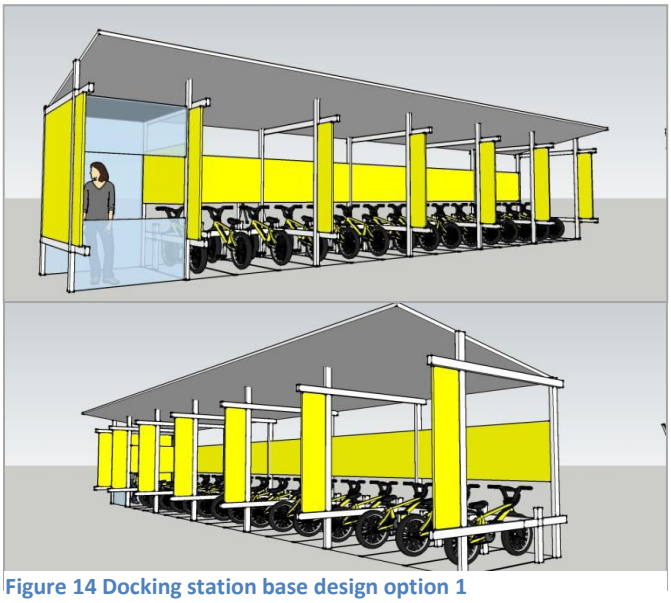


Figure 14 Docking station base design option 1

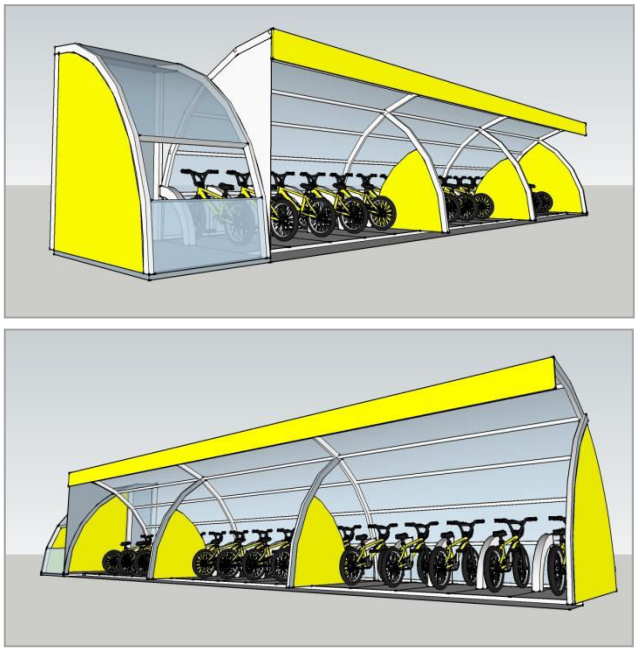


Figure 15 Docking station base design option 2

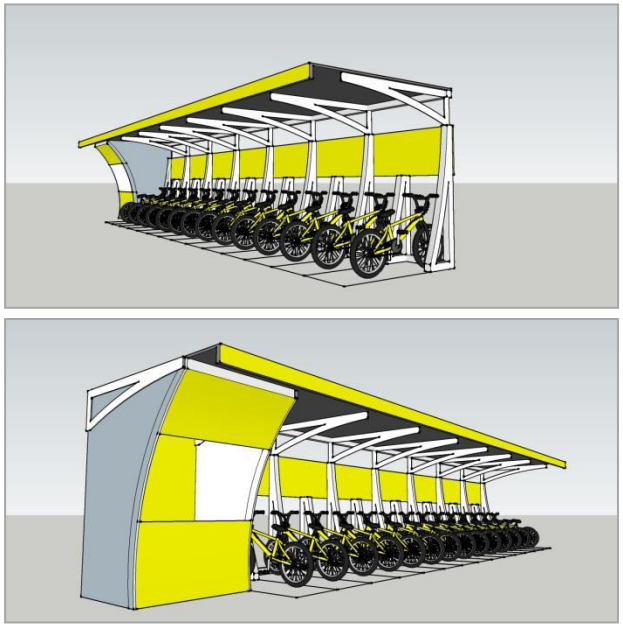


Figure 16 Docking station base design option 3

It may be noted that the yellow coloured portions in Base design options 1-3 depict space for advertisements

Figure 17 Docking station base design option 4

6.4 Finalized Design Specifications

Based on the design considerations, and the four base designs prepared, two options (1 and 4) were selected for further detailed design with the following design specifications

1. Temporary structure generally made out of steel framework with a steel corrugated sheet used as a roofing material.
2. Base unit of docking station consisting of one small cubical as a transaction terminal and guard room with an average of 18 spaces for bicycle

docking. Complete dimensions for a docking station for 18 bicycles are 13.8m X 1.64m or approx 22.63 sq.m.

3. Area for backlit advertisement space with vertical LED side panel and front/side wall of transaction cubicle works out to be 220 sq feet.

6.5 Design Option

Design Option finalized for PBS Bhopal has bicycles placed angularly along with some additional space for accommodating a transaction terminal on its left long with a guard room. Due to the placement of bicycles, the additional space on the right side of the docking station can be used for installing vending machine on the right most corner.

The plan and elevation the design is attached in ***Annexure 5***

The selected docking station design has space for advertisement considering that advertisement revenue will be a critical component in determining the feasibility of the scheme. The available advertisement space per docking station (based on designs) works out to be 25 sq.m. Out of this 2 sq.m. has been kept reserved for any "green advertisement" which could be controlled by BMC**.** Effective advertisement space remaining for commercial advertisement is 23 sq.m. which amounts to an average of 1380 sq.m. of total advertisement space for 60 docking stations. The inside horizontal panel shall have backlit advertisement which could generate revenue at a higher rate per sq.m.

3D views of the designs are given in **Error! Reference source not found.** ***to*** **Error!**

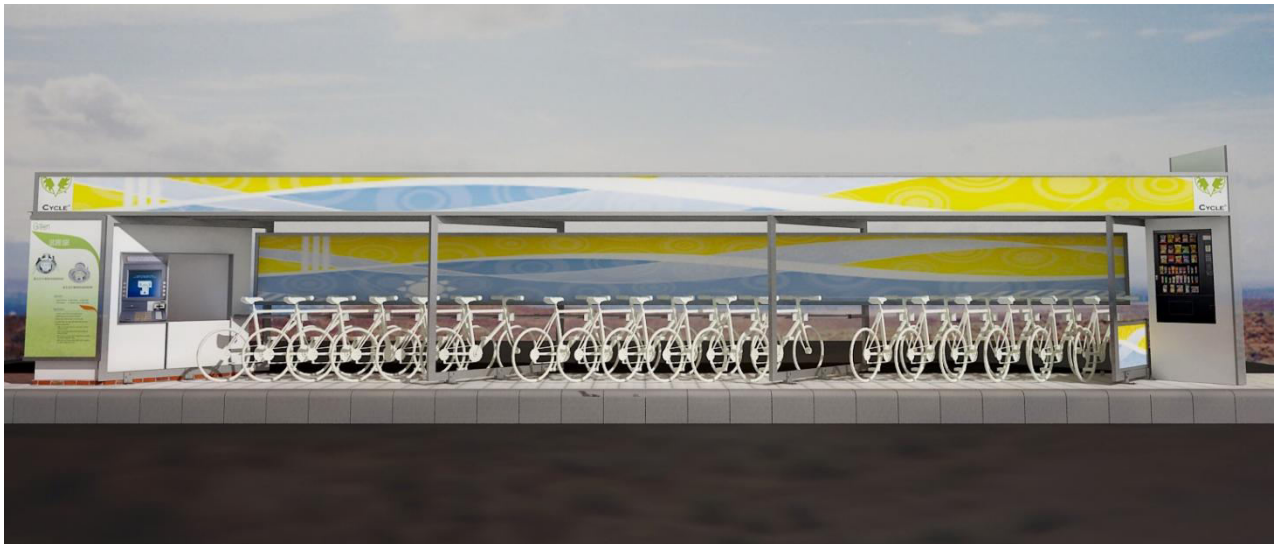


Figure 18 Front elevation of Design Option in 3D

Figure 19 3D Front side views of design option

Figure 20 3D right side views of design option with vertical advertisement panel

6.6 *Associated Elements – Tow Vans*

In case of the need of movement of spare bicycle from one docking station to another which has exhausted all bicycles, a towing van will be needed for transporting spare bicycles from one spot to another.

Keeping in view the number of docking stations being provided in the city and the sprawl of the coverage area, it is estimated that four such towing vans will be sufficient for undertaking this exercise of occasional movement of bicycles from high supply to low supply docking stations whenever required.

Refer ***Figure 22*** for image on towing vans being used for movement of bicycles in Paris.

Figure 21 Images displaying towing of bicycles from high supply to low supply docking stations in Paris and Montreal.

Chapter 7 covers the operations methodology of the PBS Scheme

7. Operations Methodology

7.1 Introduction

A fully automated or a completely manual system of operations defines the operations methodology of a PBS scheme and is the most critical part of the project. The type of technology to be used for operations becomes the deciding factor for fare collection process and affects the overall cost of the project in a significant way. This Chapter covers the various options available for operating the PBS scheme in Bhopal.

7.2 Choice of Technology

Primarily there can be three options available for operating a PBS scheme

- Fully automated system
- Hybrid system
- Manual system

7.2.1 Fully Automated System

A fully automated system depends largely on a Smart Card technology; this is most commonly found in most of the bicycle sharing schemes all over the world (third generation system – used in London Paris etc). Mobile based (second generation system- used in most cities of Germany) also can be categorized in a fully automated system, but is purely mobile phone based.

7.2.2 Hybrid System

A hybrid or a semi-automated system is one where in the cash/cash card system is made available to users through a handheld device and the person responsible for managing docking station dispenses the bicycle to the user via a semi-electronic locking system.

7.2.3 Manual System

The manual system is the simplest of its kind wherein a cash and ID card deposit to Staff or attendant at each docking unit can be made at each docking station for the release of the bicycle. (First generation system – currently being used in Delhi and other cities of India)

A comparative analysis of the advantages and disadvantages of the various types of operations systems is given in ***Table 5*** below:

Table 5 Comparative analysis for various types of PBS operations

Fully Automated		Hybrid		Manual	
Advantage	Disadvantage	Advantage	Disadvantage	Advantage	Disadvantage
Minimal Human resource required to manage the system	Since the system is highly technology centric, the cost of implementation and maintenance is high	Since the process is semi-automated, hence the initial cost of setup is relatively low in comparison to fully automated system	The system being semi-automated, there are chances are pilferage	Lowest cost of deployment	Highest pilferage possible
System being highly technology centric, offer ease of management in terms of revenue and asset management	The system is highly dependent on communication system and any failure in the system could lead to service non-availability	The system offers automation to some degree and also offers human intervention which may be conducive to certain section of society	There are higher chances of asset theft because of lesser control on asset tracking	Easily available to users as no or minimal technology used	Almost no control on asset tracking
The system offers tremendous ease of use to users and hence would encourage use of the system	Users acceptance shall take a little more time because of the use of automated technology	The cost of operations is lower	The system is highly human resource centric.	The implementation can be done in the fastest manner	Prone to Theft

7.3 Operations Methodology for PBS Bhopal

Based on the comparative analysis discussed in ***Table 5*** it is recommended that the PBS scheme in Bhopal be based on an automated framework for ease in operations and fare management. The automated framework or Intelligent Transport System (ITS) is thus studied in detail in the subsequent sections.

7.4 Types of ITS Components

ITS for a bicycle sharing scheme plays its role in two important aspects of the scheme.

- Card issue and user data collection
- ITS for fare collection and release and deposit of bicycles

- ITS for bicycle tracking - Global Positioning Systems (GPS) tracking device for individual bicycles

7.5 ITS for Bicycle Tracking

Bicycle theft is one of the most common problems in the implementation of a public bicycle sharing scheme. Use of GPS for tracking of bicycles is one of the most basic ITS steps that has already been tried and tested in buses in a lot of Indian cities. A similar technology if used on bicycle would not just help in tracking the position of the bicycles but also prevent theft and chances of vandalism.

The bikes shall have GPS trackers concealed in an anti-theft casing, so that the users do not purposely abuse the system. The GPS Tracker shall have communication chip inside the module which shall communicate its position on regular basis to the central communications and tracking system. Details of the mechanism are explained in ***Figure 23*** below:

7.6 ITS for Fare Collection

Bike sharing / rental systems have been implemented in various cities across the world and the technology selection is primarily based on local technology

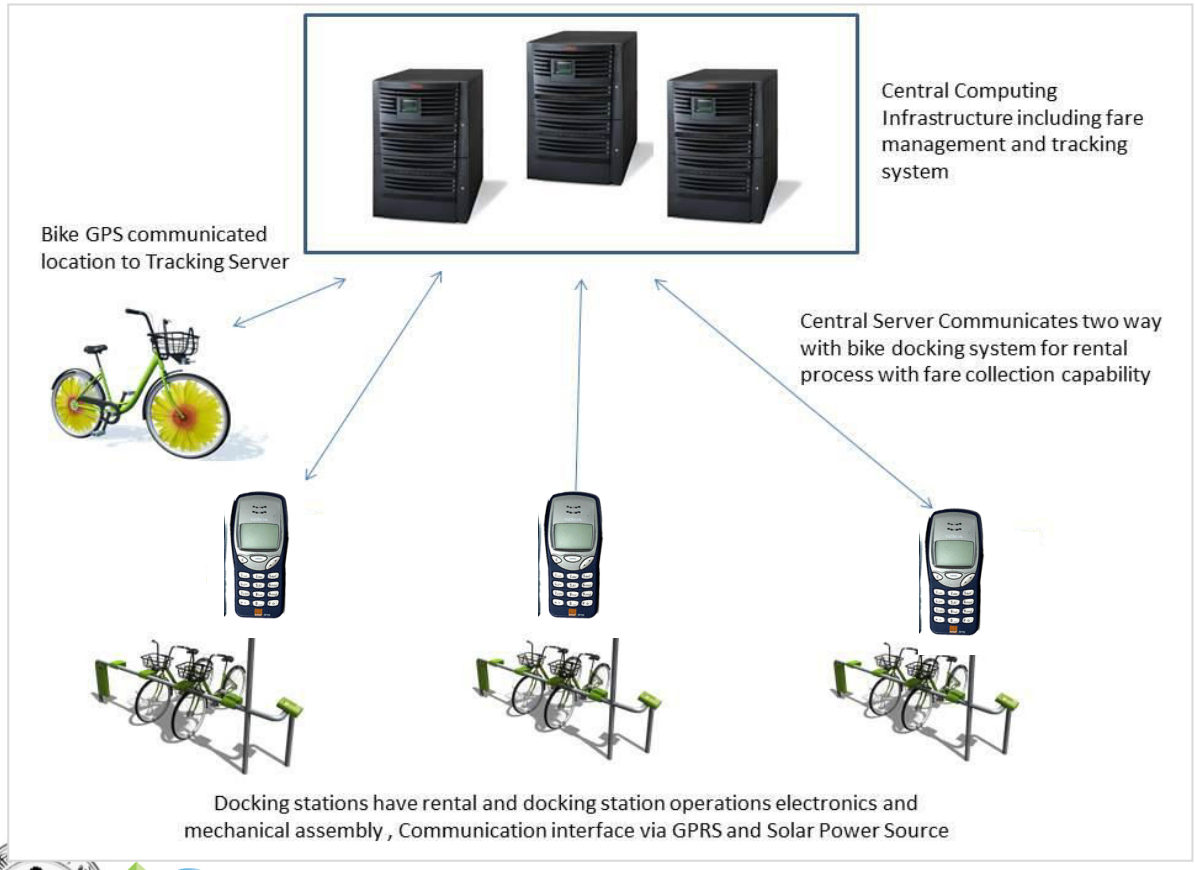


Figure 22 Complete ITS mechanism for PBS scheme

availability, inter-operability with other transit modes, social context and sustainability. Options within the fully automated and semi automated or hybrid systems are discusses in the sections below.

7.6.1 Fully Automatic System

In-case of a Fully Automated system, the technology options suggested are as follows:

- Smart Card (RFID) based fare management
- Mobile technology based fare management

a) Smart Card Based Fare Management System

This system utilizes smart card as the medium for fare payment and hence the docking / rental system primarily operates using smart card as the fare payment device. The smart card is based on standard Mifare technology which is widely used in transport applications. The users are required to load currency value of their choice on the smart card which enables them to operate and pay for bike rentals. The docking stations essentially have smartcard readers attached to locking / unlocking mechanism of the docking station. The docking station authorization device is centrally connected to the fare management and authorization server for the purpose of card authentication and fare management. The docking station authorization device is connected to the central ITS infrastructure via mobile communication device which extends internet connection capability to the authorization device for the purpose of authentication and process management with central infrastructure.

Figure 23 Image displaying use of smart card for unlocking of bicycles at the docking station

b) Mobile Based Fare Management System

This system utilizes mobile device as the fare deduction device. This system operates in conjunction with mobile operators as a Value Added Service (VAS). The users can request a bike from the mobile using SMS or a Mobile Application (Mobile APP) and the central server sends the authentication PIN number on the mobile. The user is required to enter the PIN no on the docking system management device for the purpose of unlocking the bike. The system could operate for both pre-paid and post-paid customers. In-case of prepaid customers, the rental amount is deducted from the balance on the phone instantly and in-case of postpaid customers the hire charges are billed on monthly basis with the phone bill. In this case the billing is handled by mobile service operator on a revenue share basis.

7.6.2 Semi Automatic System/Hybrid System

A semi automated or hybrid system is based on technology which is increasingly becoming popular in bus operations in India. The accounting is manual however issue of tickets and data entry is automated. The options available in hybrid system are discussed below.

a) Handheld based Ticketing System

The is as good as a manual system as a ward or a guard is stationed at each docking station and issues tickets using a hand held ticketing device. These handheld devices have an option of sending the revenue collection data via a computer or GPRS to a central location. The device can have capability to issue tickets through cash or a credit/debit card. The cash card is a money loaded card which can be made available to user through various dispensing points. This can be reusable and hence can be bought by users who would want to use the service on regular basis.

Figure 24 Typical handheld device used in the semi automatic system for fare calculation and issue of tickets

b) Semi-electronic bike docking system

The bike docking system in this case is operated by the person responsible for managing the bike rental system. The bike docking is operated via a pin-pad interface

to the docking system which releases or locks the bicycle to the docking mechanism. This system primarily acts as a bicycle security system.

7.7 Complete ITS for Management of PBS Bhopal

The bike sharing scheme envisaged to be implemented in Bhopal is proposed to be managed using an ITS infrastructure, which can enable users to avail services using a self-service platform designed in a easy to use manner so that users with minimal or no ITS knowledge can operate the system.

It may also be noted that some of the critical components of a fully automated system are already available in Bhopal for use in the City Bus Service of the city like a fully developed control centre, application/database servers, storage servers and some necessary support staff. Additional components which need to be acquired for a separate ITS system for the bicycle sharing scheme are GPS devices for individual bicycles, RFID terminals, bicycle locking devices, software etc.

Availability of some of the key components of fully automated ITS for bicycle sharing scheme with BMC would also result in a reduced capital investment in the form of ITS cost for the complete scheme.

It is thus recommended that a fully automated system be proposed for PBS in Bhopal. This would enable users to pay for services and operate the system via a proper authorization / authentication system which shall be essentially centrally managed to have overall control on revenue and asset tracking.

The bike sharing system management process essentially would require following components:

a) Automated / Electronic docking stations with vehicle identification system
b) Transaction Terminals attached to docking System
c) Centralized Communication System
d) Bike Tracking Module (GPS based with anti-theft capability)
e) Electrical System for managing electronics and mechanical units
f) Central fare Management System
g) Bike Tracking system
h) Automated / Electronic docking stations with vehicle identification system
i) Smart card recharge application

7.7.1 *Automated / Electronic docking stations with vehicle identification system*

The automated docking system is to be operated via an embedded system which has the capability to electronically lock and unlock the bike. The docking system is to essentially have an electronic system connected to the docking operations which can be operated by the user upon successful payment process and credentials checks. The system shall act as secure interface for assets and shall be connected to central tracking and communications infrastructure.

Figure 25 Conceptual layout of bicycle docking station with locking devices installed for individual bicycles with a solar panel for electricity generation

7.7.2 *Transaction terminals attached to docking system*

The transactions terminals shall have computing and processing capability to carry out following operations:

(i) Fare acceptance capability based on selected technology (Smart Card)
(ii) Electronic Locking / Unlocking bikes to docking station
(iii) Intrusion alarms and communication
(iv) Communications capability to central system
(v) Embedded software to manage rental process
(vi) Local process logging and audit capability
(vii) Anti-theft and Anti-vandal design
(viii) IP 65 based design
(ix) Integrated with the docking mechanics
(x) Smart card recharge application

Keyboard contains an electronic card reader unit, a simple LCD screen and a keypad

Lock unit reads the RFID chip placed in the tip of the bicycle's lock spike

Figure 26 Keyboard and locking unit for use in Mobile based technology

7.7.3 Centralized Communication System

The centralized communication system is be based out of a central management facility, which has the capability to aggregate communication and control data from different bike docking facilities in the city. The centralized communications facility has a dedicated internet based communication line which could be connected by the individual docking station for the purpose of data management and control parameters.

7.7.4 Electrical System for managing electronics and mechanical units

The electic supply needed to run the electronics and mechanical system of the bike docking system could be based on conventional power supply or solar system. Solar system would bring in uninterupted supply at a overall cheaper cost with no power outages.

7.7.5 Central fare Management System

The system is managed by a ITS based control central which would be based at a designed premises. The docking stations and command and control centre will be connected via a GPRS/broadband based system. The fare rules and operations management system configurations shall be driven by the central system and all field devices would work based on the central fare management rules. The central server shall have capability of fare consolidation and reporting. The application shall be hosted in a data center which would provide application continuity by way of primary and secondary application and data servers.

7.8 Detailed Bike Rental Process

Based on the detail methodology of operations out of a fully automated system, which is to be introduced in PBS Bhopal, the procedure for using the service is discussed below. It may be noted that both options under the fully automated ITS system are being covered for flexibility in technology selection. The final choice for the kind of technology shall remain with the city authorities/operating body.

7.8.1 Smart Card System

a) Getting on the System

- All customers need to register in the system after which a smart card (with photo id) will be issued to the user for using the system
- The smart card topup can be done at any docking station or designed locations

- Until they receive a RFID card they can manually input the number of the card and the PIN
- People can get on the system when standing in front of a station

b) Services

- Registering for a smart card
- Recharge of smart card
- Multi-language versions of the terminal and application
- Check credit, cost and duration of last rental
- Find the nearest free lock

c) Renting a Bicycle

- Hold the RFID card in front of the card reader zone on the keyboard or enter login number
- Enter the PIN code and press "OK"
- Enter the number of the lock unit holding the bicycle chosen for rental (more than one bike can be chosen)
- Wait 2 to 3 seconds while the terminal connects to the server via GSM/GPRS to validate the rental
- Note the bicycle lock combination number which is shown on the LCD screen
- Once the lock unit is activated (indicated by a beep), press the unlock button on the lock unit
- Remove the bicycle from the lock

d) Validating the Rental

Before unlocking the bicycle, the rental-terminal connects to the server with the system's server which runs a number of verifications including:

- The validity of the card
- The validity of the PIN code
- That user has authorization to use the bicycle rental service
- That the user has sufficient pre-paid credit for a new rental
- The user has not been blocked (black list)
- Checks that the bicycle is available for rental or if it is blocked (for repairs, for example)
- The numeric signature of the bicycle station

If any of these checks fails, the bicycle will not be released

e) Returning the Bicycle

The user must choose a station with an empty lock unit in order to return the bicycle after a rental.

- Press the button on the lock
- Insert the bicycle
- At the end of this process, the rental is terminated with a connection to the server.

f) **Display of Account Information**-Users can consult their account information at any time via the screen of any station in the system.

7.8.2 Smart Card Recharge

Recharge of smart card owned by existing users shall be done at all individual docking stations through a mobile based application. This shall be based on an application software developed as part of the ITS software for the PBS operated at all docking stations

Smart card recharge shall be managed by the individual docking station ward.

7.9 Staffing Plan for ITS Control Centre

The ITS architecture for PBS shall be developed by a professional ITS operating firm. For managing the automated bicycle network of 60 docking stations with over 750 bicycles across all stations, a central control centre will be required to have the following staffing plan. (Refer Table 6)

Table 6 ITS Centre Staffing Plan

S No.	Staff	Number
1	Bicycle monitoring officer	2
2	Transaction monitoring officer – issuance of smart card and recharge	2
3	Accounts officer	1
4	Control centre supervisory manager	1

Chapter 8 summarizes the fare collection procedure already covered in this Chapter on Operations Methodology. The detailed fare structure is discussed subsequently.

8. Fare Structure

8.1 Introduction

The previous chapter on ITS for PBS scheme in Bhopal lists the various options that can be considered for operating the system. Selection of anyone option is an important determinant in fare collection and hence the fare structure.

8.2 Proposed Fare Collection System

Selection of the most suitable ITS architecture for the PBS scheme in Bhopal will be an important determinant in the fare collection system. A fully automated fare collection system has several advantages over the manual system. The advantages and disadvantages are discussed in ***Table 6*** below:

Table 7 Fare collection system comparison

Type of System	Advantages	Disadvantages
Manual	• Low Cost of equipment • Low manpower cost as no additional staff is required at the stops	• Time consuming process • Inconvenient for user who has to depend upon the docking station guard/ward for release of bicycle • Chances of revenue leakage
	• No additional Space required at docking stations	
Automated	• Quick easy transactions • Highly convenient for user as well as operator in recording data and information about use of bicycles and fares collected • Reliability of service	• High Cost of equipment • Trained manpower at docking stations for assistance in easy transactions • Additional space required at the stops to install the equipments

Considering the choice of ITS system (Automated - Smart Card/Mobile technology based) in case of PBS scheme in Bhopal, the choice of fare collection system evidently will be automated.

8.3 Global Trends

Globally, the fare collection mechanism is completely automated and the fare structure is time bound which varies with delay in deposit of the bicycle. Additionally,

there are options for a day's subscription. And bulk passes for continuous use over a week or month or year. Almost every rental bicycle scheme operational in Europe, North America and even in China is based on a free of charge usage for the first few minutes (generally, 30 mins) in order to capture as many users as possible. This is however compensated by a relatively high rental cost thereafter. (Refer ***Table 8***)

Table 8 Global Trends in Fare Structure

Systems Worldwide	Fare Policy					
	Free Service	Start Fare	Increment / Penalty	Subscription		
Velib Paris	First 30 mins	2	€ 4 / half hr	€1 / Day	€5 / Week	€29 / annual
Cyclocity Brussles	Nil	0.5	€ 1.5 / half hour		€1.5 / week	€10 / annual
Bicing, Barcelona	First 30 mins	€ 0.3 upto 2 hrs	€ 3 / hour		€1 / week	€24 / annual
Barclays Cycle Hire, London	First 30 mins	£1 upto 1 hour	£ 0.5/half hour till 2.5 hrs, steep rise till £ 50 for 24 hrs	£1 /day	£5 / week	£45 / annual
Capital Bikeshare, Washington DC	First 30 mins	$1.5 upto 1 hr	for every additional half hour delay, the charges rise from $1.5-$6	$5 / day	$15 / week	$75 / annual

The base fare fixation for Bhopal city may not be completely inspired by this global trend as unlike the western countries, bicycling is a relatively known phenomenon in Indian cities, and should not be highly priced even if it is introduced in a completely refreshed outlook such as the PBS scheme. The opinion survey carried out for willingness to pay is in accord with this.

8.4 Base Fare Fixation

As part of the opinion survey undertaken at various spots in Bhopal city, for collecting information about user movement pattern

and their willingness to use the PBS service and how much would they be willing to pay for renting of bicycles, a base fare structure was created. Perceptions received were obvious wherein majority of the respondents preferred to opt for the lowest fare, Rs 2/hr (75%) followed by those who were ready to pay upto Rs 5/hr (22%). A very small share of respondents opted for the third option of paying a flat Rs 10 for 4 hours of usage (3%). Refer ***Figure 28.***

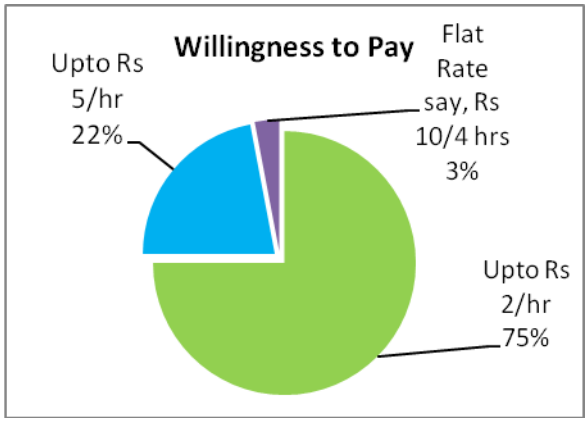


Figure 27 Willingness to pay as per primary surveys conducted in Bhopal

Based on the above observations and feasibility and sustainability of the project, it is assumed to keep the service free of charge for use upto 30 mins. The base fare of Rs 5 will be charged hereafter for upto 2 hours.

8.5 Proposed Fare Structure

The proposed fare structure will be based on fixed rentals for the first two hours, followed by increment in rental (or penalty) for every half hour delay. Alternatively, a fixed fare is being proposed for a flat 24 hour usage.

The proposed fare structure is given in ***Table 9.***

Table 9 Proposed Fare Structure

Time Slabs	Start Fare	Half Hourly Increments	Total
First half hour	Free	-	-
First 2 hours	Rs 5	-	Rs 5
2 – 4 hours	Rs 10	-	Rs 10
Every 1 hour delay after 4 hours	Rs 10	Rs 5	Rs 15
24 Hour Pass			Rs 40

It may be noted that unlike the global trend of keeping a the service free of cost for the first half hour, the fare structure for PBS scheme in Bhopal is deliberately kept away from following such a trend. This is due to the reason that unlike other countries where the scheme of passes is not proposed to be introduced during the initial testing phase of the project, and shall be considered if the demand increases for use of the service. Also, as a promotional activity, the first month of service could be

made free of cost for attracting large number of users.

8.6 Fare Revision

Keeping the base fare as Rs 5 for first two hours, Fare revision is proposed annually at the rate of 5%. The fare structure for the entire project life cycle (assumed to be 10 years) is given in ***Table 10*** below.

Table 10 Base fare and 24 hour flat fare increment upto 2023

Year	Base Fare (first 2 hours)	24 hour flat fare
2013	5	40
2014	5	45
2015	6	50
2016	6	55
2017	6	60
2018	6	65
2019	7	70
2020	7	75
2021	7	80
2022	8	85
2023	8	90

Subsequently, with revised fares, the penalty charges would also scale up accordingly.

Chapter 9 assesses the financial viability of the project.

9. Project Costs and Financial Viability

9.1 Introduction

This Chapter covers the various costs involved in the project and various sources of revenue. Based on the total cost and revenue calculation, profitability of the project is assessed.

Details of the various types of costs and the various sources of revenue are discussed in the subsequent sections.

The project cost is further broken down into capital costs and operating costs which are discussed in details in the sections given below:

9.2 Capital Costs

The capital cost of the project includes the following:

- Cost of bicycles
- Installation cost of docking station
- Cost of purchase of towing vans
- Installation cost of ITS

9.2.1 Cost of Bicycles

As per the specifications of bicycles covered in the Chapter on bicycle specifications, the selection of bicycle is made with the following features - Unisex geared bicycles with customized design, colours and added accessories like front basket, chain covers and wheel covers/mudguards for placement of advertisement. Cost for each bicycle is taken as Rs 8000. Additionally, there will be bicycles which will be purchased every year in order to meet the estimated demand, as also for replacement of some of the bicycles which may not be working condition within 1st year of use. An escalation of 5% is used with the base price of bicycle for each subsequent year. It is also assumed that 10% of the bicycles will need to be replaced each year.

Refer ***Table 11*** for increase in bicycle numbers each year after 10% scrapping and yearly increase in bicycles to meet the demand discussed in the Chapter on Demand Assessment.

Table 11 Bicycles to be purchased each year

Year	Bicycles/year	Additional bicycles	Bicycles to be replaced (10%)	Total bicycles to be purchased annually
2013	750	0	0	750
2014	785	35	75	110
2015	810	25	79	105
2016	820	10	81	90
2017	850	30	82	110
2018	865	15	85	100
2019	900	35	87	120
2020	920	20	90	110
2021	960	40	92	130
2022	995	35	96	130
2023	1015	20	100	120

9.2.2 Installation cost of docking station

Bicycle docking station design will be a temporary structure with use of steel frames and bars and fabricated roofs for providing protection to bicycles and ITS systems from direct heat and rain. Additionally a small cubicle will be integrated with the design on one side for the guard/ward along with ITS related equipment (transaction terminal) to be placed inside. There will be a provision for backlit advertisement space inside the docking station.

The block cost of construction of one docking station is taken as Rs 6,00,000. Additionally, cost of annual maintenance and repair works in the docking station have been assumed as 2% of the base cost, with a 5% increment annually. (Refer Chapter 6 on Physical Infrastructure)

The construction of docking station will be a onetime expenditure considering that the total size of the station should be large enough to accommodate the subsequent increase in bicycles uptill 2023. In the first year, the base design of average size 16.43 sq.m is fit to accommodate 12 bicycles, however with an overall increase of 5 bicycles per docking station uptill 2023, the total size is assumed as 22.63 sq.m.

The total cost of construction of 60 docking stations of average size 22.63 square meter/docking station is 3.38 Crores.

9.2.3 Cost of purchase of towing vans

Towing vans will be utilized for movement of bicycles from one docking station to another in case there are no bicycles available at any location or additional bicycles have clustered at any other location.

Cost of three towing vans is assumed to be Rs 21, 00,000 (At Rs 7 lakhs per van)

9.2.4 Installation cost of ITS components

ITS components will include the locking /unlocking devices for bicycles and a transaction terminal, a central control centre with tracking and transaction monitoring equipments, manpower and software costs.

However, as specified in Chapter 7, Section 7.7 on complete ITS for PBS Bhopal, some of the key ITS components are already available with BMC for use in ITS for city bus systems in Bhopal city. These components will be sufficient to support a network of 60 docking stations with 750 bicycles in total bicycle tracking and transaction monitoring system.

The ITS components already available in BMC are as follows:

a) Central control centre physical infrastructure and office setup
b) Application / database servers
c) Storage servers
d) Networking components
e) Lower level manpower

In addition to the above, the components that will have to be assembled and installed/purchased are as follows:

a) GPS device per bicycle
b) Magnetic lock per bicycle
c) RFID terminal per docking station
d) RFID smart card
e) Senior level staff
f) Additional desktop computers
g) Software

ITS components will be installed at each of the docking station as locking devices and a transaction terminal.

The per bicycle cost of ITS works out to be approximately Rs 14,000 (excluding the control centre and server cost). A 10% annual increment in the total cost has been assumed and the average maintenance charges are taken as 12%. The cost of installing the ITS devices have been given in Table 12

Table 12 Yearly cost of Installing ITS

Year	cost of ITS (In lakhs)
2013	108.75
2014	17.55
2015	18.42
2016	17.37
2017	23.35
2018	23.35
2019	30.83
2020	31.08
2021	40.41
2022	44.45
2023	45.13

9.3 Operating Cost

The operating cost includes the following:

- Cost of manpower/staffing
- Recurring cost of insurance of bicycles
- Cost of bicycle maintenance
- Maintenance cost of docking stations
- Maintenance cost of towing vans

9.3.1 Cost of manpower/staffing

Manpower will be required at all docking stations as security guards and also for providing assistance to the users who wish to make a transaction and use the bicycle. It is assumed that one guard/ward will be stationed at each docking station. It is assumed that one security guard/ward will be stationed at each docking station for guarding the station and also for providing necessary assistance for release and deposit of bicycles. Two shifts of guards have been accounted for at a monthly salary of Rs 8,000 per guard. An increment of 5% is assumed as salary increment each year.

In addition to the guards, 7% of additional manpower is also accounted for as managerial staff at a salary of Rs 10,000.

The manpower cost is given in ***Table 13*** below.

Table 13 Annual manpower cost

Year	Manpower Cost (in lakhs)
2013	130.30
2014	136.82
2015	143.66
2016	150.84
2017	158.38
2018	166.30
2019	174.61
2020	183.35
2021	192.51
2022	202.14
2023	212.24

9.3.2 Recurring cost of insurance of bicycles

Cost of insurance renewal on old bicycles and new insurance on newly purchased bicycle fleet annually is given in ***Table 14***

Table 14 Recurring cost of insurance on additional bicycles

Year	Total bicycles to be purcha-sed	Insurance premium on new bicycles	Old bicycle insurance premium	total Insuran-ce
2013	750	120000	0	120,000
2014	110	17600	90720	108,320
2015	105	16800	92822	109,622
2016	90	14400	93866	108,266
2017	110	17600	92735	110,335
2018	100	16000	93916	109,916
2019	120	19200	93523	112,723
2020	110	17600	95358	112,958
2021	130	20800	95536	116,336
2022	130	20800	97860	118,660
2023	120	19200	99660	118,860

9.3.3 *Annual cost of bicycle maintenance*

For a bicycle which costs Rs 8000 (discussed in the previous sections), the repair and maintenance cost for each bicycle is taken as 5% of the cost of bicycles annually. The same is given in ***Table 15***

Table 15 Bicycle repair and maintenance cost

Year	Maintenance of bikes (in lakhs)
2013	3.00
2014	3.30
2015	3.57
2016	3.80
2017	4.13
2018	4.42
2019	4.82
2020	5.18
2021	5.67
2022	6.17
2023	6.61

9.3.4 *Maintenance cost of docking stations*

As discussed in Section 9.2.2.an incremental cost of 5% is taken on the 2% of base cost of construction for annual repair and maintenance of the docking station. (Refer ***Table 16***)

Table 16 Annual docking station maintenance cost

Year	Maintenance of infrastructure (lakhs)
2013	6.76
2014	7.10
2015	7.46
2016	7.83
2017	8.22
2018	8.63
2019	9.06
2020	9.51
2021	9.99
2022	10.49
2023	11.01

9.3.5 *Maintenance cost of towing vans*

Annual maintenance expenses for towing vans are assumed to be 5% of the total cost. The annual cost of repair and maintenance of the towing vans is given in ***Table 17***

Table 17 Annual maintenance cost of towing vans

Year	Maintenance of tow vehicles (in lakhs)
2013	1.05
2014	1.10
2015	1.16
2016	1.22
2017	1.28
2018	1.34
2019	1.41
2020	1.48
2021	1.55
2022	1.63
2023	1.71

Total Capital and Operations/Maintenance cost in Crores is compiled in ***Table 18*** & ***Figure 29***

Table 18 Total capital costs and O&M costs in PBS Bhopal

Year	Total Capital Cost (in Crores)	Total Maintenance Cost (in Crores)	Total Cost (in Crores)
2013	5.28	1.64	6.92
2014	0.27	1.73	2.00
2015	0.28	1.82	2.10
2016	0.26	1.92	2.17
2017	0.34	2.02	2.36
2018	0.34	2.12	2.46
2019	0.44	2.24	2.68
2020	0.43	2.36	2.79
2021	0.56	2.49	3.05
2022	0.61	2.62	3.23
2023	0.61	2.76	3.37
TOTAL	9.40	23.73	33.13

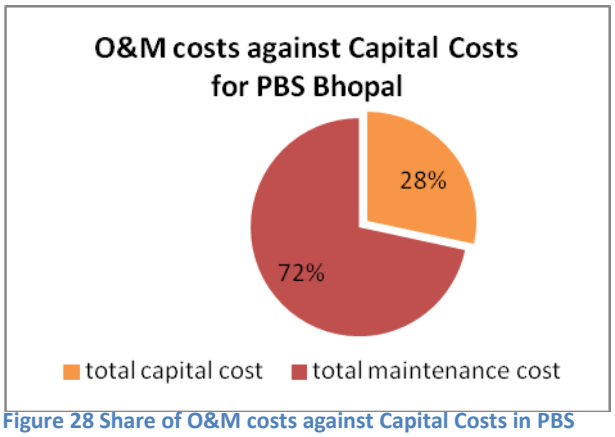


Figure 28 Share of O&M costs against Capital Costs in PBS Bhopal

9.4 Sources of Revenue

Computation of income is based on various revenue components like

- Income from fares
- Income from advertisement on docking stations
- Income from advertisement on bicycles
- Income from selling of scrap bicycles

9.4.1 Income from Fares

As discussed previously in Chapter 7 on Fare Structure. A base fare of Rs 5 for 2 hours has been recommended. The same has been taken for fare revenue calculation. Increment in Revenue annually is assumed at 5%. The details on annual revenue from fares are given in ***Table 19.***

Table 19 Sources of revenue

Year	Increment in Fares	Fare Revenue (in lakhs)
2013	5	13.69
2014	5	14.34
2015	6	17.74
2016	6	17.96
2017	6	18.62
2018	6	18.97
2019	7	23.00
2020	7	23.51
2021	7	24.53
2022	8	29.08
2023	8	29.67

9.4.2 Income from advertisement on docking station

Revenue from advertisement adds up to a significant amount in view of the current advertisement rates in Bhopal city (Rs 90 per sq. feet). Considering the design of the docking station has ample space for advertisements (23 sq.m), the annual advertisement revenue generated (8% annual increment) is a major source of

revenue for the scheme in Bhopal. The details have been given in ***Table 20***.

Table 20 Income from advertisement on docking station

Year	Average Area for Advertisement (sq. m)	Advertisement revenue from all docking stations (lakhs)
2013	23	162.00
2014		174.96
2015		188.96
2016		204.07
2017		220.40
2018		238.03
2019		257.07
2020		277.64
2021		299.85
2022		323.84
2023		349.75

9.4.3 Income from advertisement on bicycles

Keeping in line with the global trend, bicycles can act as moving sources of advertisement and can still look aesthetically pleasing if advertisements are space is designed thoughtfully. The advertisement can be placed on tyre guards or baskets in the front side of the bicycle. The monthly revenue from advertisement on each bicycle is taken to be Rs 50/month with an annual increment of 5%. (Refer ***Table 21***)

Table 21 Advertisement revenue from bicycles

Year	No. of bicycles	Advertisement revenue from bikes (lakhs)
2013	750	4.50
2014	785	4.95
2015	810	5.36
2016	820	5.70
2017	850	6.20
2018	865	6.62
2019	900	7.24
2020	920	7.77
2021	960	8.51
2022	995	9.26
2023	1015	9.92

9.4.4 Income from selling of scrap bicycles

Based on a 10% bicycle replacement policy per year, the old bicycles are assumed to be sold at a depreciated price of 20% the original cost in the first year and 7% every subsequent year. The income from selling of scrap bicycles is tabulated in ***Table 22***

Table 22 Income from scrap bicycles

Year	Yearly scrapped bicycles	Scrap value of bicycles (lakhs)
2013	0	0
2014	75	4.80
2015	79	4.67
2016	81	4.48
2017	82	4.22
2018	85	4.07
2019	87	3.85
2020	90	3.73
2021	92	3.54
2022	96	3.48
2023	100	3.60

The total revenues are tabulated in ***Table 23***

Table 23 Total revenue

Year	Fare Revenue (Crores)	Advertisement Revenue (bike + station) (Crores)	Scrap Value (Crores)	Total revenue (Crores)
2013	0.14	1.67	-	1.80
2014	0.14	1.80	0.05	1.99
2015	0.18	1.94	0.05	2.17
2016	0.18	2.10	0.04	2.32
2017	0.19	2.27	0.04	2.49
2018	0.19	2.45	0.04	2.68
2019	0.23	2.64	0.04	2.91
2020	0.24	2.85	0.04	3.13
2021	0.25	3.08	0.04	3.36
2022	0.29	3.33	0.03	3.66
2023	0.30	3.60	0.04	3.93
TOTAL				**27.34**

9.5 *Assumptions for Financial Analysis*

For carrying out the financial analysis, the life cycle of the project has been assumed to be 10 years.

As discussed in the previous chapters, demand for bicycle users has been calculated annually based on ward wise population projection. Some of the general assumptions made for calculating the bicycle demand are given in ***Table 9***.

Table 24 General assumptions for financial analysis

General Assumptions		
Item	**Unit**	**Value**
Influence area population	%	20
Public transport + Walk Trips	%	70
Working age group of Bhopal (15-45)	%	54
Willingness to use	%	50
Daily trips	%	66
Total number of service hours	Hrs	8
Minimum Usage	%	20
Decadal growth rate of PT users	%	2
Annual growth rate	%	0.2
Decadal growth rate of willingness to use	%	5
Annual growth rate of willingness to use	%	0.5
Bicycles to be replaced annually	%	10

Assumptions under Capital Cost Calculations are tabulated below (***Table 25)***

Table 25 Capital cost assumptions for financial analysis

Capital Cost Assumptions		
Item	**Unit**	**Value**
Cost of bicycle in base year	Rs	8,000
Annual Increase in bicycle cost	%	5
Insurance cost of one bicycle (per cost of bicycle)	%	2
Annual increase in Insurance rate	%	5
Number of docking stations	No.	50
Cost of one docking station	Rs	6,00,000
Area of docking station in base year	Sq. m	22.63
Cost of annual repair and maintenance of docking station	%	2
Increase in maintenance cost per year	%	5
Hours of use of one bicycle	Hrs	2
Cost of one tow van	Rs	7,00,000
Number of tow vans required	No.	3
Total cost of tow vans	Rs.	21,00,000
Maintenance cost of tow vehicles	%	5
Annual Incremental cost of	%	5

Capital Cost Assumptions		
maintenance of tow vehicles		
Cost of ITS for one bicycle*	Rs	10,000
Incremental cost of ITS	%	10
Cost of annual maintenance of ITS for one bicycle	%	12
Annual increase in maintenance cost	%	5

**The cost of ITS per bicycle includes the individual costs of the following:*

- *GPS device per bicycle*
- *Magnetic lock per bicycle*
- *RFID terminal per docking station*
- *Smart card*
- *ITS staff*
- *Additional desktop computers*
- *Software with other applications*

Operations and maintenance cost assumptions are as follows (***Table 26)***

Table 26 Operations and maintenance cost assumptions for financial analysis

Operations and maintenance cost assumptions		
Item	**Unit**	**Value**
Manpower requirement per docking station	No.	1
Manpower shifts per stand	No.	2
Total wards/guards required	No.	144
Guard Salary (per month)	Rs	8000
Additional manpower (drivers + misc)	%	5
Additional Manpower Salary	Rs	10000
Total manpower salary in base year	Rs	850000
Salary increment	%	5
Repair cost per bicycle per year	%	5
Escalation of maintenance cost	%	5

Assumptions made under revenue assessment are as follows (***Table 27***)

Table 27 Revenue assumptions for financial analysis

Revenue cost assumptions		
Item	**Unit**	**Value**
Rental per 2 hour slot	Rs	5
Annual increase in rental per year	%	5%
Area of each docking station	Sq m	22.6
Annual overall increase in docking station size	%	5%
Advertisement revenue rate (per sq m)	Rs	9
Advertisement space	Sq m	23
Increment in advertisement revenue rate (per sq m)	%	5%
Advertising revenue per bicycle per month	Rs	50
Annual increase in advertisement revenue	%	8%
Depreciation rate of bicycle after 1st year of usage	%	20%
Annual depreciation in selling used bicycles after 1st year	%	7%

9.6 Financial Viability

A financial analysis was carried out to ascertain the extent to which the investment for PBS operations can be recovered from revenue generated by the project. The overall viability of the operations is evaluated on the basis of Project NPV. Refer ***Annexure 6*** for Financial Analysis detailed spread sheet.

The financial results are expressed in terms of NPV on total investment. The results have been discussed below ***(Table 28)***

Table 28 Profitability of Project

Year	Total Cost (in Crores)	Total Revenue (in Crores)	Profitability (in Crores)
2013	6.92	1.80	-5.12
2014	2.00	1.99	-0.01
2015	2.10	2.17	0.07
2016	2.17	2.32	0.15
2017	2.36	2.49	0.13
2018	2.46	2.68	0.22
2019	2.68	2.91	0.23
2020	2.79	3.13	0.33
2021	3.05	3.36	0.32
2022	3.23	3.66	0.43
2023	3.37	3.93	0.56
Total	33.13	30.44	-2.69
		NPV	**-3.60**

As can be seen from ***Table 28*** above, the project incurs losses at the end due to heavy capital cost in the first year despite profits in some of the subsequent years. The project NPV is approx -3.60 Crores. (Refer ***Figure 30***)

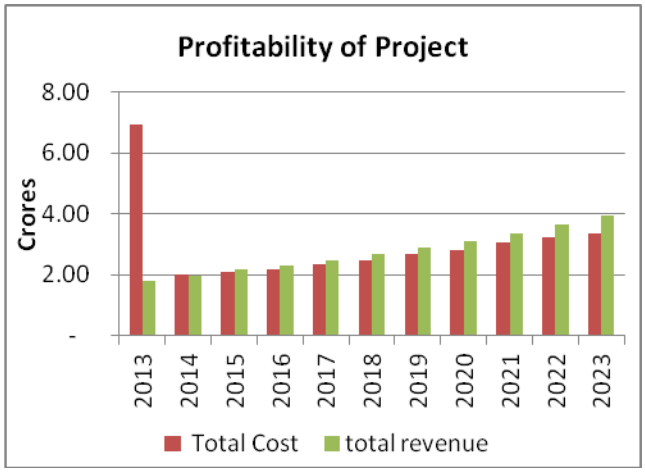


Figure 29 Profitability of Project

Thus the expenditure details in the first year in terms of Capital and Operating costs are as follows:

	Total Amount (in Crores)	Cost per bicycle (approx)
Capital Expenditure	5.27	70,380
Operating Expenditure	1.64	22,000

In view of the negative return, alternative ways of management need to be examined which will be assessed in the following chapter on Business Model

10. Business Model

10.1 Background

As seen in the previous chapter on Financial Viability, it is seen that the project becomes financially unviable because of high capital investments made in the first year of operations. Profits in the subsequent years do not add up to bring overall profitability to the project.

10.2 Project Management Scenarios

This Chapter looks into restructuring the project in various ways so as to make it financially viable. Essentially, it focuses on building scenarios in the financial viability calculations so that certain elements of the capital cost can be assigned a zero value.

The four scenarios are listed as under

- ***Scenario 1 – All investments to be made by BMC or Private Operator incase the project is bided out***
- ***Scenario 2 - Capital investment on physical infrastructure (docking stations only) to be made by BMC, remaining investments to be made by a private operator***
- ***Scenario 3 – Capital investment on physical infrastructure (docking stations) and installation of ITS to be made by BMC, remaining investments to be made by a private operator***
- ***Scenario 4 - Capital investment on physical infrastructure (docking stations) and installation of ITS, Purchase of bicycles in the first year, purchase of towing vans tp be made by BMC, remaining investments to be made by a private operator***

Under these four scenarios, the annual profits and project NPV is given as under.

(Refer ***Figure 31*** to ***Figure 34***)

Scenario 1

All values in Crores

Project Cost	33.13
Investment by BMC/ Private Entity in project period	33.13
Total Income	30.44
Total Profit	-2.68
Total NPV	-3.60

Annual Profits

Year	Profit
2013	(51,197,950)
2014	(87,750)
2015	669,469
2016	1,486,097
2017	1,341,146
2018	2,170,389
2019	2,344,510
2020	3,340,428
2021	3,185,833
2022	4,271,524
2023	5,604,159

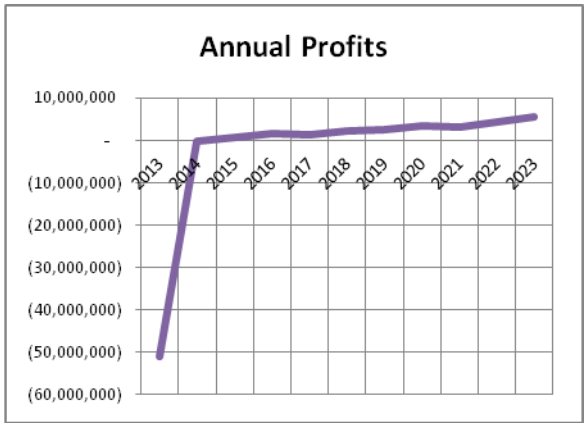


Figure 30 Cash flow and project NPV under Scenario 1

Scenario 2

All values in Crores

Project Cost	33.13
Investment by BMC in project period	3.38
Investment by Private Entity	29.74
Total Income	30.44
Total Profit	-0.024
Total NPV	-1.10

Annual Profits

Year	Profit
2013	(21,797,950)
2014	(308,250)
2015	437,944
2016	1,242,996
2017	1,085,890
2018	1,902,369
2019	2,063,090
2020	3,044,937
2021	2,875,567
2022	3,945,745
2023	5,262,092

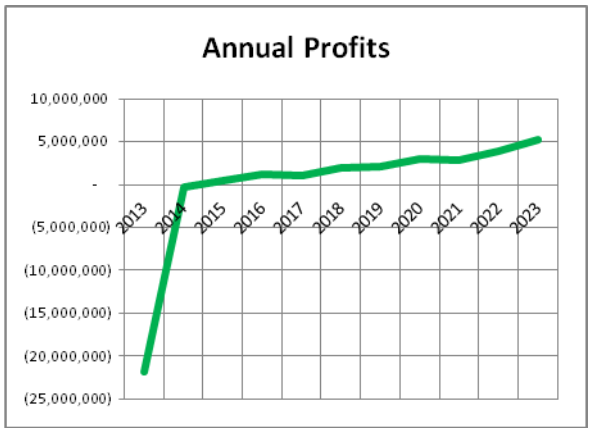


Figure 31 Cash flow and project NPV under Scenario 2

Scenario 3

All values in Crores

Project Cost	**33.13**
Investment by BMC in project period	**4.46**
Investment by Private Entity	**28.65**
Total Income	**30.44**
Total Profit	**1.06**
Total NPV	**-0.133**

Annual Profits

Year	Profit
2013	(10,922,950)
2014	(308,250)
2015	437,944
2016	1,242,996
2017	1,085,890
2018	1,902,369
2019	2,063,090
2020	3,044,937
2021	2,875,567
2022	3,945,745
2023	5,262,092

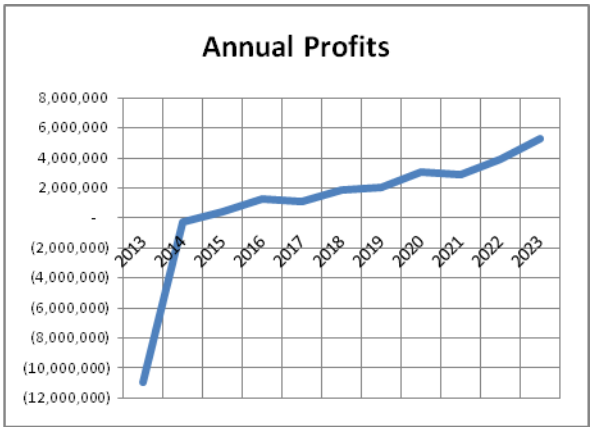


Figure 32 Cash flow and project NPV under Scenario 3

Scenario 4

All values in Crores

Project Cost	**33.13**
Investment by BMC in project period	**5.27**
Investment by Private Entity	**27.84**
Total Income	**30.44**
Total Profit	**2.29**
Total NPV	**0.96**

Annual Profits

Year	Profit
2013	1,377,050
2014	(308,250)
2015	437,944
2016	1,242,996
2017	1,085,890
2018	1,902,369
2019	2,063,090
2020	3,044,937
2021	2,875,567
2022	3,945,745
2023	5,262,092

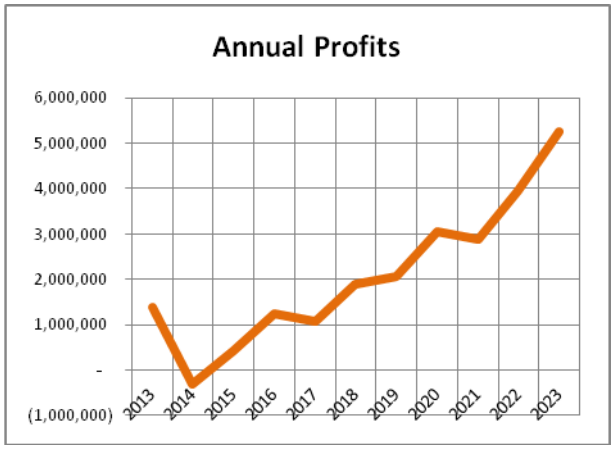


Figure 33 Cash flow and project NPV under Scenario 4

10.3 Summary

The chapter on Financial Viability indicates that the project feasibility is highly sensitive towards advertisement revenue. However, advertisement revenue needs to be treated only as an associated benefit from a project whose primary motive is to ensure an efficient, environmentally suitable, reliable and a sustained means of travel alternative in the city of Bhopal. Scope for raising advertisement revenue should only be aimed at keeping the financial health of the project in good shape so that an operator has the incentive to run the service efficiently. This is in line with the global trends of bike sharing programs in Paris, Barcelona, Montreal and Toulouse in France. (Refer ***Annexure 7*** on financing trends of international bike sharing programs)

The subsequent sections will indicate the various management options available to operate and manage the service.

10.4 Management Options

Based on the scenario building in the previous sections, it is seen that profitability of the project varies significantly with increasing responsibility of BMC in contributing the capital costs. Each of the scenarios is discussed below in detail so as to bring out the management structuring of the project.

10.4.1 Scenario 1-A

All investments and management by the BMC

In this option, all capital investments are made by the BMC, which also takes responsibility for managing the entire sharing system. This would mean it has to hire the required manpower and cover costs towards maintenance of the infrastructure, ITS, bicycles and other facilities. BMC would collect all the revenues and make all payments towards the maintenance costs.

This option results in complete control of the project which rests with BMC. However, to be able to manage and run the services, BMC would have to build its manpower strength, right from employing security guards/wards for each docking station to appointing an upper management cell which also has ITS specialists.

10.4.2 Scenario 1-B

All investments and management rests with the private entity

This scenario is based upon complete private control over the project. All types of investments are made by the private operator (physical infrastructure and bicycles).

10.4.3 Scenario 2

Capital investment only for physical infrastructure construction by BMC

In this option, capital expenditure for development of physical infrastructure is made by the BMC. Staffing and manpower and overall operations are taken care of by the private entity. A fixed percentage from the revenue earned from the advertisements and the fares collected is paid as a monthly fee to the BMC.

10.4.4 Scenario 3

Capital investments for physical infrastructure and ITS by the BMC, remaining capital expenditure for bicycles and tow vans and operations and maintenance of all components by a private entity

In this option, initial cost for construction of docking stations and purchase of ITS shall be borne by BMC. Purchase of bicycles and their operations, hiring of manpower, and maintenance of ITS and the docking stations will be done by the private entity.

10.4.5 Scenario 4

All capital investments by the BMC and all maintenance and operations by a private bidder

This option demarcates the role of BMC as an investment agency and a private entity as an operating agency. All types of investments are made by BMC for construction of docking stations as physical infrastructure, purchase of bicycles and ITS and towing vans. However, operations and maintenance is taken over by a private entity.

10.5 Comparative Analysis

Broadly, there emerge three basic forms of management options from the scenarios discussed above.

A comparison of the advantages and disadvantages of the three basic forms of management options are given in ***Table 18***.

Table 29 Business Model Variations with advantages and disadvantages

PBS Management Options	Advantages	Disadvantages
BMC only	• Complete Control of BMC over the project • Additional source of revenue for BMC • Maximum	• Heavy capital expenditure by BMC • Manpower assembly and staffing to be done solely by BMC • Poor knowhow

PBS Management Options	Advantages	Disadvantages
	accountability to the public	about special service provision and operations
BMC + Private Operator	• Role of BMC limited to monitoring of operations • Risk free source of income for BMC • No additional staffing or manpower hiring required by BMC	• Capital expenditure on physical infrastructure to be made by BMC
Private Operator Only	• Role of BMC limited to monitoring of operations • No additional staffing or manpower hiring required by BMC	• No income for BMC • Subsidy to be offered by BMC to cover risks • Complete Autonomy with private operator for providing public services may lead to neglect in service quality

10.6 Basis for Selection of PBS Management Option

In making recommendations for a choice among the options, the following points have been kept in mind:

1. If there is a –NPV, private parties will not be interested in the venture.
2. While such a bike sharing arrangement may have negative financial returns, there are positive public good values and therefore, it is a justifiable investment from a social and environmental perspective. This justifies investment by the BMC.
3. Private parties would be more efficient in managing the facility and their costs would be less than the likely costs to the BMC (security guard/ward staff used by the private party would be cheaper than the cost to the BMC which will have to hire people at government rates and on government benefits).
4. Potential for revenue leakage through private management will be lower due to more stringent oversight
5. It would be easier for the BMC to find one time capital funds and will be more difficult to be sure of adequate budget for annual maintenance expenses.

10.7 Management Plan for PBS Bhopal

Given the above, it is recommended that option 4 may be adopted. Private parties may be invited to bid for managing the bike sharing system on the following broad terms:

- BMC would invest in the docking infrastructure, the ITS, the initial lot of bicycles and the tow vans
- The private bidder would be required to maintain these and manage the bike sharing facilities on terms to be spelt out in the contract documents
- The private bidder would be allowed to collect revenues for advertising and from the renting of bicycles and would have to pay for all maintenance costs from out of these.
- The private entity will also have to replace bicycles and add to the fleet on annual basis, on agreed terms.

The bid parameter could be the extent of payment that the private entity will be willing to make to the BMC in exchange for the right to manage the facilities.

10.8 Institutional Restructuring for PBS Management

10.8.1 NMT Cell in BMC

Non Motorized Transport and its associated infrastructure is a field of growing importance in cities and for ULBs. Management of footpaths, pedestrian safety, cycle rickshaw management, Bicyclists and bicycles promotion, bicycle track development and maintenance are just some of the components that form the NMT category of urban transport.

As discussed in the previous sections, the PBS scheme in Bhopal would be feasible if it is introduced in a PPP format. This would ensure the best of privatization in project management skills and the best of ULBs public interest perspective for sustenance of the project.

Setting up of an NMT cell within the BMC is thus recommended for dedicated monitoring of the project to check for inconsistencies and continuous public welfare.

10.8.2 Staffing Plan for NMT Cell

For overall project monitoring, there will be a requirement of atleast one dedicated Project Coordinator with three to four support staff as per Table 30.

Table 30 Staffing Plan for NMT Cell within BMC

S No	Staff	Number
1	Project Coordinator	1
2	Project Officer	1
3	Accountant	2
4	Communications and Media Manager	1

The staff salary shall be reimbursed from the annual premium which will be paid by the private operator in charge for overall operations and maintenance of the PBS scheme.

10.8.3 Roles and Responsibilities

The role of the NMT cell would be the following:

- Overseeing and monitoring the operations by the private operator
- Setting standards and specifications for operations
- Providing assistance by tie ups with other departments on a need basis

The complete project responsibility chart is tabulated below in Table 31

Table 31 PBS Responsibility Chart

Agency/Organization	*Roles & Responsibilities*
BMC	Land cost and development of docking station
BMC	Project management
BMC	Management of space for green advertisement on 50% of top panel of docking station
Private Operator	Operations and maintenance of docking station
Private Operator	Management of space for other advertisement on remaining advertisement space of docking station
Private Operator	Operations and maintenance of bicycles & towing vans
ITS Operator	ITS Components
ITS Operator	Operations and maintenance of ITS equipments
BMC with the help of ITS and Bicycle operator	Branding & marketing

10.8.4 Training and Capacity Building

Training and capacity building is a conceptual approach to development that focuses on understanding the obstacles that inhibit people, government organizations and non-governmental organizations from realizing their developmental goals while enhancing the abilities that will allow them to achieve measurable and sustainable results. Exposure visits, training programs and workshops are some of the basic forms which constitute the training and capacity building exercise. These are thus critical for the persons in charge of the project so that they can learn and study new techniques and can share and bring back best practice experiences to their areas of work.

The expenditure assessment under training and capacity building exercise for project in charge officers is given below:

Table 32 Expenditure assessment for training and capacity building

S No.	Components	1st year Cost	Subsequent years total cost
1	Workshops	3,00,000	6,00,000
2	Training Program	5,00,000	27,50,000
3	NMT Cell Staff salary	30,00,000	3,96,20,362
	TOTAL	**38,00,000**	**4,29,70,362**

** upto 9 years of project period.*

The subsequent chapter (No.11) briefly covers the importance of branding and marketing for the success of the project.

11. Branding and Marketing

11.1 Introduction

One of the major challenges facing transit systems worldwide is to attract ridership and more than ever they are relying on marketing strategies to engage potential customers.

The key aspects of transit marketing include a wide range of activities to identify and meet customer needs. These include promotional tools like branding and positioning, special events, segmented marketing, public information and education, and management of community and customer relations.

The key to a successful marketing plan are identifying:

1. Marketing goals – increasing ridership, creating awareness, customer information, soliciting public support etc.
2. Target market – Pedestrians especially those using public transport (city buses and BRT in future), students, workers, fitness enthusiasts and local community/special interest groups.

The strategies for achieving the above goals include branding and positioning, segmented marketing, customer information etc.

Refer ***Figure 35*** for some of the innovative branding styles used in Paris, Montreal and Washington DC PBS schemes

Figure 34 Branding of PBS worldwide

11.2 Outreach and Education

For successful implementation of the PBS scheme, it is considered necessary to promote public awareness about utilities of bicycle use and specifics and highlights about the scheme being launched in the city so as to create a sense of public ownership of the project. In order for this to happen effectively, it is necessary to evolve an outreach and education strategy for the PBS scheme.

The outreach and education goals need to be defined at the planning stage of the PBS scheme itself to focus the efforts of the

project implementation team. To secure support of the public for the PBS facilities and obtain acceptance thereof the outreach and education goals are defined as follows:

- Introduce the concept of PBS, its purpose and benefits to the various stakeholders
- Create profile of PBS as a big impact, incremental step for achieving the long-term vision for sustainable mobility in the city.
- Enhance the understanding that PBS scheme positively impacts user health and environmental sustainability of the city
- Introduce the concept of PBS as an important strategy in making best use of transportation resources
- Establish communication channels for the public to receive information and interact with the scheme implementation team

Education and Outreach goals can be addressed by utilizing the following strategies:

- Create a network of allies ("Support Project Committees") and provide platforms for them to actively participate as disseminators of project benefits
- Use proactive and creative media relations to promote key PBS messages, particularly health features of using a bicycle and riding an environmentally safe mode of travel for short trips.

Figure 35 "Bicycle day/week" events have been very popular in the west for promoting the use of public bicycles, picture from public event for "Call a Bike" in Berlin, Germany

11.3 Communication Media

The selection of the communication media is critical in ensuring that the message is delivered effectively to the target audience. Available media include:

1. Print – newsletters, newspapers, magazines
2. Broadcast – radio, TV
3. New Media – internet, web sites

4. Out of Home – hoardings, posters, short films, display models
5. Direct mail – flyers, inserts, brochures, letters, fact sheets
6. Event marketing – special events, workshops/conferences
7. Public Relations – media management, spot visits and events
8. Mobile phone – Through SMS, toll free enquiry system etc.

The choice of media is predicated on budget, ability to reach target audience, the desired impact and the message to be communicated. The messages have to be reiterated at a regular frequency for them to impact the target audience effectively.

The development of the message is also critical to the success of the marketing plan and the message has to be well crafted with both written copy and visual component. The messages should be focused on the benefits of PBS, should be supported by facts, positive and consistent.

11.4 Marketing Calendar

Once a marketing plan is ready it is necessary to prepare a calendar for the roll out of the plan. The roll out should start well before the start of PBS operations and continue during operations. Thereafter, annual marketing plans should be prepared and revised after each year. Each annual plan needs to be reviewed after six months to find difference in the planned and ongoing situation in terms of ridership, revenues, operations and system integrations. This six month span can be increased or reduced based on the scale of the operating system and number of various bodies involved in the operation and maintenance of the system

Figure 36 Attractive marketing techniques and slogans used for promoting PBS scheme in Melbourne, Australia

11.5 Marketing Research

To prepare an effective marketing plan, tactics and strategies it is necessary to understand the customers – their profile, motivations , perceptions, behaviour and needs in respect of choice of transit. This will help set the targets for the marketing campaign and identify user segments and facilitate message development.

Some of the commonly used marketing research tools are:

1. Personal interviews or questionnaire – used to capture demographic traits , needs and behaviour
2. Focus Groups – allows in depth discussions on specific issues with a randomly selected user or non user group. Suitable for research to measure effectiveness or impact of a marketing campaign or change in service etc
3. Socio-economic study – The household survey, origin-destination survey of the commuter is also one of the important sources to understand his travel behaviour and willingness to go with any change in the public transport supply in terms of both quality and quantity. The input helps operator/owner to integrate these views with necessary system modification and study its impact on further operation in terms of maximum revenue generation with minimum utilisation of resources and operating cost.
4. Telephonic interview: This is one of the famous interview system adopted by most of the western countries to understand views of the commuter with appropriate records at zonal level details. The process is less time consuming and appropriate in the regions having high cost of time.

11.6 Measurement of Marketing Effectiveness

It is also equally important to measure the effectiveness of a marketing campaign and make changes in the campaign or service. The effectiveness of the campaign and the course corrections required can best be gauged by conducting marketing research which could be in the form of customer satisfaction surveys and ridership studies. The outcome also helps to improve current operation system to achieve goals through

socially, economically and environmentally sustainable development.

11.7 Marketing Budget

The annual marketing budget should normally be around 2-3% of the annual operating budget for PBS. However, in the pre-operation phase the marketing budget should be higher, say, about 4- 5% of the project cost.

11.8 Outline Marketing Plan for PBS Scheme

11.8.1 Communication Objectives

- Create awareness of the project
- Improve image of 'bicycle' and present it as one of the transit alternative
- Build brand identity
- Maximize ridership
- Disseminate information on user benefits
- Provide information on service (docking spots, bicycle release and deposit techniques, fares etc)

11.8.2 Target Audience

- Segment 1 - Existing Bus Users
- Segment 2- Potential Users – pedestrians, short distance two wheeler users, auto rickshaw users.
- Segment 3- Local Community /Special Interest Groups, students and fitness enthusiasts
- Segment 4 - Government officials, /Traffic Police/RTA officials/Elected Officials

Marketing strategies to be designed to cater to the specific needs of each of these segments separately.

11.8.3 Showcasing Features of PBS Scheme

The main characteristics of PBS scheme will include:

- Healthy and environmentally sustainable alternative for short distance travel
- Attractive design of bicycles
- Drop off facility at any of the 50 docking stations
- GPS tracking of bicycles
- Connectivity to all activity centers of new Bhopal

- Efficient on bicycle release and deposit facility
- Daily, weekly, monthly and annual membership options

11.8.4 Marketing Strategy

Create programs which will help meet communication objectives through:

- Advertisements - this has the highest potential for building image of PBS scheme in Bhopal, creating service awareness and disseminating information
- Public Relations and Events – building awareness of benefits of PBS scheme
- Identity Media – building PBS identity
- Web Site – disseminating information on docking sites, bicycle availablity, fares and passenger amenities.
- Special Events – has a high potential for education and awareness

11.8.5 Key messages

- Convenience – real time information, advanced fare collection
- Comfort – high quality bicycles with theft proof automated systems
- Reliability – exclusive bike-ways and signal cycle development plan to synchronize with the PBS scheme.

Table 33 below gives the breakup of costs involved in brand building and advertisement during the first year of commissioning and for subsequent years.

Table 33 Branding and marketing cost break up

S No.	Components	1st year Cost	Subsequent annual cost
1	Print Material	5,00,000	2,00,000
2	Awareness Campaign	10,00,000	2,00,000
3	Video/Print advertisement	5,00,000	2,50,000
4	Website	5,00,000	50,000
5	SMS Campaign	2,00,000	2,00,000
6	Short film on PBS, Bhopal	5,00,000	-
	TOTAL	**32,00,000**	**9,00,000**

Table 34 Promotional and Media Mix

Type of Promotion	Target Audience	Comments
Advertisement		

Type of Promotion	Target Audience	Comments
Radio Ads	All existing and potential users	Jingles on FM during peak hours
Newspaper Ads	Public	Launch Announcement
Newspaper Inserts	All existing and potential users	Information on features, benefits, fares etc
Billboards/ Hoardings	Public	At strategic locations. Create awareness of launch date.
Kiosks/Panels	All potential and existing users	Create awareness.
Brochures/ Pamphlets	Local Community/Special Interest Groups	Information on features, benefits etc.
Public Relations and Publicity		
Press Conferences	Media – Public	Disseminate information & educate
Press Kits	Media	Disseminate information & educate
Site Visits	Media, Opinion makers, RWA's	Disseminate information & educate
Short films	Public	Disseminate information & educate
Identity Media		
PBS Logo, Name, Slogan, Color Scheme etc.	Public	Promote PBS identity
Signage	Public	Promote PBS identity
Web Site	Public	Information on features, benefits, docking stations, purchase of passes, fares etc
Special Events		
Workshops/ Conferences	BMC/Elected Officials	Information on features, benefits
Launch Event	Media – Public	Create hype

12. Project Summary

12.1 Physical Components of PBS Scheme

The major physical components of the PBS scheme for Bhopal comprise of the total bicycles in the year of commencement, the number of docking stations, operations methodology and complete area to be given out for advertisement space. The details of each have been compiled in **Error! Reference source not found.**

Table 35 Project physical components

S No	Component Name	Number/Details
1	Total number of bicycles in first year	750
2	Number of docking stations	60
3	Bicycle operations	Fully automated – smart card based
4	Total area for advertisement on all docking stations	1380 sq.m

12.2 Human Resource Component

The complete list of human capital required for smooth functioning of the project is compiled in the adjoining table (Refer ***Table 36)***

Table 36 Human resource component

S No	Human Resource Requirement	Number/ Details
1	Wards at docking stations - 2 per docking station + 20% spare	144
2	Other staff including drivers for towing vans and supervision officers	7
3	ITS staff at control centre	6

12.3 Finances

Based on the detailed costs involved in the project covered in the previous chapters of this report, this section has compiled all the project related expenditures under the following heads

(a) Capital Expenditure
(b) Operations and Maintenance Expenditure
(c) Capacity Building and Training Expenditure
(d) Marketing and Branding Expenditures
(e) Miscellaneous and Contingency Expenditures

The year wise break up is given in the subsequent tables

Table 37 Capital Expenditure

	Components	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Capital Expenditure	Bicycles	6000000	924000	926100	833490	1069646	1021025	1286492	1238248	1536554	1613381	1563739
	Docking station	33,810,000	-	-	-	-	-	-	--	-	-	-
	ITS	10875000	1754500	1842225	1736955	2335240	2335240	3082516	3108204	4040665	4444731	4513112
	Towing vans	2,100,000	-	-	-	-	-	-	--	-	-	-
	TOTAL	**52785000**	**2678500**	**2768325**	**2570445**	**3404885**	**3356265**	**4369008**	**4346452**	**5577219**	**6058113**	**6076851**

Table 38 Operating Expenditure

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Operating Expenditure	Bicycle maintenance	300000	329700	357210	379701	413272	441593	482434	517813	567343	617429	661331
	Docking station maintenance	676200	710010	745511	782786	821925	863022	906173	951481	999055	1049008	1101459
	ITS operations & management	1305000	1434195	1553864	1651699	1797734	1920931	2098590	2252486	2467942	2685815	2876791
	Towing van maintenance	105000	110250	115763	121551	127628	134010	140710	147746	155133	162889	171034
	Manpower cost	13925500	14621775	15352865	16120505	16926530	17772860	18661500	19594575	20574305	21603020	22683170
	Bicycle Insurance	120000	108320	109622	108266	110335	109916	112723	112958	116336	118660	118860
	TOTAL	**16431700**	**17314250**	**18234833**	**19164508**	**20197425**	**21242332**	**22402130**	**23577059**	**24880114**	**26236821**	**27612644**

Table 39 Capacity Building and Training Expenditure

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Capacity Building	Workshops	300000	200000	-	-	200000	-	-	200000	-	-	-
	Training Program	500000	500000	250000	250000	250000	250000	250000	250000	250000	250000	250000
	NMT Cell Staff salary	3000000	3150000	3307500	3472875	3646519	3828845	4020287	4221301	4432366	4653985	4886684
	TOTAL	**3800000**	**3850000**	**3557500**	**3722875**	**4096519**	**4078845**	**4270287**	**4671301**	**4682366**	**4903985**	**5136684**

Table 40 Marketing & Branding Expenditure

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Marketing and Branding	Print Material	500000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000
	Awareness Campaign	1000000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000
	Video/Print advertisement	500000	250000	250000	250000	250000	250000	250000	250000	250000	250000	250000
	Website	500000	50000	50000	50000	50000	50000	50000	50000	50000	50000	50000
	SMS Campaign	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000	200000
	Short film on PBS, Bhopal	500000	-	-	-	-	-	-	-	-	-	-
	TOTAL	**3200000**	**900000**	**900000**	**900000**	**900000**	**900000**	**900000**	**900000**	**900000**	**900000**	**900000**

Table 41 Miscellaneous & Contingency Fund

		2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023
Miscellaneous & Contingency	TOTAL	2286501	742283	763820	790735	857965	887323	958243	1004844	1081191	1142968	1135185

12.4 Compiled Cost Components of Project

The total expenditures for the complete life cycle of the project (10 years) has been given below in ***Table 42.***

Table 42 Compiled Expenditure

S No	Cost Heads	Cost in crores
1	Capital Expenditure	9.40
2	Operations and Maintenance Expenditure	23.73
3	Capacity Building	4.68
4	Marketing and Branding	1.22
5	Miscellaneous & Contingency	1.17
TOTAL		**40.19**

The comparison of all costs per year with the revenue is given in ***Table 43*** below.

Table 43 Year wise comparison of all costs and revenue

Year	Total of all costs*	Total Revenue in Crores	Grant required (in Crore Rs)
2013	7.85	1.80	6.05
2014	2.55	1.99	0.56
2015	2.62	2.17	0.45
2016	2.71	2.32	0.39
2017	2.95	2.49	0.46
2018	3.05	2.68	0.39
2019	3.29	2.91	0.38
2020	3.45	3.13	0.32
2021	3.71	3.36	0.35
2022	3.92	3.66	0.26
2023	4.09	3.93	0.18
Total	**40.19**	**30.44**	**9.79**

Urban Mass Transit
Company Limited

Bhopal Municipal Corporation

Request for Proposal

"Engagement of Agency for Installation and Operation of Public Bicycle Sharing System In Bhopal"

July - 2015

Bhopal Municipal Corporation, Bhopal

(Engineering Project Cell)

II[nd] Floor, B Wing, ISBT Campus, Dr. Ambedkar Marg, Bhopal (MP) 462043

Ph: 0755 2980097, Fax: 0755- 2701223, email: bcll_bpl@rediffmail.com

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Bhopal Municipal Corporation, Bhopal

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NOTICE INVITING TENDER

The **Bhopal Municipal Corporation (BMC)** invites Three Stage General Bid, Technical and Financial Bids from the prospective bidders for "Engagement of Agency for **Installation and Operation of Public Bicycle Sharing System in Bhopal**". The term of the services will be 5 years. BMC is looking for the Agency for Installation and Operation of Public Bicycle Sharing System in Bhopal. Brief Schedule of bidding activities is as below:

Description	"Engagement of Agency for Installation and Operation of Public Bicycle Sharing System in Bhopal"
Earnest Money (E.M.D.)	Rs. 2,00,000.00 (Rs. Two Lacks only)
Cost of Bid Document (Non Refundable)	Rs.12,500.00 (Rs. Twelve Thousand Five Hundred only)
Announcement Date	24-07-2015
Pre Bid Meeting Date	15:00 Hrs on 04-08-2015
Purchase of Tender End Date	15:00 Hrs on 17-08-2015
Bid Submission End Date	15:00 Hrs on 18-08-2015
Opening of 'Mandatory Submission (Envelop A)	17:00 Hrs on 18-08-2015
Opening of Technical Proposal (Envelop B)	17:01 Hrs on 18-08-2015
Opening of 'Financial Bid'	15:00 Hrs on 24-08-2015

The detailed terms and conditions are given in the Request for Proposal (RFP), which can be downloaded from the website as mentioned in the NIT. Interested eligible applicants may obtain further information from BMC office. The project consists of works as mentioned in the RFP document. A firm will be selected under the procedure as described in the detailed RFP. Conditional Tenders will not be accepted. BMC has right to accept/reject any tender without assigning any reason. BMC reserves all rights to reject whole or part of the Proposal, all or any proposal and to modify the terms and conditions.

City Engineer (P)

Bhopal Municipal Corporation

Disclaimer

The **Bhopal Municipal Corporation** has prepared this Request for Proposals (RFP) to install and operate the Bhopal Cycle Sharing System. The RFP is a detailed document with specifies terms and conditions on which the bidder is expected to work. These terms and conditions are designed keeping in view the overall aim and objectives of the Public Cycle Sharing System.BMC has taken due care in preparation of information contained herein and believes it to be accurate. However, neither BMC or any of its authorities or agencies nor any of their respective officers employees, agents, or advisors gives any warranty or make any representations, express, or implied as to the completeness or accuracy of the information contained in this document or any information which may be provided in association with it.

The information provided in this document is to assist the bidder(s) for preparing their proposals. However this information is not intended to be exhaustive, and interested parties are expected to make their own inquiries to supplement information in this document. The information is provided on the basis that it is non–binding on BMCany of its authorities or agencies, or any of their respective officers, employees, agents, or advisors. Each bidder is advised to consider the RFP as per its understanding and capacity. The bidders are also advised to do appropriate examination, enquiry and scrutiny of all aspects mentioned in the RFP before bidding. Bidders are encouraged to take professional help of experts on financial, legal, technical, taxation, and any other matters / sectors appearing in the document or specified work. The bidders should go through the RFP in detail and bring to notice of BMC any kind of error, misprint, inaccuracy, or omission.

BMC reserves the right not to proceed with the project, to alter the timetable reflected in this document, or to change the process or procedure to be applied. It also reserves the right to decline to discuss the Project further with any party submitting a proposal. No reimbursement of cost of any type will be paid to persons, entities, or consortiums submitting a Proposal.

Definitions

In this RFP, the following word(s) shall have the meaning(s) assigned to them herein below:

"Arbitration tribunal" means an panel composed of an odd number of persons known as arbitrators, who decide on the solution of a conflict in which the parties have expressly waived recourse to the ordinary civil courts

"Authorised Fleet" is the number of Cycles in operation as defined by BMC.

"Bid Process" means the process of selection of the Service Provider through competitive bidding and includes submission of Bids, scrutiny and evaluation of such Bids as set forth in the RFP.

"Bid" means the proposals submitted by the Bidder(s) in response to this RFP in accordance with the provisions hereof, including technical proposal and financial proposal, along with all other documents forming part and in support thereof.

"Bidder" means any firm, including a sole proprietor or a partnership firm or a company or a Joint Venture or a Consortium or a cooperative society, who submits a Bid along with Bid Security under this RFP within the stipulated time for submission of Bids.

"BMC Representative" means any person duly authorized by BMC for the purposes of this RFP.

"Collection" is a set of processes designed for the reception, consolidation, transportation and deposit of the moneys derived from the initialization, charge and sale of the means of payment in the points of sale of the Cycle Sharing System.

"Commencement Date" means the date stipulated by BMC for commencement of the Cycle Sharing System by the Service Provider under the Service Provider Agreement and shall not be earlier than 120 days from the date of signing of Service Provider Agreement. The Commencement Date will be the first day of the first Payment Period.

"Commercial Operations Date" is the actual date on which the Cycle Sharing System will begin to serve users under the Service Contract.

"Consortium" shall mean an association of two (2) or three (3)entities / firms formed especially for the purpose of bidding for this RFP.

"Contract Period" is the time from the date of issuance signing the Service Provider Agreement to the last date of validity of the Provider Agreement.

"Control Centre" means the central facility of the Cycle Sharing System used mainly for service monitoring, operations control, and customer service. It is the location for collecting, storing, consolidating, processing the information obtained from various elements of the Cycle Sharing System as well as from users, agents, employees, and service providers.

"Cycle Sharing System" or "System" means a personal public transport system consisting of a network of cycles and stations in which a user can check out a cycle at any station using an RFID-based smart card or key (no cash/ debit card/ credit card payments at the station) and return the cycle to any other station and in which information is tracked in real-time using an information technology system. It refers to the hardware, software, and premises associated

with this RFP for Bhopal that is being implemented by BMC in various phases, unless otherwise specified.

"Cycle" means a bicycle that meets the Technical Specifications described in this RFP and is to be procured, maintained, and operated as part of the Cycle Sharing System by the Service Provider in accordance with the terms of this RFP.

"Depot" is the area equipped with facilities and equipment for general management, repair, maintenance, cleaning, and parking of cycles and stations for the Cycle Sharing System. The depot may be included with the Control Centre or at a different location.

"Dock"/ Locking bar means a physical unit for locking a single cycle at a station when the cycle is not in use.

"Fleet" means the number of cycles that are available for use in the Cycle Sharing System in accordance with the provisions of this Document. The Fleet on a given day is the sum of all cycles that are in a good condition of repair and are available for commercial service for at least 14 hours during the respective 24-hour period.

"Membership" means an agreement between the Service Provider and a customer for a specified period of time in which the customer gains access to the Cycle Sharing System.

"Member" means a customer who has entered a Membership agreement with the Service Provider.

"Payment Period" is the period for which an invoice has been submitted by the Service Provider for the service operated by the Service Provider. This shall be, unless otherwise modified, a period of three months.

"Project Asset" means Stations, Cycles, the Control Centre, and other facilities created as part of the Cycle Sharing System.

"Redistribution" is the activity of a cycle being moved by the Service Provider (normally from station to station or station to depot) using a redistribution vehicle.

"RFP" and/"RFP Document" means Request for Proposals and refers to this Document.

"Ride" is a trip taken by a registered customer of the Cycle Sharing System in which a cycle is checked out from one Station and returned to another Station.

"Service Certificate" means a document that accredits compliance by the Service Provider with all requirements established in the contract to allow the Cycle Sharing System to begin operations.

"Service Charge" means an amount BMC will compensate the Service Provider for operation of the Cycle Sharing System, subject to conditions.

"Service Provider" shall mean the Bidder who won the Bidding process of this RFP and to whom a Letter of Acceptance is issued by BMC and Service Provider Agreement to operate the Cycle Sharing System is entered with.

"Service Provider Agreement" or simply "Provider Agreement" means the Agreement including, without limitation, any and all Annexures thereto which will be entered into between BMC and the Service Provider through which BMC will grant the rights to the Service Provider to install and operate the Bhopal Cycle Sharing System during the period of the Agreement.

"Service Provider Facilities" means the facilities and equipment produced or developed by the Service Provider that are required for the due implementation of this Contract, including control centre, stations and depots.

"Standby Cycles" means the number of additional cycles that the Service Provider shall procure and maintain to ensure that the size of the operational Fleet is equal to or greater than that of the Authorised Fleet at all times.

"Station" means a unit with a user terminal and docking positions where users can rent and return cycles and avail of system information that meets the Technical Specifications described in this Agreement.

"Training and Testing Period" is the period preceding the Commercial Operations Date during which Service Provider shall demonstrate the functionality of the Cycle Sharing System.

"Vandalism" means destruction of or damage to a Project Asset deliberately

Any other term(s), not defined herein above but defined elsewhere in this RFP shall have the meaning(s) ascribed to such term(s) therein and shall be deemed to have been included in this Section.

1. Introduction

BMC plans to introduce a Cycle Sharing System to provide a low-cost, environmentally friendly mobility option to city residents. Cycle sharing is a flexible system of personalised public transport. Cycles are available in a closely spaced network of semi-automated stations. Users can check out cycles at one station and return them to any other station in the network.

Cycle sharing is a key element in a city's strategy to expand the use of sustainable transport modes. Cycle sharing is expected to boost the use of public transport by providing crucial last-mile connectivity to the BRT system, thereby expanding the catchment areas for the region's transit systems. The system will be integrated with the BRT system through the location of its stations and the ITS system. By encouraging a shift to sustainable modes, the Cycle Sharing System will reduce dependency on automobiles, reduce traffic congestion, vehicle emissions, and demand for motor vehicle parking. In addition, the system will expand the health and wellness benefits of bicycle transport to new users. Finally, the system will support the transformation of streets to become environments where pedestrians and bicyclists feel safe and comfortable.

The stations would cover the **"catchment area" of the BRT**. This will ensure that the first and last mile connectivity to people living in the catchment area is provided for. Importance will be given to place stations near important commercial, cultural, educational, administrative, and residential and tourist attraction points in the catchment area.

A Hybrid System is proposed for Public Bike Sharing. The stations will be manned by station attendants; however the operations of each station are communicated to the Central control system by the station attendants using card verification devices. The central control system collects data from each station for efficient planning and operation of the system. This data is used to make decisions on redistribution of cycles around stations during the hours of operations. **The Cycle sharing system will also be integrated with the fare collection system of the BRT system through the ITS system to aid the multimodal integration.**

The Cycle Sharing System proposed will have **500 cycles** spread over **minimum 50 stations** across the city. The project will be implemented by the service provider within a time period of 12 months of signing the bid. However, number of cycles or/and stations can be increased with mutual consent of BMC and service provider but the cost of the same shall be borne by the service provider.

BMC hereby requests interested Parties to respond to this call for Request for Proposal for the development, design, procurement, installation, operation and maintenance of the Cycle Sharing System in the city of Bhopal, Madhya Pradesh. The terms of payments and revenue would be as detailed below

a. **The Capital Cost of the project, which is determined by the service provider's offer in the capital bid component of the competitive bidding process, will be paid to the service provider in instalments** and will be based on timelines that is agreed upon by the operator and BMC. The Capital bid should be capped at **Rs. 3 Crores**. That is the capital bid amount should be less than or equal to Rs. 3 Crores.
b. The **operations contract** will be issued to the service provider for a period of 5 years (with a potential for additional 2 years). During this period, the service provider is entitled to:

    - **Fare box revenue**: Revenue earned from sale of memberships and rental income earned from renting of cycles to the users.

- **Advertisement Revenue/ Sponsorship Contract Revenue**: The service provider will be given the rights to sell advertisement space on the system. This include advertisement space on cycles and station infrastructure like panels and docks at the station. Alternatively, the service provider may also sell sponsorship contract to the system to a single entity. The sponsorship contract will include not only space on the system but also naming rights to the system.
- **Parking Revenue**: At all the stations of the system, the excess space available after providing the requisite space for the cycle, docks and other station infrastructure can be used to provide parking facility for 2 wheelers (motorised and non- motorised). The service provider is entitled to the parking revenue made from this Park and Ride facility. Along the BRT stations, the system stations will be of the size 30ft*10ft.
- **Annual Cycling Event**: The Service provider will be given the rights to conduct an annual cycling event in the city along with BMC and BMC. The profits made from this event will also be used to run the PBS system
- **CSR Funding:** The Service provider is also given the rights to tap into CSR funding of private organisations to fund the operations of the system.
- **Support from BMC**: 30 to 40% of the operating cost incurred by the service provider will be reimbursed by BMC, every three months, given that the service level benchmarks that are defined by BMC are met. The Service level benchmark is mentioned in **Section 6.2.** The Operating cost is a predetermined fixed amount of money which is the service provider's offer during the competitive bidding process. The amount bid by the service operator should be inclusive of service charges and taxes.
- The location for the cycle stations will be determined by BMC in consultation with the selected service provider. Importance will be given to providing stations along the BRT corridor from RRL to Misrod and its catchment area.
- **Utility Shifting:** If any Utility Shifting is required for stations, then cost of same shall be borne by the service provider.
- **Right of First Refusal:** After completion of Term of Agreement when new PBS Tender is floated, the existing Servicer provider would be given the **Right of First Refusal** upon matching the highest bid received by BMC.

2. RFP Data Sheet &Timelines

Description	"Engagement of Agency for Installation and Operation of Public Bicycle Sharing System in Bhopal"
Earnest Money (E.M.D.)	Rs. 2,00,000.00 (Rs. Two Lacks only)
Cost of Bid Document (Non Refundable)	Rs.12,500.00 (Rs. Twelve Thousand Five Hundred only)
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Opening of 'Financial Bid'	15:00 Hrs on 24-08-2015

The above time frame is indicative and would be subject to change as may be notified by BMC from time to time. All times refer to India Standard Time.

3. Scope of work

The contract will be for design, procurement, installation, operation and Maintenance of the Cycle Sharing System in the city of Bhopal, Madhya Pradesh. Service provider need to provide integrated and innovative solutions for the Bhopal Cycle Sharing System, including all the hardware, software and system solutions along with operation of the system. The ITS system of the system is also required to be tied in / synced with the ITS system of the BRT system.

The Service contract will be granted for a period of 5 years with a possibility of a further 2 year extension at the end of the 5 year period, if BMC is satisfied with the service provided by the service provider.

The Service Provider's Scope of work includes:

3.1. Planning and installation

3.1.1. System Planning

A list of station location and size of each station will be proposed by BMC. The service provider is required to review these stations and give their recommendations on the same which will be duly considered by BMC.

The service provider shall conduct activities not limited to:

- Evaluating the Station locations and sizes as proposed by BMC
- Conduct public outreach and location surveys to evaluate demand across the city
- Make recommendations on location and size of each station on the system.

The final decision on the station location and size rests with BMC.

3.1.2. Station Installation Plans

The Service Provider will also conduct site surveys and provide detailed drawings for each station showing the layout and positioning of the station relative to existing street elements. The Service Provider will submit the proposed station positions and layouts to BMC for approval. The BMC will clear the approved site and create a paved, level surface on which the Service Provider may install the Station. The system installation will be divided into 3 phases:

Phase 1: On ground Testing

A period of 1 week, where the components and systems are tried and tested by the service operator. During this period, the system need not be open to the general public. This period is used to ensure that once the system is launched, it will run without any operational glitches.

Phase 2: User Generation Campaign

Period of at least two weeks before the formal launch of the system. The service provider is allowed to start the user generation campaign as soon as the system is able to run efficiently. During this period the service provider should actively try to engage the people of Bhopal in understanding the operations of a PBS and also generate memberships to the system.

Phase 3: Formal Launch of the system

Within 12 months of the data of signing the service contract with BMC, the service provider should formally launch the system. The contract period of the system begins on the day of the Formal launch of the system.

The schedule of3 phases of installation is given below:

Phase	Time Line	Total Cycles	Total Stations
Phase 1: On ground testing	One week before Phase 3	~500	~50 (pre-determined number of total stations)
Phase 2: User Generation Campaign	Atleast 2 weeks before Phase 2	~500	~50 (pre-determined number of total stations)
Phase 3: Formal Launch	12 months after signing of Service Provider Contract/ 1 month after launch of on ground testing (whichever is earliest)	~500	~50 (pre-determined number of total stations)

3.2. Cycles

3.2.1. Technical standards

- Technical specifications for the cycles should at least meet the "Minimum Technical Standards" as given in Section 7.
- Procure such equipment manufactured not earlier than six (6) months before the date of signing of the Service Provider Agreement between BMC and the Service Provider. The equipment shall not have been put to commercial use anywhere previous to the Commencement of Operations.

The Service Provider will present prototype Cycles for the Cycle Sharing System to BMC for inspection. BMC will have the right to review all station hardware and software to ensure they meet all the technical criteria as specified. A prototype which may have features over and above the prescribed minimum standards, will also be accepted by BMC.

Should BMC find any discrepancy between the prototype and the technical specifications, and then the Service Provider will have 30 days to propose a solution. The final designs will be subject to approval from BMC. After receiving approval on the final design, the Service Provider may proceed to manufacture/ acquire the rest of the Cycles and Stations.

The service provider will also make suggestions on the colours and branding of the cycles and stations. These recommendations will be duly considered by BMC. The final decision rests on BMC and no additional branding components of any kind may be added to this design by the service provider.

3.2.2. ***Number of Cycles- Fleet Size***

- Procure Cycles as per the Authorised Fleet size set by BMC- 500 cycles. Each of which shall comply with the technical standards as specified in Annex A.
- Procure and maintain Standby Cycles to ensure that the operational Fleet size remains above the Authorised Fleet.
- The authorised fleet will be provided and maintained by the service provider as per the timelines agreed.

A review of the Authorised size of the system will be triggered at any point the average number of rides in the system crosses the condition given below:

- If $r / f > 6$, the Authorised Fleet size can be increased by an increment specified by BMC within 60 days of the end of the previous payment period.
- If $r / f \leq 6$, the Authorised Fleet will remain the same.

Where,

r is the average number of Rides during the previous 30 days and
f is the Authorised Fleet during the previous 30 days.

In general, the incremental change in fleet size will be at least 100 cycles and or 5 stations for any given revision in the Authorised Fleet but the decision can be made by BMC on an ad hoc basis depending on the need/ demand.

3.3. ***Stations***

3.3.1. ***Technical Specifications***

Technical specifications for the station specific hardware and software components of the Cycle Sharing system should at least meet the "Minimum Technical Standards" as given in Section 7.

Procure such equipment manufactured not earlier than six (6) months before the date of signing of the Service Provider Agreement between BMC and the Service Provider. The equipment shall not have been put to commercial use anywhere previous to the Commencement of Operations.

The Service Provider will present prototype Station for the Cycle Sharing System to BMC for inspection. BMC will have the right to review all station hardware and software to ensure they meet all the technical criteria as specified. A prototype which may have features over and above the prescribed minimum standards, will be accepted by BMC.

Should BMC find any discrepancy between the prototype and the technical specifications, and then the Service Provider will have 30 days to propose a solution. The final designs will be subject to approval from BMC. After receiving approval on the final design, the Service Provider may proceed to manufacture/ acquire the rest of the Cycles and Stations.

The service provider will also make suggestions on the colours and branding of the cycles and stations. These recommendations will be duly considered by BMC. The final decision rests on BMC and no additional branding components of any kind may be added to this design by the service provider.

3.3.2. ***Minimum Hours of Operation***

- The system will run for a period of at least14 hours every day.
- If the operator decides to operate for 14 hours, the hours of operations should be 6am to 8:00 pm.
- If the operator decides to expand the number of operating hours beyond 14 hours, then it is mandatory that the time period 6 am to 8 pm falls within the operating hours of the system

If the operator has any suggestions on change in time of operations, such a request will be put forth to BMC, who will have the final authority to decide.

3.3.3. ***Number of Stations***

Minimum 50 numbers of Stations is to be installed by the service provider. Each station should comply with the technical standards as specified in Annex A. However if Service Provider wants to increase the number of Station, same can be done at the cost of service provider and a written approval form BMC

- The system proposed by The Service Provider will install Stations as per the time lines.
- The number of units required for some of the essential station components/ infrastructure are detailed below in sections 3.3.4 to 3.3.5.

3.3.4. ***Number of Docks/ Locking posts***

The number of docks at each station should be more than the number of authorised bikes at each station, to ensure availability of excess docking space, to accommodate peak hour demand. The Service Provider will maintain a system docking capacity as follows:

$$D \geq 1.5 * f$$

Where,

- *d* is the number of docks at each station, designated for the cycles of the system and
- *f* is the Authorised Fleet at the station

The dock to cycle ratio should hold true even at the system level. That is, at the system level-

$$D \geq 1.5 * F$$

Where,

***D** is the Total number of docks in the system*

***F** is the Total Authorised Fleet size for the system*

3.3.5. ***Number of Devices for Card verification***

This is the hardware required by the station attendants to validate the user into the system and out of the system. This system will be connected to the central control system. Functionalities of the equipment is listed in the Technical specifications given in Section 7. There will be at least **one device/ station** to be handled by station attendants. High priority stations where a higher demand is expected, the operator may decide to provide more attendants and devices. The operator may also decide to procure a few extra devices to act as back up.

3.4. Central Control System

The service provider should provide for a Central control system which can on a real time basis monitor the operations of the system (all its components). The central control system provides the back bone of the PBS system. The Control Centre will constitute BMC's single point of contact to enable BMC to coordinate with the Service Provider in the course of the day-to-day operation and management of the Cycle Sharing System by BMC. The Service Provider shall ensure that the Control Centre is staffed by an adequate number of appropriately qualified personnel and further that there is due coordination between the staff at the Service Provider control centre and BMC.

The space required for the Control Centre will be made available by BMC

The service provider should:

- Should provide for software to aid in monitoring of the system including details like cycle and dock availability at each station.
- Software which will be able to aid the service provider in tracking stations and enabling efficient redistribution of cycles across stations
- Software which will be able to help in system planning and expansion.
- Procure software and hardware for the processing of customer payments via different modes.
- The hardware and software should meet the "Minimum Technical Standards" as given in Section 7.12.1
- The Central Control system should be linked to the ITS system of the BRT system to ensure coordination between both modes.
- Provide a physically staffed central control room to house the central control system which will have computer terminals and communications equipment allowing Service Provider staff to monitor system status.
- Maintenance, payment of electricity bill and all other related expense of the space provide shall be borne by service provider.

3.5. Redistribution

The Service Provider shall ensure that the cycles are redistributed on a regular basis between stations to ensure that no station is either empty (without any cycles) or full (with no free dock available) for an extended period of time. The service provider should provide adequate number of vehicles which are used only for the purpose of redistribution of cycles across stations.

3.6. Depots/ Workshops

BMC shall provide the adequate Depot/Workshop space for spare Cycles, Stations, cycles repair, equipment and Parking space for redistribution vehicles.

The Service Provider shall source and install the maintenance equipment as necessary. Major repairs of the Cycles and Stations which cannot be carried out on the site shall be carried out at the depot/ workshop space developed by the Service Provider or provided by a third party.

Such location should be accessible and appropriately equipped to manage the Cycle Sharing System. Equipment for maintenance &repair of Cycles is to be borne by the service provider.

3.7. Registration of Users

Registration is a necessary pre-condition to gain access to the PBS system. All users are required to register with the system using a valid ID proof. Each user then will be issued a personalised card which will have their name printed on it. Each card is linked to a person's id in the system making it easy for the operator to track the system usage of each user. Linking of individuals to smart cards to necessary for the system to identify and track the user who has borrowed the cycles from the system, thus reducing the probability of theft and vandalism.

A few centres around the city will be identified by BMC along with the service provider, where registration will be undertaken. The users will have to go to these notified centres with valid id proof and the required security deposit (security deposit along with the fare structure is detailed out in *Annexure C*) to register with the system and be issued a smart card. Cards issued under the PBS system shall be valid on the BRT system as well.

3.8. Fare Collection System

The Fare collection system of the PBS should be integrated with the fare collection system of the BRT. A PBS card holder will be able to recharge the card at any points where BRT cards can be recharged. This would include making payments for memberships/ subscriptions and topping up smart cards. PBS registration centres will also be equipped to handle these transactions.

The Fare structure, Membership fees and usage fees have been determined by BMC and is detailed out in *Annexure C*. No additional fees may be collected by the Service Provider or the staff. Tipping or any exchange of money for preferential service are prohibited and any staff engaging in such a practice should be disciplined accordingly.

However if there are any changes suggested in Fee Structure by the Service Provider same can revised with the written approval by BMC.

3.9. User Information System

Service Provider need to develop and Integrated Website for PBS and establish a smart phone app for the system which will help users both static and real time information about the system. Also, if such information is to be integrated with any other system of BMC Service Provider will provide support for same without any extra cost.

3.10. Advertisement Space

The Service Provider will make available designated branding/advertising spaces on the cycles and stations available to BMC as per the Technical Specifications.

The rights to advertising, sponsorship, naming, and branding rights associated with the system will remain with the Service provider but BMC will have the final right of approval on the same.

The specifications of the advertisement panel are given in system specifications detailed in section 7.

3.11. Marketing and User Education

The Service Provider will be responsible for carrying out on-going marketing activities to promote use of the cycle Sharing System and user education of the system. Before and after the Commencement Date, the Service Provider will carry out marketing activities to promote the system and increase membership.

3.12. Human Resource Plan

The Service provider will

- Enlist trained professionals to operate the Cycle Sharing System.
- Hire adequate staff to ensure that scope of services as mentioned in the RFP are met.

3.13. Data Reporting

During the Operation Period:

- The Concessionaire shall make available all the data pertaining to the Operation & Maintenance of the Project real-time that can be access by the BMC or its representative. The real-time data shall be in such a format that the BMC shall be able to evaluate the performance of the Concessionaire against the Service Levels set forth in this Agreement.
- The Concessionaire shall no later than 7 (seven) days after the close of each month, furnish to the BMC a monthly report stating in reasonable detail the condition of the Project including its compliance with Service Level Benchmarks. In particular, such report shall separately identify and state in reasonable detail the defects and deficiencies that require rectification. This report will help BMC to understand how much service charge accrues to the operator for that month's operation standards.
- The concessionaire shall no later than 14 (fourteen) days after the close of each quarter furnish to BMC a Quarterly report stating in reasonable detail the compliance with service level benchmarks and other details which will aid in making expansion plans of the system. This will include details of stations with maximum and lowest demand, time of the day when there is maximum demand, steps that can be taken to improve user experience and quality of service including potential location where the cycle share can be expanded to.
- BMC may request the Concessionaire for any additional information other than the real-time data if need be.
- BMC will have complete ownership on the data.

3.14. Maintenance

The Service provider needs to ensure that the cycles and all other assets of the system are regularly maintained on a regular basis. The Service provider is required to do a maintenance check on every station of the system at least once a week to ensure the quality of the station infrastructure and the cycles of the system. The Maintenance checks are not to be conducted during hours of operation of the system.

Cycles which require more than on-station maintenance should be taken to the Depot for repairs and be replaced with cycles from the stand by fleet to ensure that the maintenance do not clash with regular operations of the system.

Information of the problems that were addressed at each station with regard to cycles and other infrastructure needs to be properly recorded and entered into the central data base.

The exact maintenance schedule will be finalized by BMC after consultation with the service provider.

3.15. Legal

- Bear all applicable National, State and local taxes on purchase of equipment.
- Bear all the risk incurred on vandalism of the system- cycles, docks, terminals and other components within the station premises & vandalism and loss of cycle which has been rented out.
- Bear all applicable insurance, including vehicle insurance of other components of the system and passenger insurance as required under:
  - Any Financing Agreements of Laws of India.
  - Such Insurances as may be necessary in accordance with the Prudent Utility Practices.

4. Minimum Technical Specifications

4.1. Cycle

S. No.	Cycle- Minimum Specifications
1	One-Size Fits all with Step Through Frame
2	Visible difference of the cycle from regular cycles in the market through design
3	Seat Adjustable without any tools
4	Sturdy, light weight Frame
5	Integrated Lock + Kick Stand
6	Front mounted Basket with a capacity up to 10kg
7	Ad Space on basket and the sides of the bicycle
8	Simple reliable braking system
9	Simple gear system with a minimum of 3 speed gear
10	Rust and Graffiti Resistant
11	Front and Rear mud guards with fenders
12	Enclosed mechanisms
13	Lighting System in the front and back
14	Bell
15	Reflectors on front, sides and back

4.2. Station

S. No.	Stations- Minimum Specifications
1	Modular design- easy to construct and de-construct. Station location can easily be changed.

2	Installed in a manner that ensures safety of the stations infrastructure and cycles
3	Covered Station- Cycles and space for station attendants should be covered to ensure protection from the heat and rain
4	Accommodates gaps caused by on-street obstructions such as manhole covers
5	Space/ kiosk for display of system information, station attendants to register users and undertake cash or card transactions and store devices, fresh smart cards, keys to cycle locks and money
6	One panel of 6ft*6ft for Advertisements at each station
7	Rust and Graffiti Resistant design of docks/ locking posts and advertisement panels

4.3. Docks

S. No.	Docks- Minimum Specification
1	Separate docks for each cycle
2	Locking Mechanism if any for the docks are easy to operate.
3	System Cycles are locked on to docks/ locking posts and never to each other
4	Simple design which do not consume a lot of space
5	Rust and Graffiti free material
6	Guaranteed life of at least 5 years

4.4. Device for Check in and check out/ card verification

S. No.	Device– Minimum specifications
1	Simple and non-bulky design
2	GPRS enabled. Able to communicate real time information to the Central control room.
3	Reads Smart cards and indicates validity of the card and availability of minimum balance within 5 seconds
4	Transmits information about user ID and time of check in and check out to the Central Control Room
5	Able to communicate with the control room check in and check out of cycle at the station and number of cycles available at any given point at the station.

4.5. Central Control System

S. No	Central Control System- Minimum Specifications
1	Connected to all the registration centres and station check in and check out equipment at the stations
2	Able to compile information at station level and system level
3	Able to track the availability of cycles and docks at each station of the system
4	Able to use the cycle and dock availability information to make decision on redistribution of cycles
5	Able to provide real time information of the system to BMC
6	Able to receive and save all records on a searchable database
7	Guarantees data security as per Indian law and international best practices
8	All data is the property of BMC
9	Central Computer System should be upgraded and maintained daily
10	System is integrated with the ITS system of the BRT

11	The Contractor will provide reports to BMC in accordance with an agreed upon schedule or on request.
12	Physically staffed Office space housing the central control system
13	Computer terminals and communications equipment allowing Service Provider staff to monitor system status
14	Call centre clause: The service provider shall provide a call centre number for queries and feedback for the system.

4.6. Redistribution vehicles

S. No.	Redistribution Vehicles- Minimum Specifications
1	Designed to ensure transfer of cycles with minimal damage.
2	Follows the same brand guidelines for the entire system. Should look like a part of the rest of the system

4.7. Depots/ Workshop

S. No.	Depots/ Workshop- Minimum Specifications
1	Space to store extra/ back up cycles for the system
2	Space to store back up check in/ check out devices and other equipment
3	Space to undertake repair of cycles of the system
4	Space to store the required tools for repairs and maintenance

4.8. Registration Centers

S.No.	Registration Centre- Minimum Specifications
1	Enabled to collect ID proofs and other required documents to register a user to the system
2	Enabled with the required equipment or technology to issue a new user id to new customer
3	Enabled to issue personalised cards with user id and information for ID proofs linked to the card.
4	Enabled to collect and return security deposits
5	Enabled to handle card and cash transactions for subscription fees and top up of smart cards.
6	Enabled to link the transactions to the relevant user id.

4.9. User Information System

S. No	Smart Phone App- Minimum qualification
1	Smart Phone apps are provided for at least the Android and Apple operating system
2	Should be able to provide information about the system- static and real time for the ease of the user
3	Should be linked to Google maps,
4	Should be enabled to integrate information of the BRT system on a later date, if required by BMC.

5. Implementation

5.1. Contract Period

This Contract is being granted for the installation and operation of the Bhopal Cycle Sharing System for a Contract Period of 5years (excluding the time required for system installation). The contract period can be extendable for further two more years. The decision for same will be taken by BMC by seeing the service level benchmarks achived by the service provider in preceding years.

The Service Provider shall make available for Service the entire Cycle Sharing System and the entire Fleet from Commencement of Operations until such time as the Contract Period expires, subject to the Assured Fleet Availability (according to Project Phasing) during the Contract Period.

5.2. On Ground Testing

The Service Provider is required a run an on ground test of the system components for atleast two weeks before the formal launch of the system to the general public. This period will be used by the service provider to identify any service glitches in the system and correct it. During this period, the Service Provider shall make available the following:

- Staff required for operations and maintenance of the stations which are being tested.
- At least 10 Stations (with at least 50 Cycles and 125 docks), the Control Centre, and a Depot for the purpose of training and testing of operations.

BMC and Service Provider shall use this period to understand the intricacies of operations and fine-tune the Cycle Sharing System. No fines shall be applicable during this period. The Authorised Fleet requirement is not applicable in this period. Cycles put into service on request by BMC and authorized by BMC for the purpose of training and testing shall be paid on actual basis at the Applicable Service Charge for the Period.

5.3. List of Indicative Deliverables

The selected Service Provider should submit an indicative timeline to BMC on the deliverables of the system. The timelines should be such that the Service provider is able to start the operations of the system within 12 months of signing the contract.

Payment to the service provider on the capital cost incurred will be based on the timelines that is agreed upon by the operator and BMC.

6. Payment to the Service Provider by BMC

6.1. Capital Cost Payment

The capital cost of the system that is borne by the Service provider will be reimbursed by BMC. The ownership of the system hence lies with BMC. The capital cost of the system is determined as the amount that the service provider bids in the bidding process as his capital cost. The capital cost incurred by the Service provider is repaid in three installments by BMC. This is based on the timelines as mentioned in section 5.3.

6.2. Operating cost Payment

The Operating Cost of the system is to be borne by the Service Provider. However a part of the operating cost will be reimbursed by BMC to the service provider if certain service level benchmarks are met. The operating cost is pre- determined based on the operating cost bid of the service provider in the competitive bidding process.

The service provider may claim service charge against the parameter on Awareness (Trial Users) only for the first 12 months of operations or until the operator has claimed the service charge against the parameters on Usage (Ridership Levels& Memberships), whichever is earlier. The service provider may each month either claim service charge on meeting parameters on Usage or parameters on Campaign but can't charge both together.

The payment due to the service provider from BMC will be paid out on a quarterly basis. The payment will be made by BMC within 7 working days of receipt of the quarterly performance report from the Service provider. All payments shall be made through electronic transfer by BMC to the designated account of the Service Provider after deducting any tax deductions at source that BMC may be obliged to deduct under Indian law.

The Service level benchmarks and the corresponding Payment from BMC to service provider is given below:

	S. No:	Performance Indicator	Explanation	Time	Acceptable Service Level	Compensation- Meeting the standard
Bicycle Distribution	1	High priority stations*- empty, peak hours	Percent of the time that high-priority stations are empty during peak hours	7am - 10 am & 4pm-7pm everyday	Should be less than 5% of the total time of operation	5% of the Operating Cost/ month
	2	High priority stations- empty, non- peak hours	Percent of the time that high-priority stations are empty during peak hours	Operating hours excluding peak hours	Should be less than 10% of the total time of operation	2.5% of the Operating Cost/ month
	3	Low priority stations- empty, peak hours	Percent of the time that high-priority stations are empty during peak hours	7am - 10 am & 4pm-7pm everyday	Should be less than 15% of the total time of operation	2.5% of the Operating Cost/ month
	4	Low priority stations- empty, non- peak hours	Percent of the time that high-priority stations are empty during peak hours	Operating hours excluding peak hours	Should be less than 20% of the total time of operation	2.5% of the Operating Cost/ month
Availability	5	Bicycle Availability	Average cycle fleet available per day	At 6 am or when the operations start in the day whichever is later	Should always be 95% or more of the total authorised fleet size	2.5% of the Operating Cost/ month
	6	Service Availability	Number of hours when the system is operational	Operating hours of the system	Should always be 100% of the agreed hours of operations (unless permission has been granted by BMC for otherwise)	2.5% of the Operating Cost/ month

Registration	7	Registration of Members	% of valid applications and registrations that are processed and membership issued within a day	All through the month	90% of all valid applications will have to be processed within 1 day of receipt of application	5% of the Operating Cost/ month
	8	Registration of Non Members or Renewal of Membership or Top up of smart cards	% of valid applications for non-members, renewals and top of smart cards within half an hour	All through the month	90% of all applications will have to be processed within half an hour	5% of the Operating Cost/ month
Maintenance	9	Availability of the Website and smart phone app	% of total time in a month when website and smart phone app is not available	All through the month	The website and smart phone app are available for at least 90% of the time during the entire month	2.5% of the Operating Cost/ month
	10	Maintenance Schedule	Following the pre-determined maintenance schedule	All through the month	The maintenance schedule is followed more than 90% of times as pre- determined	5% of the Operating Cost/ month
Usage	11	Ridership Level	Average ridership of the system per cycle/ day	All through the month	If the average ridership in the system is more than 4/ cycle/ day	5% of the Operating Cost/ month
	12	Memberships	Total Memberships/ month	All through the month	If the total no: of memberships for the system is 750 members or more	5% of the Operating Cost/ month
Awareness	13	Trial Users	No: of people who were riding during the trial riding sessions/ no: of unique trial sessions	All through the month	If the total no: of trial users is more than 500 unique users/ month & more than 10 trial sessions/ month with different groups	5 % of the Operating Cost/ month

6.3. Revision of Service Charge

The Service Charge shall be reviewed and (if applicable) revised every six months. The Service Charge for any given payment period shall be called the Applicable Service Charge and shall be revised as follows:

$$K_{applicable} = k_{base} * (w_{present} / w_{base})$$

Where

- k_a is the Applicable Service Charge for the current payment period,
- k_b is the Service Charge for the first payment period,
- w_p is the Present Year Wholesale Price Index, and
- w_b is Base Wholesale Price Index.

The Wholesale Price Index at the Commencement Date will be defined as the Base Wholesale Price Index.The base Operating Cost of the system on the basis on which the Service Charge is calculated will be reviewed every year. The Operating Cost amount shall be revised for any given period if there has been any change in the wholesale price index. The method of calculation is given below:

$$K_{applicable} = k_{base} * (w_{present} / w_{base})$$

Where

- k_a is the Applicable Operating Cost for the current payment period,
- k_b is the Operating Cost for the first payment period,
- w_p is the Present Year Wholesale Price Index, and
- w_b is Base Wholesale Price Index.

The Wholesale Price Index at the Commencement Date will be defined as the Base Wholesale Price Index.

6.4. Damages

The Service provider will be responsible for all damages to the Cycle Sharing System. Damage to Project Asset due to regular wear and tear under filed conditions, or breach of its maintenance obligations or any other obligations specified in this Agreement and/ or omission of act by the Service Provider shall be the liability of the Service Provider. In such case Service Provider shall repair and rectify at its own cost the damages to the satisfaction of BMC. All insurance proceeds if any shall be applied in rectification/repair of Project Assets. Damages due to vandalism and theft are also the responsibility of the Service Provider, who should be insured against such loses.

Damages due to negligent driving or accidents by Service Provider personnel or authorised representatives on street shall be the liability of the Service Provider. Any fines levied against the Service Provider or any of its staff or subcontractors by traffic police or any competent authority will be borne directly by the Service Provider. BMC has no liability for such infractions.

BMC shall not be liable to make any other payments such as those arising from maintenance or operations of the Cycle Sharing System other than the payments described in this section.

7. Summary of Responsibilities

The following list is a representative but not exhaustive summary of the respective responsibilities of the Service Provider and BMC.

7.1.1. ***BMC***

- Finalisation of Station locations and sizes.
- Review of Service Provider plans for station siting.
- Provision of Land for Stations.
- Provision of space required for the Central Control system.
- Ensuring clearance and approval from all the required authorities for installation and operation of the system.
- Approval of System branding and naming/ advertisements on the system.
- Review of Service Provider plans operation and maintenance including plan for redistribution of cycles.
- Review of quarterly operations report and Fare box revenue.
- Compensation of Service Provider based on service level benchmarks and penalties.
- Provision of rights to the Service provider to conduct an annual cycling event in Bhopal along with BMC.

7.1.2. ***Service Provider***

- **Procurement of Hardware**: Cycles + Stations (Terminals + Docks/ locking posts + Device for card verification)
- Establishment of Central Control System: Software and Equipment to manage & monitor the system operations
- **Planning of Stations:** Location of stations and Station siting Plans
- Installation of stations.
- Procurement of Dedicated Vehicles for redistribution and Daily redistribution of cycles
- Regular Maintenance of Stations and Cycles.
- Establishing and Operating Depots & Workshop for repair of cycles and other system parts and storage of spare parts and back up cycles.
- Registration of Users at notified registration centres.
- Collecting fare box revenue.
- Selling advertisement space on the system/ sponsorship rights to the system.
- Co organising an annual cycling event in Bhopal along with BMC to promote cycling.
- Provision of **Website and Smart Phone App** for the system
- An ITS system which will fully integrate with the existing ITS system of the BRT system.
- Marketing & User Information- Before Launch and during operations
- Planning and hiring adequate staff with the right capabilities.
- Data Reporting- Real time transfer of data + Monthly Reports (Performance Indicators) + Quarterly Reports (System Planning)
- Legal – Insurance of Bicycles, Stations and Public Liability Insurance Policy (all risk of vandalism on operator)

8. Bidding Process

8.1. *Bid Process- Steps*

All bidding procedure will be as per the date mentioned in data sheet. As per bid data sheet

8.1.1. ***Pre Bid Meeting***

Pre-Bid Meeting will be held by BMC as per RFP Data Sheet & Timelines.This meeting is to address queries by bidders. Bidders may either present their questions about the project details and bidding process before the pre-bid meeting or at the meeting. The questions will be addressed by representatives of BMC. If required, changes may be made to the tender document based on the queries of Bidders.

8.1.2. ***Opening of Technical Bid - The Technical Evaluation***

Technical Bids of all bidders shall be opened by BMC in the presence of Bidders' representatives who choose to attend the opening of Technical Bid as mentioned in RFP Data Sheet & Timelines.The Bidders' representatives who are present at such opening shall sign a register evidencing their attendance as a witness to the Bids opening process. In the event of the specified date of Bid opening being declared a holiday for BMC, the Bids shall be opened at the appointed time and location on the next working day.

8.1.3. ***Announcement of Bids***

The Bidder's names, the presence or absence of requisite Bid Security and such other details as BMC in its sole discretion may consider appropriate, will be announced at the opening of Technical Bid. Bids, in the absence of EMD will be considered as non-responsive and solely rejected.

8.1.4. ***Technical Bid Presentation***

The Bidders are required to also make a presentation on the technical bid submitted. Any questions on the technical proposal from the BMC or its representatives have to be addressed by the bidder at the presentation.

8.1.5. ***Opening of Financial Bids***

After the evaluation of Technical Bid has been completed, BMC shall open the Financial Bids of only those Bidders who qualify the prescribed criteria for the Technical Bid. Decision of BMC in this regard will be final. Financial Bids of those Bidders whose Technical Bid are rejected shall not be opened and shall be returned to such Bidders as per the procedure set forth in this RFP.

Financial Bids shall be opened, in the presence of Bidders' representatives who choose to attend the Financial Bid opening on such date and time which shall be communicated to the Bidders, whose Technical Bid are accepted. The Bidder's representatives who are present at such opening of Financial Bids shall sign a register evidencing their attendance as a witness to the Bids opening process. The name of Bidder, Bid rates, etc. will be announced at such opening.

8.1.6. ***Completeness of Bids & Rectification of Errors***

BMC will examine the Bids to determine whether these are complete, whether these meet all the conditions of the RFP Document and whether the documents have been properly signed and the Bids are generally in order. If there is a discrepancy between words and figures, the amount in words shall prevail.

8.1.7. ***Clarification of Bids***

During evaluation of Bids, BMC may, at its discretion, ask the Bidder for a clarification of its Bid. The request for clarification and the response shall be in writing. If the response to the clarification is not received by BMC before the expiration of the deadline prescribed in the written request for clarification, BMC reserves the right to make its own reasonable assumptions at the total risk and cost of the Bidder.

8.1.8. ***Rejection of Bid***

A Bid is likely to be rejected by BMC without any further correspondence, as non-responsive, if:

- Bid is not submitted in the manner as prescribed in the Instructions to Bidders Section of this RFP and is otherwise not in conformity with the terms and provisions of this RFP Document; or
- Bid is not submitted in the bid-forms annexed in the RFP Document; or
- Bid is submitted by telex, fax or email; or
- Bid Security does not conform to the provisions set forth in this RFP; or
- Failure of any one (or more) of the conditions set forth herein above shall result in rejection of Bid.

In addition to the foregoing, in the event a Bidder makes an effort to influence BMC in its decisions on Bid evaluation, Bid comparison or selection of the Service Provider, it may result in rejection of such Bidder's Bid.

8.2. Bid Process- Evaluation

Only the bids of those bidders who pass the pre-qualification criteria (both technical and financial) would be considered for the project.

The technical bids are first evaluated and ranked before the financial bids are opened. The final decision is based on a combined score of technical and financial bid. The process is detailed out below.

8.2.1. ***Evaluation of Technical Bids***

The methodology for evaluation of Technical bids is given below:

S. No.	Parameter	Description	Score
1	Cycle	Aspects of the Cycle Design over and above the minimum specified requirements that result in improvements for the user, the operator or BMC. Examples of such aspects include, but are not limited to: Lightweight Cycles. Embedded GPS Devices.	15
2	Station	Aspects of the Station Design over and above the minimum specified requirements that result in improvements for the user, the operator or BMC Simple attractive design of the station.	15
3	User Interface and Experience	Aspects of user interface at the station and smart phone app and the user's experience in using the system which is better than the minimum stands specified. Info graphic representation of user information. Extra functionalities on the smart phone app	10
4	ITS Strategy	Aspects of the ITS system which is over and above the minimum specified qualification. Enabled to integrate with other new modes of transport. Reporting structure which aids in planning for expansion. Reporting structure which helps BMC to monitor service level benchmarks with no manual inspection.	20
5	Awareness and User Generation Campaign	The methodology for awareness and user generation including: Innovative methods used for generation of user interest and the target groups for each campaign The rationale for choosing the methods chosen The detailed plan along with time lines for the campaign	15
6	Operations Plan + HR	Aspects of the Operations and HR plan which is over and above the minimum specifications. Efficient plan on redistribution of cycles. Use of environment friendly vehicles for cycle distribution.	15
6	Prior Experience	If the Bidder or bidder consortium has had any experience in PBS planning and operation. Other Cycle related businesses. Planning and operation of any other public transport systems in India. Operating fare collection and ITS systems for mass transit in India	10

All bidders will be evaluated on the Technical bid and the presentation on the bid. The objective of the presentation is to:

- Demonstrate the solution in real life scenario.
- Understand the system's features in greater detail.
- Understand the proposed system's fit to Corporations requirements
- How the fare collection system will be integrated with the fare collection system of the BRT.
- Approach and Methodology.
- Project plan.
- Technical solution proposed in the technical bid.
- Addressing all queries on the technical bid from BMC or its representatives.

To qualify for the next round, financial bid evaluation, the bidder's technical bids need to meet certain standards:

- Bidders scoring less than 50 in the Technical Bid evaluation are immediately disqualified.
- Among Bidders who score higher than 50, only top three Bidders (highest scores) will be eligible and short-listed for the financial evaluation.

8.2.2. Evaluation of Financial Bids

- Commercial Bids of only top three bidders who have obtained 50 or above marks in the technical bid evaluation process will be opened.
- Financial score for both the capital cost bid and operating cost bid will be calculated separately.
- The maximum amount that can be bid on the capital cost is Rs. 3,00,00,000 (Rs. 3 Crores).
- Financial Score of both capital bid and operating cost will be computed separately by dividing the least of the Quotes received by the Bidder's own Quote.
- The lowest financial proposal should be given a financial score of 100 points. The financial scores of other proposals should be determined proportionately.
- Financial Score of Capital Bid is calculated on the basis of the formula given below:

Financial Score of Capital Bid= (LP (CB)/OP (CB) x 100)

Where,
LP (CB) - Lowest Price offer on the Capital Bid of the Technically Qualified Bidders and
OP (CB) - Offer Price on the Capital Bid of the bidder being evaluated.

- Financial Score of Service Charge Bid is calculated on the basis of the formula given below:

Financial Score of Operating Cost Bid= (LP (OB)/OP (OB) x 100)

Where,
LP (OB) - Lowest Price offer on the Operating Cost Bid of the Technically Qualified Bidders
OP (OB) - Offer Price on the Operating Cost Bid of the bidder being evaluated.

The Financial Bids will be opened, in the presence of Bidders' representatives who choose to attend the Financial Bid opening on date and time to be communicated to all the technically qualified Bidders. The Bidder's representatives who are present shall sign a register evidencing their attendance.

BMC Commissioner Reserves the right to reject all/any part of the tender without assigning any reason whatsoever and decision of Commissioner in this regards shall be final and binding. Commissioner is not bound to disclose the details of the evaluation process in terms of methodology, evaluation criteria and scores.

Commercial Bid Rejection Criteria:

- Incomplete Price Bid
- Price Bids that do not conform to the Tender's price bid format

8.2.3. Combined Score

The Bids received will be evaluated using **Quality cum Cost Based Solution (QCBS).**

After the Technical evaluation, the evaluation committee will evaluate each of the Technically Qualified bidders' response on the basis of technical and commercial parameters. The weightage of the technical and commercial parameters will be in the ratio of 80:20 respectively.

For calculation of the combined Technical and Price Score of all bidders, following formula will be used:

Total Score=(Technical Score x 0.50)+(Financial Score of Capital Cost Bid x 0.10)+(Financial Score of Operating Cost Bid x 0.40)

The successful applicant shall be the applicant whose proposal secures the highest combined score. However, in the event the proposals of two or more applicants have the same scores in the final ranking, the proposal with the highest technical score will be ranked first.

9. General Instructions To Bidders

9.1. Due Diligence

The Bidder is expected to examine all instructions, forms, terms and specifications in the RFP. The Bid should be precise, complete and in the prescribed format as per the requirement(s) of the RFP. Failure to furnish all information required by the RFP or submission of a Bid not responsive to the RFP in every respect will be at the Bidder's risk and may result in rejection of the Bid.

9.2. Cost of Bidding

The Bidder shall bear all costs associated with the preparation and submission of its Bid and BMC will in no case be held responsible or be liable for these costs, regardless of the conduct or outcome of the Bidding Process.

9.3. Clarification to RFP Documents

In the event that any Bidder requires any clarification on the RFP, such Bidder are expected to send their queries to BMC in writing by post, email, courier, or by faxto the following addresses / fax number in order to enable BMC to have adequate notice of the said queries so that the same may be addressed at the Pre Bid Meeting:

Contact for questions about RFP submission procedures, Technical Specifications and Terms and Conditions at :

Office of BHOPAL MUNICIPAL CORPORATION,
IInd Floor, B Wing, ISBT Campus, Dr. Ambedkar Marg, Bhopal (MP) 462043.
Ph: 0755-2980097, Fax: 0755- 2701223, email: bcll_bpl@rediffmail.com

Nothing in this section shall be taken to mean or read as compelling or requiring BMC to respond to any questions or to provide any clarification to a query. BMC reserves the right to not respond to questions it perceives as non-relevant which may be raised by a Bidder or not to provide clarifications if BMC in its sole discretion considers that no reply is necessary.

No extension of Deadline for Submission of Bids will be granted on the basis or grounds that BMC has not responded to any question or provided any clarification to a query.

9.4. Pre-Bid Meeting

A pre-bid meeting shall be held for any clarifications and replies to the queries raised by prospective Bidders as per the details mentioned in Data Sheet.

Pursuant to the Pre Bid Meeting, the terms and conditions of the RFP Document will be frozen with or without amendments thereto as applicable.

Non-attendance at the Pre-Bid Meeting will not be a cause for disqualification of a Bidder. However, the terms and conditions of the Addendum(s) will be binding on all the Bidders irrespective of their attendance at the Pre-Bid Meeting

BMC may, at its sole discretion, extend the Deadline for Submission of Bids.

9.5. Amendment of Bidding Documents

At any time before the Deadline for Submission of Bids, BMC may, for any reason, whether at its own initiative or in response to a clarification requested by a prospective Bidder, modify the RFP by amendment. Any amendments / modifications to the RFP Document, which may become necessary for any reason, shall be through the issue of addendum(s) to the RFP which shall set forth the said amendments / modifications thereto (hereinafter referred to as the "Addendum(s)." If required, in order to allow prospective Bidders reasonable time in which to take the Addendum(s) into account in preparing their respective Bids, BMC reserves the right to extend the Deadline for the Submission of Bids. However no request from the prospective Bidder(s), shall be binding on BMC for the same.

9.6. Preparation of Bids

9.6.1. Language of Bid

The Bid prepared by the Bidder, as well as all correspondence and documents relating to the Bid exchanged by the Bidder and BMC shall be written in English language only. However, in case Bidder chooses to enclose certain supporting document(s) in any language other than English then the Bidder shall also enclose certified / authentic translated copies of the same in English language. Any such document that is not translated into English or will not be considered. For the purpose of interpretation and evaluation of the Bids, the English language translation shall prevail.

9.6.2. Bid Currency

All prices quoted in the Bid shall be quoted in Indian Rupee(s) (INR).

9.6.3. Format of Earnest Money Deposit ("EMD") or Bid Security

Bid submitted in response to the RFP Document shall be accompanied by a Bid Security of Rs. 2,00,000/- (Rupees Two lakh only) (hereinafter referred to as "Bid Security" or "EMD") shall be submitted online to BMC's bank account.

Currency of Bid Security: The Bid Security should be furnished in Indian Rupees (INR).

9.6.4. Condition on Bidders

Bidding shall be open to firms (which include companies, partnerships, and proprietary concerns), duly registered cooperative societies, and consortiums. In case of a consortium or joint venture, the lead firm (which shall be single entity) shall be specified and fully empowered to represent the consortium or joint venture. The lead firm shall have a minimum stake of 51% in the consortium/joint venture.

The following conditions for consortiums shall apply:

- A consortium agreement which specifies the exact members of the consortium provided in the format given in **Annexure M.**
- Bidders are allowed to participate in the bidding through a consortium structure with a cap of three members. The members of the consortium are to be clearly identified at the time of bidding and any business/shareholding/other relationship between them is to be made clear.
- A Bidding Consortium is required to nominate a Lead Member for the purposes of interacting with BMC. The nomination of the Lead Member shall be supported by notarised copies of Memorandum of Understanding and Power of Attorney signed by all the members on a stamp paper of Rs 100/- (One Hundred only), the formats for which are supplied with this RFP.
- The Consortium agreement shall clearly specify the exact role and responsibility of each of the consortium members.
- In case of the Service Provider being a consortium, the members of the consortium shall be required to incorporate a company under the Companies Act, 1956. The Service Provider Agreement in such a case would be signed with the newly incorporated Company. The lead member of the consortium would be required to hold, initially and at all times during the duration period of the Service Provider Agreement, not less than 51% of the aggregate shareholding of the newly incorporated consortium company. The

other member of the consortium would be required to hold, initially and at all times for during the duration of the Service Provider Agreement, not less than 11% of the aggregate shareholding of the newly incorporated consortium company.

- A firm cannot be a member of more than one bidding consortium. An individual firm applying as a Single Bidder cannot at the same time be member of any Consortium bidding under this RFP.
- Each member of the Consortium shall be jointly and severally liable for the due implementation of the Project.
- Any changes and deviation of roles and responsibilities after the submission of Bid and before the execution of the Provider Agreement shall entitle BMC to reject the Bid in its sole discretion.
- BMC reserves the right to reject the Bid in case of change in the constitution of the consortium after the submission of Bid and before the execution of the Provider Agreement.

9.6.5. ***Authentication of Bid***

The original and the copy of the Bid shall preferably be type written and shall be signed by a person or persons duly authorized by the Bidder. The person or persons signing the Bid shall initial all pages of the Bid.

9.6.6. ***Validation of interlineations in Bid***

Any interlineations, erasures or overwriting shall be valid only if the person or persons signing the Bid have authenticated the same with their respective signature alongside such interlineations, erasures or overwriting.

9.6.7. ***Number of Copies of Bid***

The Bidder shall submit one original and one copy of the Technical Bid separately, clearly marking each "Technical Bid– Original" and "Technical Bid– Copy", as appropriate. The same practice has to be followed for the Pre- Qualification Criteria. In the event of any discrepancy between the original and the copy, the original shall govern.

Bidder shall submit only one original of the Financial Bid, clearly marking the same as "Financial Bid".

9.6.8. ***Sealing and Marking of Bids***

After online submission of Technical Bid bidder shall submit a sealed copy of same at BMC office.

9.7. Documents Constituting Bid

The documents constituting the Bid shall be as follows:

9.7.1. ***Technical Bid with Bid Security***

In order that Bidder(s) qualify to bid for this RFP, Bidder(s) shall be liable to submit a Technical Bid in the form and manner set forth in Annex E of the RFP Document along with all documents required to be submitted as per the said Annexure including without

limitation any Memorandum of Understanding and the Bid Security. The said Technical Bids shall be evaluated by BMC in its sole discretion.

9.7.2. Financial Bid

The Financial Bids should be in the form and manner set forth in Annex F to this RFP and should comprise of all such documents and details mentioned therein for both the capital costs and Operating Cost.

9.8. Period of Validity of Bids

9.8.1. Validity Period

Bids shall remain valid for a period of one hundred and eighty (180) after the date of technical bid opening prescribed by BMC .BMC reserves the right to reject a Bid as non-responsive if such Bid is valid for a period of less than 180 (one hundred and eighty) days and BMC shall not be liable to send an intimation of any such rejection to such Bidder.

9.8.2. Extension of Period of Validity

In exceptional circumstances, BMC may solicit the Bidder's consent for an extension of the period of Bid validity. Any such request by the BMC and the response thereto shall be made in writing and such extension of Bid validity period by the Bidder should be unconditional. A Bidder may refuse BMC's request for such extension without forfeiting the Bid Security. A Bidder accepting the request of BMC shall not be permitted to modify its Bid.

9.8.3. Mailing Address for Bids

Bids shall be addressed to BMC and sent at the following address:

Office Of BHOPAL MUNICIPAL CORPORATION,
II[nd] Floor, B Wing, ISBT Campus, Dr. Ambedkar Marg, Bhopal (MP) 462043.
Ph: 0755-2980097, Fax: 0755- 2701223, email: bcll_bpl@rediffmail.com

9.9. Deadline for Submission for Bids

9.9.1. Last Date and Time for Submission

The Bids must be submit online by BMC, at the specified dates as mentioned in data sheet of RFP Document.

9.9.2. Extension of Deadline for Submission of Bids

If the need so arises, BMC may, in its sole discretion, extend the Deadline for Submission of Bids by amending the RFP documents in this behalf. In such event, all rights and obligations of BMC and Bidders previously subject to the earlier deadline will thereafter be subject to the deadline as extended. Any such change in the Deadline for Submission of Bids shall be notified to the Bidders by dissemination of requisite information in this behalf in writing either by email or by facsimile or by registered post.

9.10. Modification and Withdrawal of Bids

Bidder shall not be allowed to modify any part of its Bid after the Bid submission.

9.11. Bid process – Discharge of Bid Security

9.11.1. Discharge of Bid Security of Other Bidders

The Bid Security of Bidders other than the Bidder selected to be the Service Provider will be discharged / returned as promptly as possible after the expiry of Bid validity and latest by the 30th (thirtieth) day of the signing of the Provider Agreement with the Service Provider.

9.11.2. Discharge of Bid Security of Service Provider

The Service Provider shall be required to furnish a performance guarantee on or before the date of signing the Provider Agreement. The Bid Security of a Service Provider shall be discharged only after the Service Provider furnishes the performance guarantee as required. The Service Provider's Bid Security shall not be adjusted against the Performance Guarantee.

9.11.3. Forfeiture of Bid Security

The Bid Security of a Bidder shall be forfeited in the following events:

- If a Bidder withdraws the proposal during the period of Bid validity after the Bid due date, or
- In the case of the Bidder selected to be the Service Provider, if the Bidder fails to sign the Service Provider Agreement or fails to furnish the required performance guarantee with in stipulated time in accordance with General Conditions of Contract set forth herein.

9.12. Signing of Provider Agreement

Bidders should note that in the event of acceptance of its Bid, the Service Provider(s) would be required to execute the Provider Agreement, with such terms and conditions as may be considered necessary by the BMC at the time of finalization of the Provider Agreement. It is clarified that the issuance of the Letter of Acceptance shall be followed by signing of the Provider Agreement (as aforesaid) and thereafter the Service Provider shall commence supply of the equipment for the Cycle Sharing System. The signing of the Provider Agreement shall be completed within one (1) month of the issuance of the Letter of Acceptance to the Service Provider or within such extended time frame as extended by BMC in its sole discretion.

Any and all incidental expenses of execution of the Provider Agreement shall be borne by the Service Provider.

9.13. Annulment of Award

Failure of the Service Provider to comply with the requirements set forth in this RFP Document and /or the provisions of the Provider Agreement shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security

9.13.1. Failure to abide by the Provider Agreement

The conditions stipulated in the Provider Agreement shall be strictly adhered to by the Service Provider and any violation thereof by the Provider may result in termination of the Provider Agreement without prejudice to any rights available to BMC upon such termination as set forth in the Provider Agreement.

9.14. BMC's right to accept or reject any and/or all Bids

BMC reserves the right to accept or reject any Bid in its sole discretion, and to annul the bidding process and reject all Bids without assigning any reason whatsoever at its sole discretion at any time before issuance of a Letter of Acceptance without incurring any liability.

10. General Conditions Of Contract

10.1. Application

These general conditions shall apply to Service Provider to the extent that provisions in the Service Provider Agreement do not supersede them.

10.2. Standard of Performance

The Service Provider shall perform the services and carry out its obligations under the Agreement with due diligence, efficiency and economy; in accordance with generally accepted practices followed in the industry and in a professional manner and shall observe sound management, technical and engineering practices. Service Provider shall deploy appropriate technology, safe and effective equipment, skilled, competent and professionally trained staff and use latest methods for the Cycle Sharing System. In the event that BMC requires any interaction and / or arrangement with a third party in relation to the Cycle Sharing System, Service Provider shall act as a faithful advisers to BMC in such process and shall, at all times, support and safeguard BMC's legitimate interests in this context.

10.3. Use of Provider Agreement & Information

Service Provider shall not, without BMC's prior written consent, disclose the contents of this Agreement, or any provision thereof, or any specification, plan, drawing, pattern, sample or information furnished by or on behalf of BMC in connection therewith, to any person outside the scope of the Cycle Sharing System.

Service Provider shall not, without BMC's prior written consent, make use of any document or information, which becomes available to the Service Provider during the performance of the Provider Agreement, except such use of information for the purpose of performing the Service Provider Agreement.

All documents other than the Service Provider Agreement itself, including without limitation any drawings, plans, specifications, charts, etc. shall remain the property of BMC and shall be retained (in all copies) by BMC.

10.4. Indemnity

Service Provider shall at all times, i.e. during the subsistence of the Service Provider Agreement and any time thereafter, defend, indemnify and hold BMC harmless from and against all claims (including without limitation claims for infringement of intellectual property, breach of contract, death or injury to a person or injury to property, or other tort claims) and expenses (including court costs) arising out of or relating to the breach by Service Provider of any covenant, representation or warranty or from any act or omission of the Service Provider or his agents, employees or subcontractors.

10.5. Performance Guarantee

Within 30 (thirty) days of receipt of Letter of Acceptance from the Authority, Service Provider shall furnish a performance guarantee to BMC, for an amount equal to Rs. 1,00,00,000/- (Rupees One Corers) or an amount equivalent to half of the Capital Bid amount, whichever is lower, for Public Cycle Sharing System with 500cycles and minimum 50 Stations. The amount will be payable in the form of a Bank Guarantee from any Scheduled Bank approved by RBI or Demand Draft / Bankers' Cheque.

This performance guarantee is valid until the completion of the first year of operation. The Performance Guarantee required to be provided by the Service Provider for every year of operation starting year 2 of operation would be reduced annually by an amount equivalent to one fifth of the bank guarantee furnished in year 1. An example of the amount that needs to be provided as performance guarantee is provided in Annexure E.

The Bid Security submitted by the Service Provider shall not be adjusted against the Performance Guarantee. The Bid security shall be returned back to the Service Provider on the receipt of Performance Guarantee. The general format of the bank guarantee for Performance Guarantee is set forth in Annex Fof this RFP.

Performance Guarantees in the form of a bank guarantee shall be irrevocable and valid for the entire Contract Period and an additional period of 90 (ninety) days thereafter.

10.6. Representations and Warranties

Service Provider hereby represents and warrants that the hardware, software, and the services implemented under the Cycle Sharing System shall be:

- In accordance with the standards laid out in the RFP by BMC for the Cycle Sharing System and those provided during the term of the agreement;
- As per the specifications given in the RFP and meeting all mandatory, legal and other statutory requirements;
- Compliant with the Technical Specifications set forth in Annex A;
- Fit and sufficient for the purpose(s) for which they are designed and developed;
- Be new;
- Be certified or registered with the concerned agency after completing all legal, statutory, and other requirements,
- Be free from defects in design, material and workmanship, whether latent or otherwise,

Service Provider hereby represents and warrants that neither any component of the Cycle Sharing System nor any use thereof by BMC will infringe any patent, trademark, copyright, trade secret, or other proprietary right of a third party.

Service Provider hereby further represents and warrants that any service that is provided by the Service Provider hereunder shall be performed in a competent manner and be for any purpose for which Service Provider knows or has reason to know BMC intends to use such service.

Service Provider hereby agrees that the above stated Representations and Warranties (i) shall survive the inspection, acceptance and use of the Cycle Sharing System by BMC or any other authorized agency; (ii) are for the benefit of BMC; and (iii) are in addition to any warranties and remedies to which BMC may otherwise agree or which are provided by law.

10.7. Assignment

Service Provider shall not assign, in whole or in part, any right or delegate any duty under the Service Provider Agreement to any third party, except with BMC's prior written consent.

10.8. Delay in providing the Cycle Sharing System

The Service Provider shall ensure that the Cycle Sharing System is provided to BMC as per the time schedule given in the Service Provider Agreement and / or any amendments thereto. A delay by Service Provider in the performance of its obligations under the Service Provider Agreement shall render Service Provider liable to any or all the following sanctions in the sole discretion of BMC:

- Forfeiture of Service Provider's Performance Guarantee
- Imposition of liquidated damages on Service Provider in terms of this RFP
- Termination of the Service Provider Agreement

If at any time during performance of the Service Provider Agreement, Service Provider should encounter conditions impeding the timely completion and/or performance of the services as per the Agreement, Service Provider shall promptly notify BMC in writing of the fact and reasons for the delay and likely duration of such delay. As soon as practicable after receipt of Service Provider's notice in this behalf, BMC shall evaluate the situation and may at its discretion extend Service Provider's time for performance of Service Provider's obligations under the Agreement. Any such extension shall be valid only if ratified by the parties by way of making appropriate amendment(s) in writing to the Service Provider Agreement as may be mutually agreed to between the parties.

10.9. Quality check & acceptance of equipment

Service Provider shall finalise a Quality Checks and Acceptance Test Plan of offered systems to BMC and after finalisation, the same shall form part of the Service Provider Agreement. The cycles offered by the Service Provider for the Bhopal Cycle Sharing System shall be inspected for acceptance/rejection (as applicable) in accordance with the Quality Check and Acceptance Test Plan given in the cycle specifications by BMC or its authorized agency.

10.10. Liquidated Damages

In the event of delay in supply of the Cycle Sharing System by the Service Provider beyond the Commencement Date (including the grace period) and up to the end of the additional period (90 days) provided by BMC, Service Provider shall pay to BMC liquidated damages at 1% of the performance guarantee per day of delay in making the service operational, for the first 90 days.

In case the Service Provider is unable to make the system operational with manpower and supporting maintenance infrastructure within these 90 days of Commencement Date, BMC reserves the right to terminate the Service Provider Agreement and Service Provider shall forfeit the Performance Guarantee amount. No interest shall be paid by BMC on the Performance Guarantee.

10.11. Right to Inspect Cycles, Support Facilities and Documents

Service Provider shall make the Cycle Sharing System and all support facilities along with all documents, certificates as required to the Cycle Sharing System available for inspection by BMC and its staff and authorized representatives from time to time.

BMC reserves the right to inspect/arrange inspection of any cycle, station, and/or any support facility used by Service Provider in relation to the implementation of the Cycle Sharing System, through an authorized agent / representatives. BMC shall do so after giving prior notice to Service Provider and make a visit during the office hours of Service Provider. Service Provider shall at all times assist BMC in such inspections.

BMC reserves the right to inspect/ arrange inspection of any all relevant documents/ records of business operations / records including the books of accounts of statutory payments like PF, ESIC, Service Tax, etc. of the Provider at any time to monitor compliance with Service Provider's obligations in relation to implementation of the Cycle Sharing System, through an authorized agent or representatives. BMC shall do so after giving prior notice to Service Provider and make a visit during the office hours of Provider. Service Provider shall at all times assist BMC in such inspections.

10.12. Ownership & Protection of Property/Data

BMC shall retain the title and ownership of any site allotted by BMC to Service Provider for purposes of carrying out Service Provider's obligations in relation to the Cycle Sharing System. Such title and ownership of BMC in any such site shall not pass to Service Provider. However, BMC may enter an agreement to lease the premises to the Service Provider at a nominal rate (e.g. Re 1 per year).

BMC shall own any and all data created out of the Cycle Sharing System at all times, during and after the expiry / termination of the Service Provider Agreement. Service Provider shall not have any claim on and for such data and shall not for any reason withhold such data from BMC.

Service Provider shall exercise all due caution to protect and maintain the data created out of this Cycle Sharing System, including identification and financial data collected from Members. Service Provider shall not share, sell, or in any manner use the data created by Service Provider out of this Cycle Sharing System otherwise than in accordance with the terms of the Service Provider Agreement.

After the expiry or termination of the Service Provider Agreement, Service Provider shall have no right, title, or interest in or to any work including without limitation the designs, software, modifications or facilities developed by BMC under the Cycle Sharing System for any purpose whatsoever. The Service Provider shall hand over all identification and financial data about Members to BMC. The Service Provider's copy(ies) of Member data shall be destroyed.

10.13. Confidentiality Obligations of Service Provider

10.13.1. Confidential Information

Service Provider shall treat as confidential any information which is clearly described as confidential otherwise clearly marked as confidential or proprietary to BMC ("Confidential Information"). Notwithstanding the generality of the foregoing, Confidential Information shall include any proprietary or confidential information of BMC relating to the Cycle Sharing System

or services provided under the Service Provider Agreement in relation thereto and information relating to BMC's business or operations.

Service Provider shall not without BMC's prior written consent use, copy or remove any Confidential Information from BMC's premises, except to the extent necessary to carry out Service Provider's obligations hereunder. Upon completion or termination of each assignment hereunder, Service Provider shall return to BMC all documents or other materials containing BMC's Confidential Information and shall destroy all copies thereof.

10.13.2. ***Confidential Exceptions***

Confidential Information shall not include information which:

- is or becomes generally available to the public without any act or omission of Service Provider
- was in Provider's possession prior to the time it was received from BMC or came into Service Provider's possession thereafter, in each case lawfully obtained from a source other than BMC and not subject to any obligation of confidentiality or restriction on use;
- is required to be disclosed by court order or operation of law; in such event, Service Provider shall so notify BMC before such disclosure; or
- is independently developed by or for Service Provider by persons not having exposure to BMC's Confidential Information

10.13.3. ***Period of Confidentiality***

Service Provider's obligations of confidentiality regarding BMC's Confidential Information shall terminate 3 (three) years after the expiry or earlier termination of the Provider Agreement.

10.14. *Force Majeure*

BMC shall not forfeit Provider's Performance Guarantee or charge liquidated damages or terminate the Provider Agreement for default, if and to the extent that delay in performance or failure to perform Provider's obligations under the Provider Agreement is the result of an event of Force Majeure, provided the Service Provider has taken all reasonable efforts to avoid, prevent, mitigate and limit damage, if any, cause or is likely to be caused to the project facilities as a result of the Force Majeure Event and to restore the project facilities, in accordance with the Good Industry Practice and its relative obligations under this Agreement;

If a Force Majeure situation arises, Provider shall promptly notify BMC in writing of such conditions and the cause thereof. Unless otherwise directed by BMC in writing, Provider shall continue to perform its obligations under the Provider Agreement as far as is reasonably practical and shall seek all reasonable alternative means for performance not prevented by the Force Majeure event.

Any insurance proceeds received shall be, subject to the provisions of Financing Documents, entirely applied to repair, replace or restore the assets damaged on account of the Force Majeure Event or in accordance with Good Industry Practice.

For this purpose, Force Majeure shall be defined as any event lying beyond the reasonable control of either the Service Provider or BMC. Such events, shall include, but not be limited to, the following:

- Earthquake, flood, inundation and landslide
- Storm, tempest, hurricane, cyclone, lightning, thunder or other extreme atmospheric disturbances
- Fire caused by reasons not attributable to the Affected Party or any of the employees, contractors or agents appointed by the Affected Party
- Acts of terrorism;
- Strikes, labour disruptions or any other industrial disturbances not arising on account of the acts or omissions of the Affected Party
- Break down of the Plant or any part thereof
- Action of a Government Agency having Material Adverse Effect including by not limited to
    - Any acts of expropriation, compulsory acquisition or takeover by any Government Agency of the Cycle Sharing System or any part thereof or of Service Provider's rights in relation to the Project.
    - Any unlawful, unauthorised or without jurisdiction refusal to issue or to renew or the revocation of any Applicable Approvals, in each case, for reasons other than Service Provider's or any of its contractor's breach or failure in complying with the, Applicable Laws, Applicable Approvals, any judgment or order of a Governmental Agency or of any contract by which Service Provider or its contractor as the case may be is bound
- Early termination of this Agreement by BMC for reasons of national emergency or national security.
- War, hostilities (whether declared or not) invasion act of foreign enemy, rebellion, riots, weapon conflict or military actions, civil war, ionising radiation, contamination by radioactivity from nuclear fuel, any nuclear waste, radioactive toxic explosion, volcanic eruptions.

10.15. Termination due to Force Majeure Event

If a Force Majeure Event as described in Clause 6.14 continues or is in the reasonable judgment of the Parties likely to continue beyond a period of 120 days, the parties may mutually decide to terminate this Agreement or continue this Agreement on mutually agreed revised terms. If the parties are unable to reach an agreement in this regard, the affected party shall after the expiry of the said period of 120 days, be entitled to terminate this Agreement

Upon Termination of this Agreement on account of a Force Majeure Event, the Service Provider shall be entitled to the following (a) receive any outstanding payments due to it for services rendered under the Service Provider Agreement up to the date of Termination and (b) discharge of the performance guarantee in full.

10.16. Events of Default and Termination

Events of Default shall mean either Service Provider Event of Default or BMC Event of Default or both as the context may admit or require.

10.16.1. Service Provider Event of Default

Any of the following events shall constitute an Event of Default by Service Provider (Service Provider Event of Default) unless such event has occurred as a result of a Force Majeure Event:

- Service Provider is in breach of any of its obligations under this Agreement and the same has not been remedied for more than sixty (60) days:

- A resolution for voluntary winding up has been passed by the shareholders of Service Provider

Any petition for winding up of Service Provider has been admitted and liquidator or provisional liquidator has been appointed or Service Provider has been ordered to be wound up by Court of competent jurisdiction, except for the purpose of amalgamation or reconstruction, provided that, as part of such amalgamation or reconstruction and the amalgamated or reconstructed entity has unconditionally assumed all surviving obligations of the Service Provider under this Agreement.

10.16.2. BMC Event of Default

Any of the following events shall constitute an event of default by BMC ("BMC Event of Default") when not caused by a Service Provider Event of Default or Force Majeure Event:

- BMC is in breach of any of its obligations under this Agreement and has failed to cure such breach within sixty (60) days of occurrence thereof
- BMC has unlawfully repudiated this Agreement or otherwise expressed its intention not to be bound by this Agreement.

10.16.3. Termination due to Event of Default

In the event of the Service Provider Event of Default, BMC shall have the right to

- invoke the Performance Guarantee and/or
- take any other action including provisioning of the equipment of the Cycle Sharing System through any replacement service provider selected by BMC in its sole discretion at the risk and cost of the Service Provider, and/or
- take over the entire infrastructure developed by the Service Provider for the Cycle Sharing System or any part thereof and / or
- Negotiate with Provider to transfer the said infrastructure or part thereof to a replacement Provider selected by BMC, at BMC's sole discretion.

Upon Termination of this Agreement on account of Service provider Event of Default, BMC shall not be liable to pay any termination payment to Service provider.

10.17. Termination for BMC Event of Default

Upon Termination of this Agreement on account of BMC Event of Default, the Service Provider shall be entitled to the following:

- Receive any outstanding payments due to it for services rendered under the Service Provider Agreement up to the date of Termination.
- Receive compensation equivalent to 50% of the depreciated value of the installed hardware, including Cycles and Stations.
- Discharge of the performance guarantee in full.

10.18. Termination for Insolvency, Dissolution, etc.

BMC may at any time terminate the Agreement by giving written notice to Provider without any compensation to Provider, if Provider becomes bankrupt or otherwise insolvent or in case of dissolution of firm or winding up of the company, provided that such termination will not prejudice any other rights of BMC. Notwithstanding the generality of the foregoing, BMC reserves the right to invoke the Performance Guarantee and/or take any other action including

appointment of any replacement Provider selected by BMC in its sole discretion, take over the entire infrastructure developed by Provider for the Cycle Sharing System or any part thereof, and/or negotiate with Provider to transfer the said infrastructure or part thereof to a replacement Provider selected by BMC, in BMC's sole discretion.

10.19. Suspension

On the occurrence of any of the following events, BMC shall, by a written notice of suspension, suspend any agreements as set forth in the Service Provider Agreement which may have been granted to the Service Provider there under:

- In the event and to the extent BMC is required to do so by any applicable law(s), rule(s), guideline(s), or court order(s). Any such notice of suspension shall specify the applicable law(s), rule(s), guideline(s), or court order(s).
- In the event Service Provider fails to perform any of its obligations under the Service Provider Agreement as required (including the carrying out of any services there-under). Any such notice of suspension issued by BMC to Service Provider shall specify the nature of the failure and may request the Service Provider to remedy such failure within a specified period, as decided by BMC in its sole discretion, from the date of issue of such notice of suspension.

10.20. Arbitration

If any dispute or difference or claims of any kind arises between the Parties in connection with implementation, construction, interpretation or application of any terms and conditions or any matter or thing in any way connected with or in connection with or arising out of the Contract Agreement for the "Engagement of Agency for Installation and Operation of Public Bicycle Sharing System in Bhopal", or the rights, duties or liabilities of any Party under the PBS Agreement, whether before or after the termination of the PBS Agreement, then the Parties shall meet together promptly, at the request of any Party, in an effort to resolve such dispute, difference or claim by discussion between them.

There shall be a Dispute Settlement Committee, which shall try to settle all disputes at the first stage. The Dispute Settlement Committee shall be chaired by Commissioner, Bhopal Municipal Corporation and two other authorised members of the organisation. The authorized representative of the Contractor will be allowed to participate in the Dispute Settlement procedure. If the Committee fails to resolve the issue within 30 (thirty) days of reference for amicable settlement, the parties will be free to redress it in the front of the Commissioner, Directorate, Urban Development & Administration, Government of Madhya Pradesh, whose decision in this regard shall be final and binding on both the Parties.

10.21. Jurisdiction

Only the courts in Bhopal shall have jurisdiction to try all disputes and matters arising out of an under this Agreement, after reference to arbitration.

10.22. No Waiver of Rights and Claims

Any forbearance, toleration or delay in invoking any of the rights or claims accruing in favour of any party under the terms of this Agreement shown or made by such a party in whose favour such rights or claims might have vested by virtue of this Agreement shall neither constitute nor be construed to be a waiver of such rights or claims accruing in respect of such a party.

Annexe A. Format For Technical Bid

The Bidder will provide detailed explanation on all 10 aspects on which Technical bid will be evaluated. The Bidder may use graphical representation/ descriptive explanations/ any other format to showcase their technical bid.

Annex B. Format For Financial Bid

The Bidder will have to submit the financial bid in the letter head of their company. In case of Consortiums, in the letter head of the lead consortium member. The format will be the same as the one mentioned below.

Bhopal Municipal Corporation		
Firm's Name:		
Tender Description: "Engagement of Agency for Installation and Operation of Public Bicycle Sharing System in Bhopal"		
Description	**Cost Excluding Service Tax (Amount Should Be In Figure as Well as in Words)**	**Presently Applicable Service Tax**
(A)	**(B)**	**(C)**
Capital Cost for procurement and installation of the Public Cycle Sharing System		
Operating Cost per month for operating the Public Cycle Sharing System (in Rs.)		

- Service Taxes to be paid in addition as per actual applicable from time to time.

SIGNATURE OF THE TENDERER(S)
With Seal

Name: _____

Full Address: _____

_____

_____

Annexure C.: Fare Structure

The proposed fare structure for the system as determined by the BMC is given below. There are four main components to the fare and payment structure:

1. Security Deposit
2. Subscription Fee
3. User Fees
4. Processing Fee

Security Deposit- A refundable Security Deposit will be charged on all users to ensure safety of the system's cycles. Lack of a security deposit could lead to theft of cycles or the cycles not being returned back to the system and being discarded around the city.

The Security Deposit should be linked to the insurance amount of cycles and should not exceed an insurance amountper cycle. Ideally the security deposit charged from each user should be the insurance amount/cycle. This will be charged on all kinds of users for the length of their use/membership, at the end of which it would be returned, in case there has been no case of missing cycles attributed to the person's account.

Subscription Fees- Users may if they prefer subscribe to the system to become a member. Not all users who are registered with the system are required to become members. Members are granted with the benefit of unlimited number of cycle hires of the trip lengths half an hour or lesser during the time of their membership.

Three types of membership will be offered in the system.

- One-Year Pass- Membership valid for a year
- Three Month Pass- Membership valid for three months
- One-Month Pass – Membership valid for a month

The proposed subscription fee for each membership is given below:

Subscription Type	Fee (Rs.)
One Year Pass	999
Three Month Pass	299
One Month Pass	149

User Fees

The proposed fees that users pay based on the amount of time cycles were borrowed each time before it is returned to the system.

Time	Non Member- User Fees (Rs.)	Member- User Fees (Rs.)
0- 30 mins	5	0
30 mins- 1 hours	10	
1 hour- 2 hours	25	
2 hours- 3 hours	50	
3 hours- 4 hours	100	
4 hours- 6 hours	175	
6 hours- 8 hours	250	
> 8 hours	350	

Processing Fee

An amount of Rs. 50 is charged as processing fee for issuing a card to a user. Members are exempt from this charge.

Annexe D. Format For Letter Of Application
(On Letter Head)

Date: _____

To,
The Commissioner,
Bhopal Municipal Corporation,
ISBT Campus, Dr. Ambedkar Marg
Bhopal (MP)

Sir,

Being duly authorized to represent and act on behalf of _____ (here-inafter "the Bidder"), and having reviewed and fully understood the Technical bid qualification information provided in the RFP No. _____, the undersigned hereby applies to be qualified by you as a Service Provider for the Bhopal Cycle Sharing System.

Attached to this letter are certified copies of the following original documents:

- The applicant's legal status
- The applicant's principal place of business
- Documents evidencing the incorporation/registration of the firm, including place of incorporation
- Memorandum of understanding (in case of consortium/joint venture), indicating share of the consortium member in equity of the proposed joint venture company
- All documents as specified in Technical Bid and RFP in respective envelopes.
- Online Deposit slip of THE EMD/Bid Security amount of Rs. 2,00,000 (Rs Two lacks)

The BMC and its authorized representatives are hereby authorized to conduct any inquiries or investigations to verify the statements, documents, and information submitted in connection with this application, and to seek clarification from banker(s) and / or client(s) regarding any financial and technical aspects thereof by way of letters or otherwise from any such institutions, in order to verify statements and information provided in this application, or with regard to our resources, experience, and competence.

This application is made in the full understanding that:

- Our bid and any information submitted for at the time of bidding will be subject to verification by BMC.
- BMC has reserved the right to:
    - Amend the scope of work for the Cycle Sharing System. In such event, bids will only be called from qualified bidders who meet the revised requirements; and
    - Reject or accept any application, cancel the Technical Bid, the qualification/Bid process, and reject all applications; and
- BMC shall not be liable for any such actions and shall be under no obligation to inform us of the grounds for the same.

We confirm that we agree with the terms and conditions provided in RFP/Technical Bid.

The Technical Bid and the Financial Bid submitted by us shall be valid for the period of 180 (One hundred and Eighty) days from the date of bid opening prescribed by BMC.

The Bid Purchase amount of Rs. 12,000/- (Rupees Twelve Thousand and Five Hundred only) has been paid by us/ is enclosed by us along with this letter in the form vide DD number _____ dated---------- of bank _____ drawn in favour of _____ and payable at Bhopal (in the event that the RFP has been downloaded in electronic form)

The undersigned declares that the statements made and the information provided in the application is complete, true and correct in every detail.

Signed,

[Name]

For and on behalf of [name of Bidder or Consortium/Joint venture]

Annexe E. Example of Bank Guarantee

If the capital bid amount of the service provider/ concessioner is Rs. 1,00,00,000 (Rs. One Crore), the performance guarantee required by BMC is as follows:

S.No.	Performance Guarantee Validity	Performance Guarantee Amount (Rs.)	Calculation
1	From the point of signing the contract to end of year 1 of operations	1,00,00,000	Whichever is lower.50% of Capital Bid amount or Rs. 1 Crores
2	Year 2 of operations	80,00,000	Reduction in performance guarantee by 1/5th of the original amount
3	Year 3 of operations	60,00,000	Reduction in performance guarantee by 2/5th of the original amount
4	Year 4 of operations	40,00,000	Reduction in performance guarantee by 3/5th of the original amount
5	Year 5 of operations		Reduction in performance guarantee by 4/5th of the original amount

Annexe F. Format for Performance Guarantee

(For "Engagement of Agency for Installation and Operation of Public Bicycle Sharing System in Bhopal")
(To be issued by a Scheduled Commercial Bank (Licensed by RBI) in India)

THIS DEED OF GUARANTEE executed on this the day of …….. 2015 at ……by --------(Name of the Bank) having its Head/Registered office at ----------and a Branch Office at …….hereinafter referred to as "the Guarantor" which expression shall unless it be repugnant to the subject or context thereof include its successors and assigns;

In favor of Commissioner, Bhopal Municipal Corporation in his executive capacity for BMC, represented by the Bhopal Municipal Corporation, having its Head Office at IInd Floor, Harshwardhan Complex, Mata Mandir Square Bhopal (MP), hereinafter called "BMC" (which expression shall include its successors and assigns);

WHEREAS

A. By the Concession Agreement dated entered into between BMC and M/s. ---------- Limited, a company incorporated under the Companies Act, 1956 having its registered office at …… hereinafter called "the Company", ("the Concession Agreement ") the Company has been granted the Concession to implement the project for the work of **"Engagement of Agency for Installation and Operation of Public Bicycle Sharing System in Bhopal** as given in the RFP document of **Engagement of Agency for Installation and Operation of Public Bicycle Sharing System in Bhopal**

B. The Company is required to furnish to BMC, an unconditional and irrevocable bank guarantee for an amount of Rs._____ (Rupees_____only) as security for due and punctual performance/discharge of its obligation under the Contract Agreement during the contract Period. 'Contract Period' for the purpose of this Guarantee shall mean the period from ……..to …….

C. At the request of the Company, the Guarantor has agreed to provide the guarantee, being these presents, guaranteeing the due and punctual performance/discharge by the Company of its obligations under the Concession Agreement during the 'Contract Period'.

NOW THEREFORE THIS DEED WITNESSETH AS FOLLOWS:

1. Capitalized terms used herein but not defined shall have the meanings assigned to them respectively in the Concession Agreement.
2. The Guarantor hereby guarantees the due and punctual performance by the Company of all its obligations under the Contract Agreement during the 'Contract Period'.
3. The Guarantor shall, without demur, pay to BMC sums not exceeding in aggregate Rs._____ (Rupees_____only) within five (5) days of receipt of a written demand thereof from BMC stating that the Company has failed to meet its performance obligations under the Concession Agreement during the 'Contract Period'*. The Guarantor shall not go into the veracity of any demand made by BMC and shall pay the amounts specified in the demand notwithstanding any direction to the contrary given or any dispute whatsoever raised by the Company/Concessionaire or any other Person.
4. In order to give effect to this Guarantee BMC shall be entitled to treat the Guarantor as the principal debtor. The obligations of the Guarantor shall not be affected by any variations in the terms and conditions of the Concession Agreement or other documents or by the extension of time for performance granted to the Company or postponement/non exercise/ delayed exercise of any of its rights by BMC or any indulgence shown by BMC to the Company and the Guarantor shall not be relieved from its obligations under this Guarantee on account of any such variation, extension, postponement, non exercise, delayed exercise of any of its rights by BMC or any indulgence shown by BMC, provided nothing contained herein shall enlarge the Guarantor's obligation hereunder.

5. This Guarantee shall be irrevocable and shall remain in full force and effect until discharged by the Company of all its obligations under the Concession Agreement during the Operations Period and by the Guarantor of all its obligations hereunder.
6. This Guarantee shall not be affected by any change in the constitution or winding up of the Company/the Guarantor or any absorption, merger or amalgamation of the Company/the Guarantor with any other Person/Body.
7. The Guarantor declares that he has the power to issue this guarantee and discharge the obligations contemplated herein, and the undersigned is duly authorised to execute this Guarantee pursuant to the power granted under _____.

IN WITNESS WHEREOF THE GUARANTOR HAS SET ITS HANDS HEREUNTO ON THE DAY, MONTH AND YEAR FIRST HEREINABOVE WRITTEN

SIGNED AND DELIVERED by ----------Bank by the hand of Shri ---------- its ……at its Head Office / …….. Branch Office and authorised official

* Banks are unlikely to issue guarantee for the entire Operations Period in one stretch. Initially the guarantee may be issued for a period of 3 years. The Company shall have to keep the guarantee valid throughout the Operations Period by seeking extension from time to time.

Annexe G. Format for General Information

(To be submitted for each firm in case of consortium/joint venture.)

Name of Firm	
Head office address	
Contact Person	
Telephone	
Fax	
Email	
Place of incorporation/registration	
Year of incorporation/registration	
No of employees	
Legal status of firm (company/partnership/proprietorship, etc.)	
Registration/incorporation documents	
If applying as a joint venture, the status of the company in the joint venture	
Ownership structure, business growth revenue details, staff details and/or capability statement.	
Management team	
Products/services offered	
Annual sales volume (in rupees)	
Major clients	
Business partners (and the services/products they offer	
History of litigation or claims made against the Applicant and all partners during the three years immediately prior to the Closing Time	
History of bankruptcy filings by the Applicant and all partners during the three years immediately prior to the Closing Time	

Annexe H. Format for Undertaking

It is certified that the information furnished in this Technical Bid, Qualification Bid and as per the document(s) submitted therewith is true and correct and nothing has been concealed or tampered with. We have gone through all the conditions of RFP and agree to be liable to any punitive action for furnishing false information / documents.

Dated this _____ day of _____ 2015

[Signature]

[Company stamp]

[Name] in the capacity of _____, duly authorized to sign bids for and on behalf of _____.

Annexe I. Formats for Power of Attorney and Memorandum of Understanding for consortium

Power of Attorney

Dated this _____ day of _____ 2015

Know all persons by these present that We, _____ and _____ (hereinafter collectively referred to "the consortium / joint venture") hereby appoint and authorize _____ as our attorney.

Whereas the BMC ("BMC") has invited applications from interested parties for the Bhopal Cycle Sharing System (hereinafter referred to as "the Project"),

Whereas the members of the consortium/joint venture are interested in bidding for this project in accordance with the terms and conditions of this tender along with its amendments, addenda and related documents,

And whereas it is necessary for the members of the consortium/joint venture to appoint and authorize one of them to do all acts, deeds and things in connection with the aforesaid Project,

We hereby nominate and authorize _____ as our constituted attorney in our name and on our behalf to do or execute all or any of the acts or things in connection with making an application to BMC, to follow up with BMC and thereafter to do all acts, deeds and things on our behalf until culmination of the process of bidding and thereafter till the license agreement is entered into with the Service Provider.

And we hereby agree that all acts, deeds and things done by our said attorney shall be construed as acts, deeds and things done by us and we undertake to ratify and confirm all and whatsoever that our said attorney shall do or cause to be done for us by virtue of the power hereby given.

All the members of this consortium will be jointly and severally liable for execution of this assignment in all respects.

In witness hereof we have signed this deed on this _____ day of _____ 2015.

[Signature]

For and on behalf of

[Company]

[Signature]

For and on behalf of

[Company]

Memorandum of Understanding

Know all men by these present that we, _____ and _____ (herein after collectively referred to "the consortium / joint venture") for execution of tender.

Whereas the BMC has invited tenders from the interested parties for the Bhopal Cycle Sharing System.

Whereas the members of the consortium / joint venture are interested in bidding for the work of _____ in accordance with the terms and conditions of the RFP/tender.

This Consortium / Joint Venture agreement is executed to undertake the work and role and responsibility of the firms as _____.

And whereas it is necessary under the conditions of the RFP/tender for the members of the consortium / joint venture to appoint and authorize one of them as Lead Member to do all acts, deeds and things in connection with the aforesaid tender. _____ is the Lead Member of the Consortium.

We hereby nominate and authorize _____ as our constituted attorney in our name and on our behalf to do or executive all or any of the acts or things in connection with the execution of this Tender and thereafter to do all acts, deeds and things on our behalf and thereafter till the satisfactory completion of work.

And we hereby agree that all acts, deeds and things done by our said attorney shall be construed as acts, deeds and things done by us and we undertake to ratify and confirm all and whatsoever that my said attorney shall do or cause to be done for us by virtue of the power hereby given. All the members of this consortium will be jointly and severally liable for execution of this assignment in all respects.

In witness hereof we have signed this deed on this _____ day of _____.

[Signature]

By the with named _____ through its duly constituted attorneys in the presence of _____.

[Signature]

By the with named _____ through its duly constituted attorneys in the presence of _____.

Notes

For the purposes of Memorandum of Understanding and Power of Attorney:

- The agreements are to be executed by the all members in case of a Consortium.
- The mode of execution of the Power of Attorney should be in accordance with the procedure, if any, laid down by the applicable law and the charter documents of the executants and when it is so required the same should be under common seal affixed in accordance with the required procedure.
- Also, wherever required, the Bidder should submit for verification the extract of the charter documents and documents such as a resolution/power of attorney in favour of

the Person executing this Power of Attorney for the delegation of power hereunder on behalf of the Bidder.

- In case the Application is signed by an authorized Director / Partner or Proprietor of the Applicant, a certified copy of the appropriate resolution / document conveying such authority may be enclosed in lieu of the Power of Attorney.