

## SECTION 5. TERMS OF REFERENCE

### **FOR HIRING A CONSULTANT TO PREPARE** **ACCESSIBILITY PLAN TO THE BRTS** **UNDER THE TECHNICAL ASSISTANCE COMPONENT OF THE GEF PROJECT FOR AICTSL,** **INDORE**

Indore is one of the pioneering cities of India introducing a Bus Rapid Transit System for its citizens. Introduction of the Bus Rapid Transit System is part of a larger effort of the city to provide good quality mobility by public mass transportation in a socially equitable and environmentally sustainable manner. In continuation of the same effort, AICTSL intends to make improvements to non-motorized traffic (NMT) infrastructure, so as to ease and encourage access to the BRT using active transportation.

Integrating non-motorized traffic infrastructure with the bus system will not only increase the ridership in the catchment area of the bus-system and provide last mile connectivity but make the entire trip-chain of the passenger low-carbon.

#### About Indore BRTS

Length of route	<ul style="list-style-type: none"><li>• 11.46 km</li></ul>
Road section	<ul style="list-style-type: none"><li>• 31.6 / 60 metres</li></ul>
System type	<ul style="list-style-type: none"><li>• Closed</li><li>• Median stations</li></ul>
BRTS Stations	<ul style="list-style-type: none"><li>• 21</li></ul>
Number of buses	<ul style="list-style-type: none"><li>• 50</li></ul>
Type of bus	<ul style="list-style-type: none"><li>• 12 m long with AC</li><li>• 900 mm Semi Low Floor</li><li>• 245 hp, BS III engine</li></ul>

#### **I. AIM & OBJECTIVES OF THE ASSIGNMENT**

The aim of this assignment is to be able to develop an implementable plan to improve access to the BRT system on AB road for Non Motorised Transport users. This plan is intended not only for setting design guidelines for smoothing pedestrian movement, but also to establish demonstrative standards for safety and attractiveness, in order to facilitate a much more sustainable development of the city.

**Objectives:**

1. Improve & promote the public transport system by providing safer, more convenient access routes for NMT users to bus stations & stops in general and to the planned BRT network in particular.
2. To integrate cycle parking and pick up and drop off of rickshaw & auto rickshaws into the Non Motorised Transport (NMT) network serving public transport stops in general, BRT stations in particular. Considering the presence of hawkers within the areas of proposed NMT network, the study shall cover facilitating their integration on the NMT network and the extent to which this is possible while maintaining accessibility.
3. Improve non-motorized access and mobility for vulnerable transport users such as the elderly, children, women and differently-abled users to bus stations & stops in general and to the planned BRT network in particular.
4. To Integrate BRT System with other Public Transport Modes such as Inter City Bus Services, Railway stations, Auto-Rickshaws, Taxi Stands, Parking Facilities etc.
5. To plan and integrate intermittent public spaces and encourage the use of streets for social interactions and also design streets for safe and secure movement for BRT network.
6. Propose BRT corridor improvements including adjoining/ side streets and lane improvements from NMT pick up – drop off, off street parking perspectives.

**II. SCOPE OF WORK**

1. **Project Inception and methodology** - Also review and summarise international case studies in improving NMT related to public transport applicable to the city of Indore, based on available literature prepared for guidance document for NMT under SUTP.
2. **BRT Accessibility Plan Framework** - Creation of a broad city-wide framework for NMT street infrastructure and facility planning & design along bus rapid transit corridors to encourage and facilitate its use. The consultants shall prepare concept level plans for the city wide NMT framework and then use the same guiding principles to come up with detailed working of access to BRT network within 500 meters on either side of the corridor of 11.5 Kms including junctions, adjoining roads etc. Major activity centres (institutional, commercial, public/semi-public, recreational etc) within 1.5 km radius of corridor shall also be included.
3. **Delineation Plan & Reconnaissance Survey** - Delineation of urban sections easily accessed and those that are not from the BRT Corridor
4. **Surveys, NMT Demand Assessment (NMT corridors) and analysis**
5. **Infrastructure and Systems Design** – Detailed drawings/ designs and Implementation Plan for Accessibility to public transport in general (bus terminals, intersections, bus stops, parking etc), BRT stops in particular and along the BRT corridor. Improvements should facilitate efficient and safe access to and from the BRT along the corridor.
6. **Implementation plan** - Development of an implementation plan, including cost estimates, implementation arrangements for construction and operation and maintenance etc.

7. **Education and Public Outreach Strategies and Plan-** Development of education and outreach programs for the stakeholders in the government and also stakeholders on the streets, including pedestrians, bicyclists and street vendors.

### III. DETAILED SCOPE OF WORK

The detailed scope of services of this assignment would include:

#### **3.1 Project Inception and Methodology**

- 3.1.1 Prepare methodology: Prepare a detailed study methodology that details the consultant's strategy for successfully accomplishing the tasks of the project.
- 3.1.2 Review of all relevant documents (including Master Plan, CMP, CDP, Parking Policy) to understand BRT/NMT related projects proposed and city's mobility vision.
- 3.1.3 Review of BRTS accessibility case studies: The case studies shall document and review the approach and strategies used in the selected case studies and discuss the lessons learnt in the context of their application to the city of Indore.
- 3.1.4 Submit inception report

#### **3.2 BRT Accessibility Plan Framework**

The approach to the corridor accessibility plan shall be planned in the context of a larger city wide BRT network, beyond AB road. It will be required from the Consultant to establish a framework for developing a city-wide network of streets that prioritize the needs of pedestrians and bicyclists and public transport users. BRTS accessibility plan shall be planned to provide safer, more convenient access routes for NMT users to bus stations & stops in general and to the planned BRT network in particular. This section shall cover, and not be limited to the following items –

- 3.2.1 Preliminary Network Analysis & area delineation

This section should include a diagrammatic mapping of the hierarchy network of streets to and from the AB road BRT corridor by width, modal usage, land use and detailed activities, NMT crossings along the corridor and BRTS stations (including interchange points).

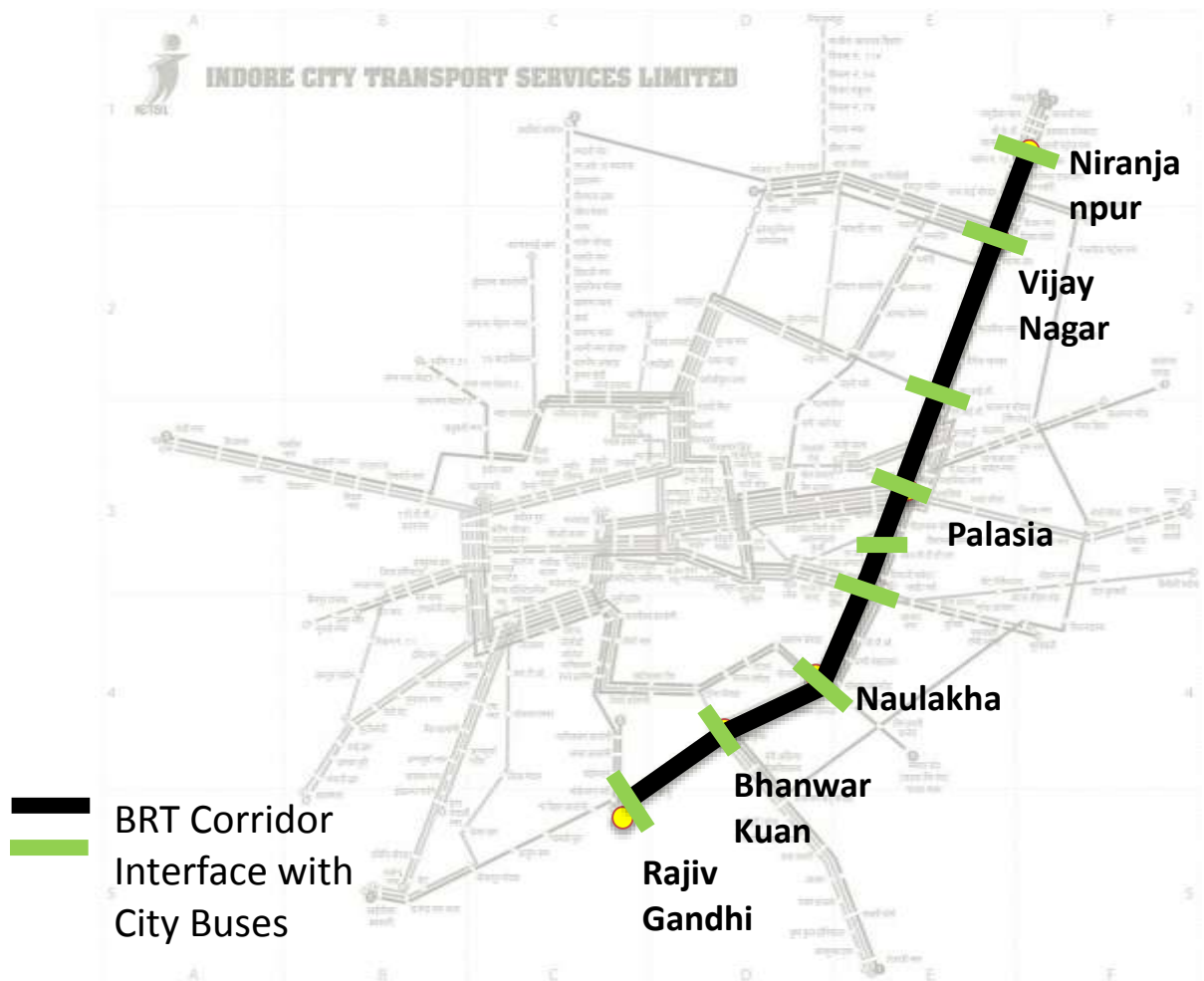
- 3.2.2 Principles of Network Planning for NMT infrastructure

Using case studies and the diagrams generated above, and available Guidance documents the appointed Consultant shall establish a framework of principles under which the design and implementation shall be approached for BRT corridors and Indore as a whole.

- 3.2.3 Submission of BRTS access plan framework for BRT accessibility planning in Indore

#### **3.3 Delineation Plan & Reconnaissance Survey**

- 3.3.1 Pursuant to the principles of the BRTS access network for NMT laid out above, AB Road shall be studied in detail for its position in the overall network in the city. This shall include:
- 3.3.2 Review & analysis of land use adjacent to the corridor to establish origins, destinations and nodes for travel patterns within and beyond the corridor.
- 3.3.3 Within NMT network (BRT, etc.) corridors, identify locations of activity centres such as but not limited to schools, workplaces, commercial areas, major transport nodes, parking etc. There are 9 nodes along the BRTS corridor which would have interchange with city buses for seamless access. Survey of interchange points and access. The interchange points are shown below:



- 3.3.4 The delineated network shall include streets and neighbourhoods within 500 m of the AB BRTS corridor. Further, specific uses (institutional, recreational, public semi-public, commercial etc) within 1.5 km radius from the corridor shall be identified and included in the delineation network. The consultants shall prepare concept level plans for the city wide NMT framework and then use the same guiding principles to come up with detailed working of access network within 500 mts on either side of the BRT corridor network of 11.5 Kms including junctions, adjoining roads, NMT crossing at BRTS station & interchange points etc. Major activity centres within 1.5 km radius of corridor shall also be included.
- 3.3.5 Detailed mapping of delineated network (BRTS corridor and adjoining) - Topographic survey of the delineated sections with electronic total station capturing ROW details (in XYZ format) which include for example physical features, built-up area, underground and overhead services/utilities, trees, signages, obstructions and encroachments, drainage system etc. Identification of "missing links".

- 3.3.6 Identify locations from safety audit for safety improvements specially for NMT and vulnerable users. Locations to be approved by AICTSL.
- 3.3.7 Road safety audit: Pedestrian and cyclist safety audit in NMT corridors, links and intersections. Analysis of quality of existing infrastructure provisions including safety conditions, which will include a review of road safety and personal security for the NMT links, junctions, passenger access (to the BRTS corridor, stations & interchange points), and junctions. A detailed safety audit is to be done for entire delineated network specifically for NMT for accessing BRTS corridor, BRTS stations and interchange points with city bus. Documentation and analysis of the specific streets with respect to adjacent activities in terms of safety. Adjoining/ side streets and lane to from be included from NMT, pick up – drop off, off street parking etc perspectives.
- 3.3.8 Identify survey locations. Locations to be identified in discussion with AICTSL and approved by AICTSL.
- 3.3.9
- 3.3.10 Submission of report on delineated sections for accessibility to the AB road BRT corridor & reconnaissance Survey

### **3.4 Surveys, Demand Surveys, NMT Demand Assessment (NMT corridors) and analysis**

- 3.4.1 Classified pedestrian / cycling / cycle rickshaw counts at links and intersections. They will be done from 06:00 to 22:00 with 15 minute intervals. Proposed survey locations should be identified during Task 3.3 and be listed in the report being submitted in task [3.3.103-3.103-3.9](#) and approved with AICTSL.
- 3.4.2 BRTS User-Non user preference and satisfaction surveys (including pedestrians, cyclists, rickshaw users, IPT & private vehicle users etc). User-Non user preference & satisfaction surveys shall be limited to 1000 samples across the delineated network. Surveys should establish socio economic & travel profile of the users & non users (of BRTS). The surveys should be distributed at BRTS stations, interchange points, along corridor and activity with high pedestrian volumes. Survey should cover but not be limited to the following
- overall origin and destination,
  - trip distance,
  - trip time,
  - mode and stages of travel;
  - number of walking trips undertaken in a day,
  - average walking trip lengths and time,
  - purpose of walking trips and perception of walking
  - Any other
- 3.4.3 Analysis of survey findings
- 3.4.4 If required, based on the survey findings revision of BRTS accessibility Plan framework.
- 3.4.5 Submission of report on demand analysis

### **3.5 Infrastructure and Systems Design**

This section shall cover for the delineated section specific details for infrastructure and systems designed for pedestrians and bicyclists and shall be in congruence with the overall principles and NMT plan for the city. The proposal shall draw its strategies from existing practices of movement and allied street activity and seek to include them in the strategy as much as possible. They shall cover, but not be limited to:

- 3.5.1 Based on survey results, identify required BRTS accessibility improvements for AB Road BRTS corridor, stations, interchange points and its link streets and lanes.
- 3.5.2 Design Strategy and Principles, elaborating the overall premise under which the design recommendations shall be made. This shall also include a strategy to include existing street activity and consider them as part of the design proposal for the future. In case that is absolutely not possible, a relocation/ rehabilitation plan for existing activities shall be proposed.
- 3.5.3 Design should be such that it facilitates safe and convenient access to the BRT and encourages NMT through designed improvements on the corridor as well as adjoining streets, lanes etc. Design components and systems, listing out site specific interventions and their details that include but are not limited to:
  - Continuous, wide footpaths
  - Access to/from BRTS stations, interchange points with city buses
  - Traffic calming measures along the corridor and access network
  - Coverage (tree cover)
  - Park and ride zones and details of the facilities
  - Cycle parking
  - Pick-up and drop-off zones
  - On street Parking, off street parking and no-parking zones
  - Lighting
  - Street furniture (seating, garbage cans, etc.)
  - Crossing paths, islands
  - Information & signage (to and from the BRT system)
  - Advertising
  - Street vending and hawking
  - Public amenities
  - Security
  - Traffic Signals
- 3.5.4 Prepare a comprehensive corridor level proposal (including a CAD<sup>1</sup> plan) detailing locations for the proposed inserts and for installing/ retrofitting infrastructure to ensure safe and attractive accesses for people to the BRT system.
- 3.5.5 Prepare detailed drawings for identified improvements for the delineated area (entire corridor, adjoining/ side streets and lane improvements (for typical streets of the study area) and all BRTS station & interchange point accesses. The design improvements for the delineated area shall be prepared NMT pick up – drop off, off street parking perspectives for improving BRTS accessibility. Design Standards, to establish benchmarks for quality of each of the physical

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<sup>1</sup> Computer Aided Design

infrastructure components identified in 3.5.3. This shall include minimum and maximum limits for system capacities and its compatibility with NMT practices and under no circumstance can they compromise the usability or priority to pedestrians and BRT commuters. These standards shall recognise the realities of operations and security of the systems to ensure its longevity.

### 3.5.6 Detailed Drawings

The Consultant shall provide designs and sections proposed for the delineated section along with a detailed key showing the exact locations for the same. The design improvements will not only include the BRT corridor improvements but also the adjoining/ side streets and lane improvements from NMT, pick up – drop off, off street parking perspectives. This section shall include, but not be limited to -

- Cross-section Designs
- Alignment Designs
- Junction Designs
- Typical Details
- Typical Services and Furniture Designs
- Typical Signage and Marking Designs

3.5.7 Submission of report including design and phasing for the implementation for accessibility to the BRT corridor.

## 3.6 Implementation plan

The Consultant shall prepare an implementation schedule, for timely and efficient completion of the project components (infrastructure and systems) without compromising quality and detail the implementation arrangements. This shall cover, but not be limited to:

### **Implementation arrangements plan**

3.6.1 Identification of project implementation framework

3.6.2 Structure, roles and responsibilities to be defined in detail conformity of existing institutional framework.

3.6.3 Implementation schedule for all procurement related activities

3.6.4 Implementation plan shall illustrate the sequence of construction, timelines and financial resources required and their sources and roles of the respective agencies involved.

**Cost estimations** should include estimation for both capex & opex

3.6.5 Potential sources of funding and estimates of their magnitude

**Preparation of Operations, Maintenance and Development Management Plan:** Should include protocol recommended to operate and maintain the new infrastructure and also develop new systems in the future. Roles and responsibilities for each of the stake-holding agencies shall be outlined with clarity and consent from the involved parties.

3.6.6 Preparation Implementation arrangements plan, cost estimates and O&M plan

3.6.7 Enforcement

3.6.8 Submission of report on implementation plan including operations, maintenance, phasing, planning and management for accessibility to the BRT corridor

### 3.7 Education and Public Outreach Strategies and Plan

The consultant shall propose strategies for increasing awareness within stake-holding agencies about the importance of Non-Motorised Transportation in a city and exposure to best practices in NMT planning and implementation. Programs and campaigns shall be developed for citizens to sensitise them and also enlarge their understanding of how best to use the NMT network will be developed. This section should thus cover, but not be limited to-

- 3.7.1 Strategies for capacity building within the relevant stakeholders on NMT planning and implementation and to disseminate the knowledge gained in the project.
- 3.7.2 Plan for dissemination of information regarding NMT plan to the public/user to manage traffic and minimise delays during construction.
- 3.7.3 Conduct training workshops for IMC, IDA, AICTSL and other stakeholders, including citizens and street vendors. The consultant will create strategies, train and educate key stakeholder (public stakeholders, students, vendors, other) in regards to public outreach and develop material such as flyers, Maps, Management of account on social networking site or discussion group.

**Task 1:** Hold one day long workshop to disseminate the findings and also have the findings appropriately validated, with about 60 participants to be nominated and invited by the city. The consultant shall develop questionnaires and other supporting material to gauge the level of satisfaction with the current facilities. The consultant will be responsible for all the logistics of the workshop, including:

- Developing and sharing workshop material in both hard & soft formats,
- Arranging and hiring the venue,
- Usual packages of Lunch & snacks.

- 3.7.4 Develop an outreach strategy to sensitise and familiarise users to the new system, along with guiding them to use the system most efficiently.
- 3.7.5
- 3.7.6 Feedback received to be incorporated in final designs
- 3.7.7 Submission of report on outreach strategies, coherent to the Design & Implementation plan mutually agreed upon by involved stakeholders

### 3.8 Final accessibility plan

The consultant to prepare a final accessibility plan report combining all of the above.

## IV. DELIVERABLES, TIME FRAMES and PAYMENT SCHEDULE

### 4.1 Deliverables and Time Frame

The consultant shall commence work within a week of signing of the contract and shall submit a work plan within 1 month of commencement of work. All deliverables are due within 12 months of commencement of work. The list of deliverables and their respective time frames are given in the table below:

**Table 1: Time Frame**

Sl. No.	Activities	Time (in	Cumulative Time (in
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		months)	months)
1.	Submission of Inception report	1	1
2.	BRT Accessibility Plan Framework	1	2
3.	Report on delineation & reconnaissance Survey	1	3
4.	Report on demand analysis	2	5
5.	Report on design and phasing	2	7
6.	Implementation arrangements plan, cost estimation	2	9
7.	Report on Education and Public Outreach Strategies and Plan and workshop report	2	11
8.	Final Accessibility Report	1	12

**Table 2: Work Plan**

Activities / Months	1	2	3	4	5	6	7	8	9	10	11	12
Submission of Inception report												
BRT Accessibility Plan Framework												
Report on delineation & reconnaissance Survey												
Report on demand analysis												
Report on design and phasing												
Implementation arrangements plan, cost estimation												
Report on Education and Public Outreach Strategies and Plan and workshop report												
Final Accessibility Report												

All the reports submitted to the client will be supplied in six hard Copies, along with a CD comprising relevant electronic copies.

It shall be noted that the copyright for all the manuals, plans and reports and other intellectual property created as a part of this project will vest exclusively with the Government of India (MoUD) which would be free to use all such material, without restrictions, in any of its training programs or for any other purposes.

#### 4.2 Payment Schedule

The payment schedule for the above-discussed work has been detailed out in Table 3.

**Table 3: Payment Schedule**

S.No.	Milestone	Payment %
1.	Inception report and City wide framework for NMT planning in Indore	20
2.	Report on delineation & reconnaissance Survey and Report on	20

	demand analysis	
3.	Report on design and phasing	10
4.	Implementation arrangements plan, cost estimation	20
5.	Report on Education and Public Outreach Strategies and Plan and workshop report	10
6.	Final Accessibility Report	20

#### 4.3 Consultant identification

The consultant's team will need to have interdisciplinary expertise, including GIS mapping, database management, financial planning, transport and city planning. The consultant should have demonstrated experience in undertaking transport surveys in urban areas, in planning and designing of infrastructure relevant to public transport, and non-motorized transport (pedestrians and cyclists).

#### 4.4 Staffing

The suggested key staffing requirement and schedule required for the project has been outlined in Table 4.

**Table 4: Qualification & Experience of Key Staff**

Position	Man months towards project	Years of Professional Experience	Qualifications and Experience
Transport Planner cum team leader	4	10	<ul style="list-style-type: none"> <li>• Masters Degree or equivalent in Transportation planning with minimum of 7 years of experience in Urban Transport planning and research and preferably should have a good understanding of Sustainable Urban Transport;</li> <li>• Experience in planning transportation studies inclusive of network analysis, demand analysis, public transport and NMT studies, operations and management of transport systems is essential;</li> <li>• The candidate shall be conversant with NMT developments across the world and should have good communication and writing skills;</li> <li>• Should be a good coordinator and would be responsible for quality of the outputs;</li> <li>• The ideal candidate would be one having a good understanding of Sustainable Urban Transportation.</li> </ul>
NMT specialist	5	7	<ul style="list-style-type: none"> <li>• Masters degree in Transportation engineering/ planning with at least 5 years experience in public and non-motorized transport</li> </ul>
Road Safety Advisor	2	7	<ul style="list-style-type: none"> <li>• Masters degree in transportation / civil engineering with at least 5 years experience, in carrying out road safety audits;</li> <li>• Should have demonstrated skills to identify and provide</li> </ul>

Position	Man months towards project	Years of Professional Experience	Qualifications and Experience
			solution for projects related to safety of vulnerable road user group
Traffic Engineer	4	7	<ul style="list-style-type: none"> <li>• Masters degree in engineering /architecture/ planning with at least 5 years experience in Traffic engineering / transport planning;</li> <li>• Should have knowledge and experience in providing proposals for attractive, coherent, safe and comfortable infrastructure for NMT user groups.</li> <li>• Should have experience in NMT detailed designing</li> <li>• Should have experience in conducting traffic surveys and analysis</li> </ul>
Urban Designer	2	5	<ul style="list-style-type: none"> <li>• Masters degree in urban design / landscape architecture/ planning with at least 3 years experience in urban design;</li> <li>• Should have knowledge and experience in providing proposals for attractive, coherent, safe and comfortable infrastructure for NMT user groups.</li> </ul>
Communications & Outreach Expert	3	7	<ul style="list-style-type: none"> <li>• Professionals with relevant degree in communications and 5 years' experience in developing strategies for effective mass communication in Public programs and development sector.</li> <li>• Experience of promotion and outreach programs for government/government agencies &amp; their projects/achievements is desirable.</li> </ul>

#### 4.5 Supervision

The study will be supervised by the PIU. They will be supported by the National PMU and World Bank.